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Dijstelbloem, H.

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Moving the Immovable: Climate Change and the Multiple Tensions between Mobility and Immobility

Huub Dijstelbloem 

Institute for Advanced Study of the University of Amsterdam

Corresponding author

Huub Dijstelbloem
University of Amsterdam,
Department of Philosophy, Oude
Turfmarkt 141-143, 1012 GC
Amsterdam, The Netherlands
✉ H.O.Dijstelbloem@uva.nl

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Abstract

The lecture examines the emergence of the research field of climate migration from a philosophy of science and technology perspective. It explores the tensions between mobility and immobility by discussing three specific technologies and infrastructures that emerge from the notion of climate migration and push mobility to the extreme: interventionist policies that encourage managed retreat, experimental digital technologies that promote circulation, and a proposal for a climate passport. It then considers implications of this paradigm of mobility for STS, focusing on immobility as a concept that can deepen and challenge our understanding of a trinity of states, sovereignty, and territory under conditions of climate change and mobility. By reconceptualizing the relationship between mobility and immobility, the lecture proposes a nuanced and refined alternative to the emphasis on motion, movement, and mobility, with the aim of contributing to the discussion of how climate (im)mobilities and Anthropocene (im)mobilities unfold.

Keywords

climate migration; (im)mobility; extreme infrastructures; mobility paradigm; Anthropocene mobilities.

1. Introduction

Composite terms, concepts that combine different notions like “platform economy”, “identity politics”, or “urban mental health”, do several things. They define a new phenomenon, suggest a relationship between the composing terms, often a causal relationship, and point to a direction in which the current situation in economics, politics, or health problems is moving: the emergence of platforms, expressions of identity, and urban environments are putting pressure on existing ideas about economics, politics, and health. The same is true of the term “climate migration”. As a relatively new concept or subcategory or specification of environmental migration, it calls attention to a presumably novel phenomenon, namely that existing forms and patterns of migration will be affected by climate change, that new categories of migrants will emerge, and that the number of migrants is likely to increase due to the devastating effects of climate change. Direct effects, such as drought incidence, increased cyclone intensity such as by hurricanes and typhoons, and sea level rise but also heath waves

and floodings, as mentioned by the IPCC (2023), that will damage communities, villages and cities, complicate agriculture, and economic trade or human existence directly, because it will deprive entire regions of water, or will make life simply too vulnerable or even impossible. But there are also indirect consequences, because climate change can be a source of conflict, or because states fail to take the required measures, willingly or not, or because economic and political investment simply anticipates the consequences and withdraws. Here we already see the beginning of the complications of the notion of climate migration.

The scientific discussion and political consequences of the concept of climate migration can be described by applying the STS approach of controversy studies. To contribute to the conference theme “Interesting Worlds to come. Science & Technology Studies facing more-than-human challenges” of the 2023 STS Italy conference in Bologna, I will first unpack the notion of climate migration to see how STS can help understand the development of an emerging field of knowledge, policy, migration, and climate adaptation management. Thereafter I will discuss some of STS key concepts and assumptions as well, namely about what we exactly mean when we say we study networks and relationships, how we distinguish between relationships and causal relationships in those networks and which kinds of causal relationship we use. For that reason, I will focus on how STS research engages with the notion of mobility, not only as an object of research but also as an ontological assumption, or perhaps sometimes even as mobility-bias. My claim is not that STS should be seen as still following the “mobility turn” in the social sciences since the 1990s (Urry 2000). If only because the real “mobility turn” took place ages ago when the Aristotelian metaphysics of the “unmoved mover” and the subsequent Christian theology was replaced by the dominant concepts of movement and event (Blumenberg 1983; 1996). As Peter Sloterdijk once put it, “nowadays, only real estate brokers believe in immovable property” (Sloterdijk 2020, 50). And even that statement is questionable today.

Attending to the tensions between mobility and immobility is also a way of advancing the political theory component of STS. Critical reflection on the notion of mobility is also required as the control over mobility is one of the key aspects of today’s state control – and international cooperation between states. John Torpey (1999) developed a powerful analogy in his book *The Invention of the Passport: Surveillance, Citizenship and the State*. Drawing on arguments from Marx and Weber, he sought to demonstrate that modern states and the international state system of which they are part have deprived individuals and private entities of the legitimate means of movement (Torpey 1999, 5-6). While Max Weber argued that states expropriated the means of violence from individuals and private entities, Torpey claims that modern states have acquired a “monopoly on the legitimate means of movement”. Whether states have acquired a monopoly on the control of mobility in the same way that they have acquired a monopoly on violence is still the subject of academic debate. What is becoming clear, however, is that climate change is putting pressure not only on the presumed control over the movement of people and the situations of migration, refuge, exile, and statelessness, but also on the situation of being stuck and stagnant. Meanwhile, the relationship between climate change, mobility and immobility is inextricably intertwined with a configuration of other factors that complicate the determination of direct and indirect causes and consequences. STS research seems well placed to explore this area, provided that it succeeds in developing a refined perspective on the understudied notion of immobility.

2. Unpacking climate migration with STS

In *Down to Earth: Politics in the New Climate Regime*, Latour (2018) argued that “migrations, explosions of inequality, and the New Climate Regime” are “one and the same threat”. “The climate crisis”, he wrote, “is forcing people they do not welcome to cross their forties; hence the response: ‘Let’s put up impenetrable borders and we’ll escape from the invasion!’” However, he continued, “the New Climate Regime has been sweeping across all our borders for a long time, exposing us to all the winds, and no walls we can build will keep these invaders out”. But, he claimed, “neither state sovereignty nor inviolable borders can take the place of politics any longer” (Latour 2018, 8). The political question, according to Latour, is “how to reassure and shelter all those persons who are obliged to take the road, even while turning them away from the false protection of identities and rigid borders?” (Latour 2018, 11). “How”, he asked,

can we reweave edges, envelopes, protections; how can we find new footing while simultaneously taking into account the end of globalization, the scope of migration, and also the limits placed on the sovereignty of nation-states that are henceforth confronted by climate change? (Latour 2018, 11)

If indeed this is the big question we are facing, I propose we start with unpacking the concept of climate migration. Climate research and migration research are broad and mixed disciplines themselves, existing of all kinds of older and newer fields and approaches. Although there is not much overlap between the fields, in terms of scientific approaches and scientific researchers, they do have something in common: both can be considered as crisis-disciplines, fields of research that operate at a moment in time and study situations, patterns and development, interventions, causes and effects where things are in crisis, either because of the devastating consequences of climate change and the seize and urgency of the measures that are required in order to prevent things from even being worse, or because of the terrible humanitarian consequences of some of the causes of forced migration – violent conflicts, discrimination, prosecution, death sentences and the unworthy circumstances and sheer violence migrants meet when trying to reach other destinations.

The two fields meet, or rather, the study of migration is situated in a broader context of scarce resources, vulnerable regions, changing environments, political instability, and conflicts, when it concerns the relationship between climate change and migration. The combination of the research fields of climate change research and migration research connects the latter to what Edwards (2013) called “the vast machine”, the development of climate models, including simulation models, reanalysis models, and data models and the theoretical, methodological, and infrastructural integration of various fields of study, including weather and climate observing systems.

The relationship between climate change and migration is complicated and at certain points even highly contested. One can even argue that it is hardly worth paying attention to this notion because migration researchers and environmental policy scholars already carefully deconstructed the concept. In a 2019 Comment in *Nature Climate Change*, Ingrid Boas and colleagues identified the most important myths. Below, I will focus on three of them. First, there

is already a considerable body of evidence to suggest that migration is not driven by climate change alone. Instead, it is influenced by a mix of climatic, socio-economic, cultural, and political factors (Boas et al. 2019, 902). Second, it is often assumed that climate change will lead to increased international mobility, especially to European and North American countries. However, empirical evidence suggests that most climate-related mobility tends to occur at the national or regional level (Szaboova 2020, 6). Third, climate change does not always lead to mobility. While it may lead to increased willingness to move, climate change may also undermine the vital capital and resources needed to migrate, leaving some of the most vulnerable and poorest unable to move in response to climatic and environmental risks (Black and Collyer 2014).

These arguments seem to consign the concept of climate migration to the academic dustbin. However, there is still an argument to be made in favor of the notion of climate migration, namely the commonsense notion that people are already being confronted with the consequences of climate change, and there is no doubt that these consequences are only going to get worse. It may be true that “the discourse of apocalyptic climate change-induced mass migration is now past its prime” because:

an ever-rising number of studies shows [...] that relations between climate change and human migration are often indirect, small-scale, and taking shape in context-specific ways, influenced by a host of other socio-economic and political factors. (Boas et al. 2022, 3365)

However, detecting the refined relations between climate change and human mobility in all kinds of context, situations and events will only become more important as the debate shifts towards anthropocene mobilities (Baldwin et al. 2019). The challenge ahead is to be more precise about the kinds of relationship between climate change and migration, especially because the notion of climate migration has a political connotation. The term has a performative effect. It rings alarm bells, not just by introducing this new category but also by adding the numbers. To explain this effect, I will first consider the theoretical construction of climate migration research. After that, I will discuss three possible consequences – of political interventions, of technologies and of infrastructures – that this way of thinking can lead to.

3. The under-explored notion of immobility

Despite the attempts to debunk the myth of climate migration, there is an increasing amount of literature arguing climate change will stimulate mass migration from vulnerable regions in low-income countries to other destinations. Various politicians and scientific policy advisors have raised the red flag. Lord Stern, author of the Stern Review, was quoted in *The Guardian* in 2013, stating that:

Hundreds of millions of people will be forced to leave their homelands because their crops and animals will have died. The trouble will come when they try to migrate into new lands, however. That will bring them into armed conflict with people already living there. Nor will it be an occasional occurrence. It could become a permanent feature of life on Earth. (McKie 2013)

In his 2015 State of the Union speech, European Commission president Jean-Claude Juncker stated: “Climate change is one of the root causes of a new migration phenomenon. Climate refugees will become a new challenge – if we do not act swiftly” (Juncker 2015). The Economist, on Nov 18th 2022, wrote that “Climate change is likely to increase migration” but rightfully added that “three-quarters of such migrants stay within their own country” (Dobbs 2022). Assumptions about a causal link between global warming and migration are also found in the scientific literature. Based on their research (Xu et al. 2020) Scheffer estimates that global warming is likely to drive billions of people out of the so-called “climate niche” in which humanity has flourished for millennia (Carrington 2023). Also the popular-scientific literature on climate change and migration is increasing, see for instance Gaia Vince’s (2022) *Nomad Century. How to Survive the Climate Upheaval*. Vince begins with a prediction of a dystopian future, based on scientific projections of a world that will soon be warmer than at any time in tens of millions of years. The consequences will be devastating. Coastlines altered by rising seas and stronger tropical storms, forests ravaged by wildfires, drought-stricken fields left barren, and deserts expanding to swallow villages and towns. Other communities will be wiped out by terrible floods or abandoned for lack of rainfall. As a result, Vince argues, humans will do what we have done throughout our evolutionary history: we will move. But this time it will be in our billions, on an unprecedented scale. At this point Vince’s story becomes utopian. According to her, the coming migration of billions of people from the tropics to the northern hemisphere can be planned. New cities will have to be built to house the climate migrants and give them a chance to build new lives in Alaska, Canada, Greenland, northern Europe and Russia, as well as in Patagonia, Tasmania, New Zealand and Antarctica, as they leave warmer latitudes in Asia, Africa and Latin America. She is extremely optimistic about the possibilities of successfully integrating migrants into their new communities through enlightened policies.

Such optimism is a rarity. More to the point of this lecture, assuming so much causality between climate change and migration is also exceptional – and questionable. There is some general agreement about which kinds of countries are likely to be affected most by climate change and out-migration. The least developed countries (LDCs), landlocked developing countries (LLDCs) and small island developing States (SIDS) are among the most vulnerable groups of countries in the world. They are disproportionately affected by the negative impacts of climate change due to their structural constraints and geographical disadvantage. In 2016, 13 out of the 15 countries with the highest vulnerability to natural hazards were from the LDCs, LLDCs and SIDS groups (IOM 2019). But it is misleading to suggest a direct relationship between climate change and migration. The effects of climate change depend on the local or regional conditions, the ways a region is susceptible to change, whether resources will be affected, and whether the provision of food, agriculture, housing, health care, and many other infrastructures will last (Benveniste et al. 2022). The form and intensity of the consequences of climate change highly depend on responses by governments and international organizations, measures that are or are not taken. As a cause of migration, climate change, in short, is not an independent driver but part of an assemblage of life circumstances, development, environmental conditions, state governance, and international relations. The terminology is contested as well. Previously, the notion of climate refugees briefly prevailed,

but disappeared quickly and never made it into a policy term as it does not exist as a category in international law. The IOM and the United Nations suggest speaking of climate migrants which does not require a legal formulation. The UNHCR, the UN Refugee Agency, prefers the notion of disaster displacement and environmental migrants. Climate migration or Climate Change Induced Migration (CLICIM) is a very general term, with quite some complications as we just saw.

Given this taxonomical variety and the unclarity of the relationship between different terms, different forms and situations of climate change and different modes of (im)mobility, integrating climate change as a driver of migration into migration research and, to some extent, to pursue an integration and synthesis of climate and migration research, is complicated. Not only due to practical and methodological problems, but also due to some central assumptions in migration research. As Pisarevskaya, Levy, Scholten, and Jansen (2020) have pointed out:

As a broadly-based research field, migration studies has evolved at the crossroads of a variety of disciplines. This includes disciplines such as sociology, political science, anthropology, geography, law and economics, but increasingly it expands to a broader pool of disciplines also including health studies, development studies, governance studies and many more, building on insights from these disciplines. (Pisarevskaya et al. 2020)

Meanwhile, migration research has been criticized for lacking a general theory and for being based on – or biased by – some key assumptions: first, it is state-centered; second, it reproduces colonial representations; and third, and this is the point I want to focus on, it suffers from a mobility bias.

The latter may sound strange: is accusing migration research of a mobility bias not the same as saying that natural science pays too much attention to physical nature and that sociology focuses too much on the social? After all, isn't mobility the central object of research? Well, it is, but just as Latour in *Reassembling the Social* (2005) once blamed the social sciences for misunderstanding the social and mistaking the explanandum for the explanans, I would argue that immobility is just as important for understanding migration patterns as mobility, and we can't fully explain the former by the latter.

A first step to understand this issue is by taking a closer look at the contract between nation-states, territory and sovereignty. An argument brought forward in migration research is that the notion of "migration" itself is a particular way to conceive of human mobility, namely as movement in a world governed by states, jurisdictions, and borders regimes. The risk of designating human mobility as "migration" is that it naturalizes the border. The by now famous saying holds that "if there were no borders, there would be no migration – only mobility" (de Genova 2017). On the other hand, it has been argued that "if there were no state borders, other kinds of borders would likely emerge, in different shapes, at other locations" (Dijstelbloem 2021, 16-17). The core of the discussion is that migration studies are held captive in a misleading picture that naturalizes the nation-state. The existence of states is taken for granted and situated as a starting point to analyze human mobility. However, territory and sovereignty and "the control over the means of movement" as Torpey called it are much more loosely related and come in more variegated combinations than is often

assumed (Dijstelbloem 2021). Two assumptions often underlie the literature on state formation, sovereignty, borders and migration. The first is that the modern form of state power and the relationship between nation-states and borders was born in the European state, starting with the Peace of Westphalia. The second is that this form of governing and controlling mobility has spread globally from the West (Vigneswaran 2020, 2). In contrast, institutional-historical archival research on the development of international migration policy suggests that “extra-European actors played a significant role in both originating and defining the nature of European sovereign territorial and transnational mobility norms” (Vigneswaran 2020, 3). Territorial migration control also arose outside Europe and migration policy in European countries was more the result of international negotiations and exchanges than bearing a Westphalian mark (Dijstelbloem 2021).

This state-focused legacy continues in migration research regarding the issue of immobility. To clarify that, I will attend to some recent proposals that aim to contribute to theory construction in the field and show how immobility is conceptualized as an unmovable immobile. Of course, there are many studies that deal with immobility: refugee camps in Kenya, Bangladesh, Jordan, Tanzania, or Pakistan where migrants are trapped for years, forced immobility, the relationship between immobility and time, and especially during the Covid-19 pandemic with its lockdowns and travel restrictions, the issue of immobility became more important. But the question is if we can explain immobility as a category on its own.

To answer that question, let us take a closer look at the recent development of the migration research field. The discussion has been fueled by Schewel (2020). She recalls the basic elements a satisfactory theoretical account of international migration ought to contain. According to Massey et al. (1999) concluded there are four basic elements:

1. The structural forces that promote emigration from origin areas;
2. The structural forces that attract immigrants into destination areas;
3. The social and economic structures that connect origin and destination areas;
4. The aspirations and motivations of those people who respond to these structural forces by migrating.

And indeed, theoretical frameworks based on these elements have proven to be successful. Migration research left the older push-pull models and rational choice cost-benefit analysis according to which people move from low income to high income countries behind. Instead, it opted for a more multidimensional model. However, according to Kerilyn Schewel:

these elements alone are insufficient to explain real-world migration trends. The structural forces that constrain or resist migration in and between origin and destination areas, as well as the aspirations of actors who respond to these same forces by staying, must also be included. (Schewel 2020, 329)

In recent work, De Haas (2021, 25) has proposed a proper theory of migration that also addresses the category of non-migration (Figure 1).

The theory is erudite and ambitious but can still be questioned. For instance, the different concepts that are related in the model come from very different disciplines and approaches. The idea of distinguishing between a negative and a positive sense of the term “liberty” was

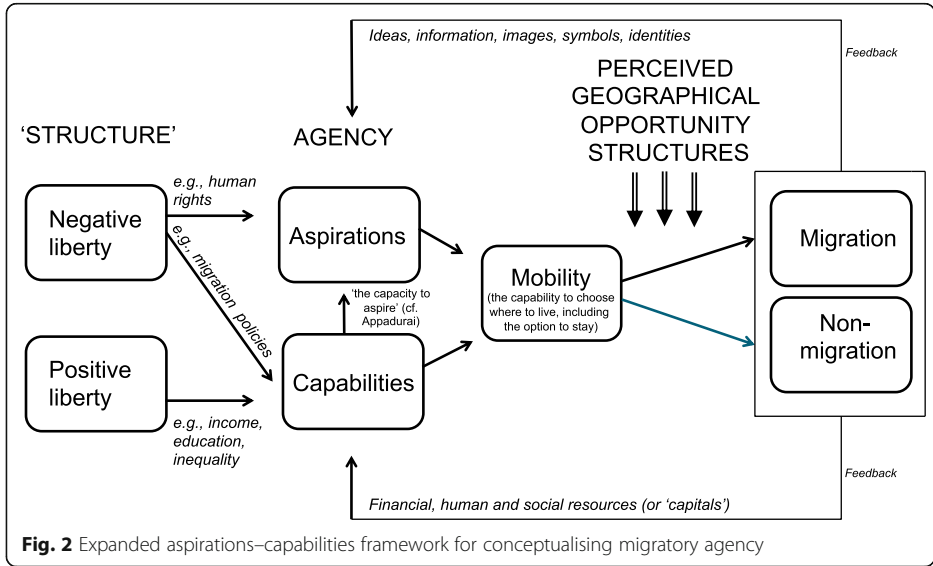


Fig. 2 Expanded aspirations–capabilities framework for conceptualising migratory agency

Figure 1.

De Haas (2021, 25)

proposed by Isaiah Berlin. “Aspiration” is a category that requires social science research and often ethnographic fieldwork. The capability approach is a social justice approach developed by Sen and Nussbaum to criticize traditional economic models. Notwithstanding this rather composite and varied origin, the model follows the structure of theory construction in the social sciences. However, according to Schewel (2020, 335): “An important limitation of [...] De Haas’s work is [the] relative neglect of the category and determinants of voluntary immobility”. For that reason, Schewel (*ibid.*) introduced a fourth (im)mobility category to the framework, namely that of acquiescent immobility (Figure 2). The category of acquiescent immobility highlights “those who do not wish to migrate and are unable to do so”. The word acquiescent implies non-resistance to constraints, its Latin origins meaning “to remain at rest”.

The tentative conclusion at this point is that it is a highly complicated endeavor to combine different research fields, such as climate science and migration studies, without questioning the central assumptions of the research fields and identifying possible theoretical constraints or blind spots that might hinder future research. Ignoring the notion of immobility not only leads to a potentially limited view of migration and overstated assumptions about the causal relationship between climate change and human mobility, but also does injustice to the different aspects, dimensions, and modes of immobility.

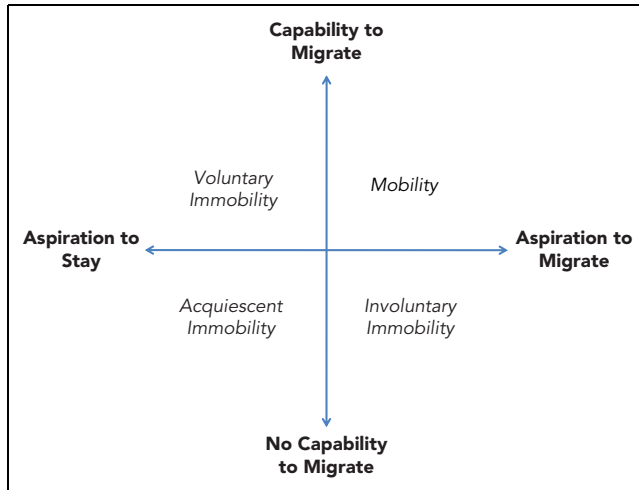


Figure 2.
Schewel (2019, 335)

4. Extreme infrastructures

The relationship between mobility and immobility returns in the discussion about the specific technologies and infrastructures that are generated from the notion of climate migration. This is the point where the notion of what I call “extreme infrastructures” enters the stage. The notion of “extreme” combines two connotations, namely with regard to intensity in the meaning of exceeding the ordinary and becoming “radical” or aiming at a “maximum” or “pushing to the limits” and a spatial meaning as in situated at the farthest possible point or being at the outer boundaries, as is also apparent in the Latin origins of the term “exterus” meaning “outer” and “extremus”, “outermost”. With extreme infrastructures I refer to technologies, instruments and material security policies that create, control or displace borders, for example by the externalization of border control, and do so in extreme ways, by pushing the boundaries of legitimate state actions by moving jurisdiction to other countries or crossing legal boundaries by violating fundamental rights. Obvious examples concern the wall in Europe, pushbacks, and the violence used in the externalization of border control for instance by the deals between the EU and Turkey and the one with Tunisia that is being developed these days (Dijstelbloem 2021).

When it comes to climate change, migration and the relationship between mobility and immobility, the extreme consists of trying to make the unmovable move, pushing the mobility paradigm to the limit by creating ever more means of movement while ignoring the constraints of immobility. Three potential infrastructures that push mobility to the extreme come into mind:

1. Managed retreat;
2. Humanitarian experimentation and protracted migration;
3. Climate passports.

4.1 Example 1: Managed retreat

The first example of how the unmovable is encouraged to move concerns so-called managed retreat. Managed retreat involves the purposeful, coordinated movement of people and buildings away from risks, in this case risks caused by climate change. As always, we should be wary of the word “manage”. All too often, especially in the context of migration, it is a euphemism used to mask forceful interventionist policies with far-reaching consequences. The phrase “managed retreat” was coined by coastal engineers in the early 1990s (Pethick 1993). It initially referred to the removal of infrastructure, such as sea walls, so the rising ocean could encroach, particularly in Australia and the UK. Nowadays, the term is much more widespread, although sometimes the much gentler notions of “resettlement” and “managed realignment” are used as well, as are the more aggressive notions of “strategic advance”.

Managed retreat comes in different forms, varying from buyouts to community relocation when entire towns are being picked-up. According to Siders et al. (2019) “Retreat has been seen largely as a last resort, a failure to adapt, or a one-time emergency action; thus, little research has focused on retreat, leaving practitioners with little guidance”. According to them, “such a narrow conception of retreat has limited decision-makers’ perception of the tools available and stilted innovation”. For that reason, they “propose a reconceptualization of retreat as a suite of adaptation options that are both strategic and managed”.

The tension between immobility and encouraged or even forced mobility can have severe consequences, because they are often based on a utilitarian logic that easily disregards the rights, concerns, and aspirations of individuals. Displacement of communities can cause significant disruption, uprooting people from their homes, neighborhoods, and social networks. It can lead to the loss of community cohesion, cultural heritage, and a sense of belonging. Community relocation disproportionately affects marginalized and vulnerable populations who may not have the resources or support to move to safer areas. The acquisition and relocation of property from individuals or communities is often required for managed retreats. Respecting property rights and providing fair compensation can be complex and contentious. Determining how to value property, addressing legal issues, and ensuring that property owners are adequately compensated can be challenging – and so is ensuring that decision-making processes are transparent, inclusive, and participatory to avoid excluding or neglecting the voices and concerns of affected populations.

4.2 Example 2: Humanitarian experimentation and protracted migration

The second example of moving the immovable concerns the experimentation with data that takes place upon displaced people and populations. In this case, the paradigm of mobility returns as a means of creating financial circulation, while the circulation of people is at a standstill, with displaced persons and populations remaining in refugee camps. The stimulation of circulation takes place with experiments with humanitarian data. As STS scholars know all too well, experimentation has left the lab for long and has become part of business, government, and NGO policies. It takes the shape of developing data supported decisions based on online experiments with users as conducted for instance by Booking.com¹ or living labs in cities (Tay-

lor 2020). It can also take place in regulatory settings, such as regulatory sandboxes that offer frameworks for experimentation. In the humanitarian context, examples of “humanitarian experimentation” include biometrics and data modelling (Sandvik et al. 2017), “humanitarian wearables”, i.e., “smart devices that can be placed on or inside the bodies of aid beneficiaries for many purposes, including tracking and protecting health, safety and nutrition” (Sandvik 2020) or remote sensing imagery from satellites or drones in the case of natural disasters or conflict situations. Whereas proponents emphasize that data gathering from for instance cell phones, modeling, and machine learning improve targeting risk groups and support humanitarian aid (e.g., Aiken et al. 2022), others warn for the ethical risks and argue a new form of extraction, datacolonialism (Thatcher et al. 2016) or technocolonialism might be at stake (Madianou 2021).

Situations of protracted migration lend themselves particularly well for this kind of humanitarian experimentation. According to the UNHCR, “protracted refugee situations are those in which at least 25,000 refugees from the same country have been living in exile for more than five consecutive years. Refugees in these situations often find themselves trapped in a state of limbo: while it is not safe for them to return home, they also have not been granted permanent residence to stay in another country either” (UNHCR 2020). Tensions between mobility and immobility, fixity and flux, are likely to arise when collaborations with tech companies and industries, such as credit card and other financial companies, are aimed at stimulating certain forms of financial circulation, while the human circulation remains stuck.

4.3 Example 3: Climate passports

The third and final example of making the unmovable movable concerns a well-known object: the passport. Passports are a unique combination of an identify document and a travel document. Whereas some governments for security reasons are increasingly in favor of disconnecting the two functions of the document, and whilst during the Covid-19 related travel restrictions we saw the rise of all kinds of travel certificates combined with test results and vaccination certificates, the WBGU, the German Advisory Council on Global Change proposed the climate passport in 2018 (WBGU 2018). Similar ideas, such as the proposal to distribute Climate Humanitarian Visa, have been made by other scholars (Matias 2020) but the idea of climate passports has been specified by Kira Vinke in her book *Sturmnomadinnen* (2022).

The idea of the climate passport is based on the Nansen Pass, for which the Nansen International Office for Refugees was awarded the Nobel Peace Prize for implementing this project in 1938. The Soviet government’s decision in 1922 to revoke the citizenship of 800,000 Russian citizens living in exile inspired the idea of the Nansen Pass. During and after the First World War, these people were dispersed throughout Europe as refugees from the Russian Civil War, or as exiles fearing repression by the newly formed government. To address this deficiency, the “Arrangement Concerning the Issuance of Certificates of Identity for Russian Refugees” was negotiated in Geneva from July 3 to 5, 1922, under the chairmanship of the then High Commissioner for Refugees of the League of Nations, Dr. Fridtjof Nansen. To enable the stateless people to move across borders in their search for a new home, the ratifying states were obliged to issue them with passports. In this way, the trapping dynamics of statelessness were overcome (see Los 2020).

The proposal of the German Advisory Council on Global Change for a climate passport is based on this idea. On the one hand, this idea reads as a proposal to revive what John Torrey called the control of states over the means of movement. On the other hand, it can be argued that the selection of states to which this passport hypothetically refers is not based on the notion of territory, but on an anthropocenic terrain. The passport is supposed to grant holders not only the right to be admitted to other countries, but rights similar to citizenship. The WGBU makes a distinction in order to identify those states that are obligated to receive refugees and those individuals who would be entitled to a passport.

Which countries should receive migrants? The WGBU suggests that the 10 countries with the highest historical cumulative emissions and the 15 countries with the highest per capita emissions should be primarily responsible. And which migrants should be the recipients of the climate passport? Here the WGBU applies a different criterion. Although all those affected should be entitled to such a humanitarian instrument, the first step will be to protect those people who will be affected by climate change at the earliest possible stage. But this will be based on an expert review process.

From the point of view that mobility and immobility are inextricably linked, the granting of a climate passport to migrants must have consequences for those who do not move, including those in the host countries. The mobility rights of the inhabitants will also have to be affected to allow for the slightest bit of symmetry. This is where questions of climate justice, rights and privileges come into play again, but now in the context of mobility. More importantly, grounding the notion of a passport and the right to mobility on carbon footprints and historical cumulative emissions, rather than on the contract between states, sovereignty, territory, and borders, leaves behind the notion of control over the means of movement and replaces it with a concept of anthropocenic terrain on which human mobility and immobility take place.

5. Mobilizing the concept of immobility

Now that we have analyzed the emphasis on mobility in migration and climate migration research, and explored the possible consequences of proposing specific techniques and infrastructures that elaborate the mobility paradigm, the inevitable question is how the development of STS itself as a research field relates to the so-called mobility turn in the social sciences. Seeing evidence of complicity is tempting. Actor-network theory, for instance, with roots in Deleuzian philosophy and semiotics, exchanged a foundational philosophy or a social science approach concerned with structures at different layers for a “plane of immanence”. Translation, circulation, articulation became key notions to debunk the relationships between subjects and objects and focus on the coming into being of relationships in a non-reductionist way. These notions imply that every relationship is a dynamic relationship in which a certain interaction takes places. Something is exchanged, transferred, transformed when humans or nonhumans meet. On the other hand, Latour and many others always emphasized the relationship between mobility and immobility, for instance with the notions of “Centers of calculation”, “Obligatory passage points”, “Immutable mobiles”, “Hybridization and purification”, and “Circulating reference”. They refer to events where mobility and circulation

of facts, artefacts, people, and all possible combinations between them go hand in hand with moments of stabilization and solidification. The same is true for those authors in the fields of international relations and security studies who work closely with the science and technology studies. To name a few, Barry (2001) studied the infrastructural movements of the EU as a technological zone in *Political Machines*; in the two volumes of *Making Things International* Salter and colleagues (2015; 2016) considered the movements of things and how they have expanded our notions of globalization by investigating *circuits and motion* and catalysts and reactions. De Goede traced and detected the interactions in security and finance to counter terrorism in terms of a chain of security (2018). Pelizza (2021) emphasized the ruptures, friction and translations in infrastructures that organize asylum requests, data management of displaced people and information flows about mixed migration. The author of this lecture is also guilty as charged, because in *Borders as Infrastructure* (2021) I argue that borders themselves should be thought of as mobile entities. So, to support the STS case – and my own – I think it is misleading to say that STS is entirely based on the mobility paradigm. That is to say: I think there is a preoccupation with mobility as an object of study. We study movement, circulation, mobility, networks, transitions, transformations, and translations. Theoretically, however, things are more nuanced, and the most sophisticated STS approaches try to precisely discern the relationships between what is or will be mobile and what remains, has been, or will be immobile². The challenge is that we can be more precise about what Brown called the tension between fixity and flux in STS (Brown 2009, 180-183).

If this is the paradigmatic position of STS, then the field seems sufficiently equipped to think with and against the notion of climate migration, and in particular to offer a nuanced and refined alternative to the emphasis on motion, movement and mobility. Motion and movement are central concepts and topics of research in the social sciences, in science in general, and climate research and migration studies are no exception to this. This dominance concerns both a conceptual interest, in which movement figures as an ontological, epistemological, or political blueprint of the world, and an empirical interest, in which research focuses on specific phenomena related to movement, such as migration or the development of infrastructures. The purpose of this lecture was to formulate an amendment to this mobility paradigm. Over-emphasizing notions of motion and mobility runs the risk of neglecting situations of immobility, for instance when people are stuck or unwilling to move. Instead of giving primacy to the notion of movement, the reconceptualization of the relationship between mobility and immobility, conceptually and empirically, deserves more attention as the discussion of climate mobilities and anthropocene mobilities unfolds (Adams 2016; Baldwin et al. 2019; Boas et al. 2022; Schewel 2020; Wiegel et al. 2019). The aim of the above was to contribute to the exploration of the relationship between mobility and immobility in times of climate change and changing environments. Attending to these issues also allows for deepening our understanding of how the trinity of states, sovereignty and territory is affected (Dijstelbloem 2021) and the resulting regime of rights and citizenship in times of global warming (Chandler 2019, 386).

If we use the two constituent terms of STS, “science” and “technology”, as a lens to analyse the notion of climate migration in terms of the emergence of a field of research and as an interventionist program, does this mean that the concept should be abandoned? As a concept,

climate migration appears in three different forms. First, in its most factual form, as a name for a phenomenon that exists, that can be described and explained, and that can be studied and intervened upon. In the second, as an alarmist term, the concept is waved as a red flag, to emphasize migration is likely to increase and that more border security is needed. Thirdly, climate migration is seen as something that, when it occurs, should be facilitated, or even encouraged on a humanitarian basis to promote the movement and circulation of people. However, there are important risks and more generally the term over stresses the causal relation between migration and climate change. For that reason, we need a more plural approach that does justice to the variety of interactions between different forms of climate change, its entanglement with policy interventions, socio-economic aspects, conflict situations and material circumstances, and different forms of (im)mobility. We need to pay attention to the multiplication of categorizations, and the relationship between mobility and immobility that is at stake, such as in the examples of managed retreat, humanitarian experimentalism, and climate passports. What do mobility and immobility mean in those contexts? How are they related? How do they constitute each other? What does “becoming” mobile or immobile mean? What does “remaining” mobile or immobile mean? A refined understanding between mobility and immobility is required to deal with the challenges of climate change and human (im)mobility. An important reason to pay attention to immobility is not only because it is empirically and theoretically understudied as a category, and because it is an important issue in thinking about migration and climate change. Conceptually, the concept of immobility has the potential to be a counterweight and a resistance to too much thinking in terms of mobility. However, especially when climate migration becomes a security policy concept, more attention to the relationship between theory construction and the development of infrastructures is required.

As hopefully demonstrated above, an STS analysis of the notion of climate migration shows that applying a mobility perspective and reproducing key assumptions of migration research that are state-centred, pursue colonial legacies and tend to disregard the immobility of people, as in proposals for managed retreat, humanitarian experimentalism, and climate passports, runs the risk of prioritizing movement over attachment to place. It may be going too far to say that movement and mobility are the key concepts driving research on migration, but otherwise it is no exaggeration to say that research on immobility and fixity is underdeveloped. This does not imply that what is needed now is a counter turn, an anti-Copernican backlash against mobility, or a reevaluation of a grounded and territorial ethic that assigns rights to inhabitants and residents. The direction that needs to be explored further is twofold. The first task is to further develop the science and technology perspective on how theory construction takes place and how explanations or causal relations are determined when different disciplines or research methodologies are integrated, such as in the case of climate science and migration studies. The second task is to recognize immobility as a reservoir of potentialities, and how attachment to land, place, and location can be understood in relation to mobility and movement.

Having analysed the emergence of the research field of climate migration from a philosophy of science perspective in the first part and having discussed different infrastructures and technologies, namely an interventionist policy, an experimental digital technology and a proposal for a document, in the second part, and having reflected on the dominance of the notion of mobility and the question of whether STS itself suffers from a mobility paradigm, the

task ahead is still complicated and demanding. The exploration that has taken place so far can hopefully lead to some guidance to navigate the next set of questions. These questions include how to unfold the potential of immobility, how to typify the differences between different modes of immobility, how to define the different modes that relate movement and flow to immobility, and how to identify the transfers that occur between the two. Addressing these questions will hopefully contribute to a deeper understanding of what it means to be attached to a place under conditions of climate change. The tensions between mobility and immobility will challenge the trinity of states, borders, and sovereignty and call for an Anthropocene view on the connection between humans, mobility and immobility, and the earth.

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Notes

¹ See <https://booking.ai/>.

² A fine example is the work by Matthias Leese and Stef Wittendorp (2018), who attend to immobile infrastructures and argue that a focus on security and mobility is not a plea to get rid of the category of fixity.

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