



Affording mobility: Attending to the socio-material affordances of transport un/affordability

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ABSTRACT

The affordability of transport is a long-standing concern of both transport and economic geography. However, despite the growing influence of relational and heterodox economic thinking in a range of geographic sub-disciplines, the cost of transport is still largely conceptualised in universalising, binary, and purely quantitative terms, as either affordable or unaffordable. The present paper proposes the concept of transport un/affordability to bring together perspectives from the geographies of everyday mobility, and research on everyday economic lives, in order to examine how affording transport takes place. The paper draws on interviews with public transport users in Sofia, Bulgaria, demonstrating how fares act as one type of socio-material affordance which enables, precludes, or transforms un/affordability in situated and contingent ways. The everyday spaces and times within which transport un/affordability takes place are examined through the three interrelated dimensions of transport un/affordability: transactions, journeys, and budgets. The paper considers the implications of conceptualising transport un/affordability relationally, particularly in the context of transport geography's empirical and theoretical engagements with transport justice, and amidst processes of profound technological change within both payment systems and transport systems globally.

1. Introduction

Transport affordability is a key dimension of what has come to be termed transport justice (Verlinghieri and Schwanen, 2020). However, theoretically robust definitions of affordable transport have proven elusive. To advance geography's engagement with this dimension of transport justice, the present paper proposes a geographical understanding of transport affordability. My point of departure are the situated and embodied interactions through which mobility becomes differently affordable or unaffordable for different people. To develop a situated understanding of *how* affording transport takes place, I build on geographic research on transport inequalities, and recent work on everyday economic lives, to conceptualise transport un/affordability as a relational arrangement which exceeds simple quantification. Using the example of the public transport fare, I demonstrate how a range of socio-material affordances participate in relations of un/affordability, to make transport services differently economically attainable or unattainable for their users.

To date, the cost of using transport has been researched mainly in two ways: either as an abstracted economic price attached to a journey, and engaged with through rational calculation, or increasingly, as a

technologically mediated transaction involving mobile apps, smart-cards, and contactless payments. For the most part, the engagement of transport geography with affordability reflects the sub-discipline's roots in orthodox economics, as well as its resistance to rethinking some of its core concepts (see Goetz, 2006; Hanson, 2003; Schwanen, 2019). The concept of transport un/affordability seeks to rethink how transport is afforded through a relational and situated understanding of the transactions, journeys, and budgets of transport users. While heterodox and relational thinking has new research directions in economic geography (as well as other sub-disciplines), the everyday economies of transport are yet to benefit from relational understandings of cost and value. Placing transport geographic work on affordability in dialogue with research on everyday economic geographies is thus an opportunity to conceptualise the process of affording to be mobile as imbued with multiple meanings, and practically accomplished within lived economies (Yarker, 2017; Anderson et al., 2019). As the landscape of payment infrastructures in and beyond the transport field becomes increasingly complex and fragmented, exploring new definitions of affordable transport which capture its relational, tentative, and contextual nature, has a particular urgency.

The paper begins by briefly outlining relevant research on transport

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affordability, everyday mobile and economic lives, and socio-material affordances. It draws on these to propose a conceptualisation of transport un/affordability along the three interrelated dimensions of transactions, journeys, and budgets. The third section outlines the complexities of public transport ticket systems in Sofia as well as globally, while the fourth section discusses the qualitative methods on which the paper draws. The three empirical sections focus in turn on the transactions, journeys, and budgets in which the socio-material affordances of the public transport fare participate to bring about the shifting and ambiguous relations of transport un/affordability. The everyday practices of paying, travelling, and budgeting point to some of the everyday times and spaces within which mobility can subtly or abruptly shift from affordable to unaffordable, and vice-versa. The final section offers a discussion of implications for changing payment and ticketing systems, and for transport geographic research on the un/affordability of mobility.

2. Conceptualising transport un/affordability

2.1. Geographies of transport affordability

Across both transport research and policy, there are few widely accepted definitions of transport affordability. In some instances, it has been defined as the extent to which the cost of travel is a financial burden, the extent to which individuals or households have to make sacrifices in order to travel, or whether they are able to travel when they want to (Carruthers et al., 2005). The resulting applications of affordability tend to be purely quantitative in nature. Thus, it is not uncommon to set affordable expenditure thresholds (e.g. transport spending should not exceed 20% of household income), or to attempt to define a universally shared minimum basket of necessary trips (Bocarejo and Oviedo, 2012; Wang and Liu, 2017; Hartell, 2015; Litman, 2017; London TravelWatch, 2015; Perrotta, 2017). Although the shortcomings of these approaches have been highlighted, affordability has not been substantially reconceptualised in response (Diaz Olvera et al., 2008).

Despite questions around the theoretical foundations of its definitions, affordability has long been recognised as a key factor in accessing mobility, which is in turn fundamental to social inclusion and justice (Lucas, 2012). Thus, in research as well as policy and advocacy, transport affordability is most powerfully conceptualised in terms of the juxtaposition between low incomes and high transport costs (Venter, 2011). This positions affordability as a dimension of transport-related social exclusion, alongside issues such as spatial and temporal separation from transport services, and different forms of inaccessibility of essential destinations (Lucas, 2006; Bocarejo and Oviedo, 2012; Church et al., 2000; Herszenhut et al., 2022). The unaffordability of transport services is a pressing and pervasive issue facing diverse populations in a range of global contexts. However, its role as a barrier to achieving just and fair mobility systems remains relatively under-explored compared to other aspects of accessibility (Aivinheno and Zuidgeest, 2019). Despite its utility for drawing attention to transport-related social exclusion, the resulting framing is one of affordability-unaffordability as a binary and static condition.

Affordability is also mostly conspicuously absent from the lively interdisciplinary field in which transport geography, cultural geography, and mobility studies interact. While human geographers have played a central role in theorising the relational constitution of everyday mobility and its cultural, political, embodied, and affective dimensions, affordability has largely remained outside of such discussions (Bissell, 2018; Jirón et al., 2016; Wignall et al., 2019). As a result of everyday mobility research being mostly silent on the topic of affordability, the cost of transport continues to be viewed predominantly as an abstracted price which transport users rationally evaluate against the benefits of being mobile (Hensher, 2008). The enduring influence of *homo economicus* in research on the social impacts of the cost of transport, as well as in transport geography more broadly (Adams, 1981; Schwanen,

2020), thus contrasts with contemporary work in other areas of human geography.

2.2. Mobilising everyday economic geographies

An interest in the affective, embodied, and political dimensions of mundane everyday practices is now well-established across human geography and its sub-disciplines (Jirón et al., 2016; Anderson et al., 2019). Transport geographers, often through engaging with what has been termed the ‘mobilities turn,’ have similarly examined everyday mobile lives in terms of the situated, felt, imagined, and practically accomplished im/mobilities of humans, non-human animals, and objects (Cresswell, 2011; Schwanen, 2016). This body of work has illuminated, for instance, how the use of a pram both enables and constrains the performance of motherhood and childhood in cities (Clement and Waitt, 2018; Middleton, 2022); the affective atmospheres which circulate through train carriages and at pedestrian crossings (Bissell, 2018); and the significance of being on the move for different types of livelihood strategies (Esson et al., 2016).

Economic geography has similarly benefited from engagement with feminist, post-structuralist, and cultural perspectives (Gibson-Graham, 2008; Lee et al., 2008). Under the broad rubric of everyday economic lives (Yarker, 2017), geographers have drawn attention to, for instance, the experience of families living with national-level austerity policies (Hall, 2019). The work of Langley (2006, 2016) has traced processes of financialization across a range of domains of everyday life, from the transformation of retired workers into entrepreneurial investor subjects, to the proliferation of crowdfunding. More recently, Dawney, 2020 have examined the affects of living with debt, documenting both moments of intense despair as well as the ‘background hum’ of worrying about indebtedness. Such attention to seemingly mundane practices has equipped economic geography with new theoretical perspectives on the economy as lived and felt.

Despite such closely related interests, the geographies of everyday mobile lives and everyday economic lives have not been placed in dialogue to a sufficient extent. However, weaving together a perspective which considers everyday economic lives and everyday mobile lives as sets of co-constitutive practices can open up the definition of transport un/affordability to encompass not only quantifiable costs, but also the particular intersections of mobility, immobility, spending, saving, and planning, at which transport un/affordability is negotiated. This approach involves two theoretical advances. First, a relational understanding of affordability, reflected in the term un/affordability, as a condition which is continuously reconfigured through the social, technical, and economic relations among human and non-human actors. Here, transport un/affordability is conceptualised alongside three inter-related dimensions – transactions, journeys, and budgets. While these dimensions loosely correspond to earlier geographic work on everyday economic lives (see, for instance, the conceptualisation of lived austerity by Hitchen and Raynor, 2020, around intensities, localities, and materialities), the second contribution of this definition is the specific focus on journeys as a dimension of affording. As a result, the definition reflects what is particular about transport un/affordability, i.e. its enactment with and through mobility and immobility, which sets it apart from what un/affordability might mean in other contexts (e.g. energy; healthcare). Thus, while transport is afforded through a wide range of different socio-material affordances, from price lists and apps to tickets and tills, depending on mode and place; transactions, journeys and budgets exemplify the dimensions of transport un/affordability which remain recognisable across contexts. The next section illustrates this conceptualisation using the example of the public transport fare.

2.3. Public transport fares as un/affordable affordances

A focus on everyday mobile economic lives points to the ways in which the un/affordability of public transport in particular is routinely

materialised through the fare. Public transport operators and authorities present, organise, and enforce fares through particular socio-material configurations involving tickets, travelcards, vending machines, barriers, written regulations, policy documents, inspections, websites, smartphone apps, and conventions. In turn, public transport users do not simply pay a fare to access mobility; they exchange (different forms of) money for a fare, and a fare for a journey, while also validating, arguing their case (e.g. to a ticket inspector), moving slowly or quickly (e.g. to qualify for an off-peak fare), carrying, borrowing and sharing, budgeting, making sense of, cheating, forgetting, counting, and miscalculating. Examples of the lived idiosyncrasies of transport fares can be found in any city. Prior to 1999, a new arrival to Moscow would likely become the butt of the popular joke that different types of metro tokens should be bought for the outward and return leg of journeys (Zaporozhets, 2014). In Brussels, missing the last evening bus and having to catch the first night bus instead can mean having to purchase a different, and pricier, type of ticket (Plyusheva, 2019). In London, the backlash against the 2014 cessation of cash payments on buses led to the 'One More Journey' policy, allowing those with a negative travelcard balance to make one additional bus trip (Pritchard et al., 2015; Transport for London, 2014).

To highlight the particular roles played by the fare within these multiple and heterogeneous relations of purchasing access to transport services, I draw on the notion of affordance. The concept of affordance derives from ecological psychology, originally developed to theorise visual perception (Gibson, 1979; Scarantino, 2003). Affordances are themselves relational – they describe a subject's ever-shifting capacities for action and perception within an environment made up of a multitude of objects and human and non-human beings. Thus, affordances do not reside within specific material objects, but they do enliven them as objects become entangled in everyday activities, enabling, precluding, or transforming the outcome of activities (see also Dokumaci, 2017, 2020). In this sense, affordances are socio-material in nature: they have been evocatively described as presenting action-taking possibilities and meaning-making opportunities (Vatrapu, 2009). Both transport geographers and interdisciplinary scholars of mobility studies have discussed the many kinds of affordances involved in everyday mobility (see, for example, Jensen et al., 2014; Clement and Waitt, 2018). However, the questions of paying and payments are generally absent from these discussions. Here, the conceptualisation of the fare as a socio-material affordance, helps to shift the focus from dichotomies of affordable versus unaffordable fares, to the role of fares in the transactions, journeys, and budgets through which transport becomes un/affordable. In the next section, I provide a brief vignette on the diversity and complexity of what is often thought of as the humble 'ticket,' before turning to the methodological choices made when researching fares with public transport users in Sofia, Bulgaria.

3. A note on public transport fares

Most public transport operators worldwide rely on a complex and continuously changing range of fares, which vary depending on time of day, the identity of the transport user (e.g. retired person; university student), number of journeys made in a day, and so on (Fleisher, 2018). In Accra, Ghana, the conductor can adjust the fare for a trotto ride depending on weather and crowdedness (Agyemang, 2015). In London, UK, Lathia and Capra (2011, p. 1181) found that pricing on the public transport network involved seven temporal, nine geographical, and twelve user type categories. In Hong Kong, the acceptance of the Octopus travelcard in contexts outside of public transport, including shops and restaurants, further complicates the day-to-day management of transport costs (Sea and Siu, 2008). Frequently bewildering complexity is painfully familiar also to public transport users in Sofia. In a 2012 newspaper report, a journalist commented that the city's ticketing system combines practices and objects from the 19th, 20th and 21st centuries (Todorov, 2012). As of 2022, this was still the case.

Reflecting the city's fragmented post-1989 approach to transport governance, a multitude of different agencies were involved in ticketing and fare decision-making process. For instance, while the price of a single-journey ticket was the same across public transport modes and irrespective of distance, the types of tickets varied widely: buses only used a dedicated type of paper ticket (bought in advance and validated on-board) and some travelcards, which they shared with trams and trolleybuses; trams were also equipped with automated on-board vending machines producing a different type of ticket, to be used on the spot; and the metro service had a separate type of single ticket, and its own travelcards, but also accepted payments through a smartphone app (however, only some metro stations had ticket gates equipped with QR-code readers). Similarly, the range of points of sale of public transport tickets could be confounding: some ticket booths only sold paper tickets, ticket offices in metro stations offered tickets and travelcards which were only usable on the metro, and a few larger ticket offices covered the full range of services and tickets. With the 2021 pilot of a long-awaited introduction of smartcard ticketing, a further layer of complexity was introduced, with further risk of paying more than necessary, or paying the incorrect fare.

4. Research context and methods

Sofia, the capital city of Bulgaria, has an extensive public transport network consisting of metro, tram, trolleybus, bus and minibus lines, however the quality and reliability of services is uneven. While many of the central districts of the city enjoy relatively comfortable, reliable and frequent metro and tram services, many peripheral areas are only sparsely covered by bus lines, many of which run infrequently, particularly in the evening hours, and are served by decrepit and polluting vehicles. Combined with the relentless rise of the private car since the 1990s, this has resulted in a gradual decline of the share of journeys made by public transport, which stood at 37% by 2017 (Vision for Sofia, 2018).

This paper draws on qualitative data collected between 2012 and 2018 in Sofia, over the course of two separate research projects both examining aspects of everyday mobility practices, including paying for transport. The projects incorporated data from across different types of journeys, including public transport, car and taxi driving and 'passenger,' cycling and walking. Affordability was central to both projects from the outset, based on an open-ended intention to think about paying for transport from a socio-technical perspective. A range of qualitative methods were used in the course of data collection: repeated go-along interviews with white-collar commuters (82 interviews with 20 commuters, conducted between 2012 and 2015); autoethnographic journeys and diary entries from field observations ($N = 65$, from 2012 to 2018), in-depth interviews with hospitality workers ($N = 21$, conducted 2017–2018); and documents including local planning and transport policies relevant to public transport fares ($N = 9$, dated 1975–2018). Interview data were transcribed verbatim and translated from Bulgarian to English by the author. The data analysis drew on aspects of grounded theory approaches (Glaser, 1992; Torres and Carte, 2013) and involved open and thematic coding using qualitative data analysis software, followed by the construction of the theoretical approach to transport un/affordability described here. Results on other aspects of negotiating everyday mobility in Sofia have been published elsewhere.

The interview quotes included below come from interviews with public transport users aged between 20 and 42. Participants were recruited using a snowball approach, aiming for diversity in the sample but not for representativeness of the broader Sofia population. The sustained engagement with the project of the repeated go-along participants provided opportunities for in-depth discussions, which was important to the qualitative inductive approach adopted here. An important limitation in relation to the topic of transport un/affordability is that most research participants described themselves as having an income which was average or a little below average; several told of

periods of precarity, but none lived in long-term hardship. However, it should be noted that in the Sofia context, jobs such as graphic designer or university lecturer can often mean a very modest and/or uncertain income (Daskalova and Slaev, 2015); for some of the participants, cash-in-hand was the norm even in office-based work. As will become clear, these research participants, while not dealing with acute poverty, thoughtfully narrated their extensive, minute and often arduous negotiations around everyday practices of paying for mobility. All names used are pseudonyms.

5. Negotiating un/affordable fares as affordances

5.1. Ambiguous transactions

This first empirical section focuses on the situated interactions, or transactions, within which transport un/affordability is enacted in and with public transport fares. It highlights first, that the outcomes and thus un/affordability implications of these transactions are often unknown or unknowable; and second, that the various technologies of public transport fares, from turnstiles to barcodes, often amplify the ambiguity of outcome instead of removing it. Thus, instead of treating the transactions of transport as trivial and straightforward instances, attending to the particular geographies of who, how, when and where transacts is a crucial aspect of understanding un/affordability relationally. This example from a journey with Julia, a 30-year-old graphic designer, demonstrates this:

Julia buys a single ticket from the ticket booth at the metro station entrance. She scans it at the turnstile, then realizes the turnstile had not fully closed after the last person. Once it closes, she tries to scan her ticket again, but the turnstile now considers her ticket 'used,' and does not let her in. Julia briefly considers asking for help and glances over at the ticket booth, but the assistant is on her phone. After a moment's hesitation, Julia simply squeezes through one of the exit turnstiles, which often have large gaps, and continues towards the platform. I am pretty certain the assistant sees this, but she says nothing. (Research diary excerpt from go-along interview, August 2014).

Not only do socio-material affordances produce ambiguous affordability outcomes; transport users have highly unequal resources for dealing with their ambiguity. For instance, Julia has the confidence that the metro worker would not react to her pushing through the turnstile intended for exiting passengers. What would she need to do if she is challenged, and what might happen if she then is found to not have enough money for another ticket? In this case, Julia's ability to deal with the erroneously invalidated ticket at no further cost requires a degree of self-assuredness, prior experience, and access to alternatives. These considerations are not the sole outcome of rational evaluation; they reflect Julia's multiple embodied and felt interactions with the various affordances presented by the city's transport system at different times. This outcome is also contingent on Julia's presented identity as a member of the White ethnic majority, and her being dressed as an office worker (poorer passengers and Roma Bulgarians are routinely treated with greater suspicion on public transport; Grekova, 2008), as well as on having the body shape to pass through a narrow gap (Muñoz, 2020). In other circumstances, the contingencies of affording may extend to language, as one participant described his experience of approaching a ticket office to find a seemingly unorganised group of people, rather than an orderly queue, waiting outside ("People are often just standing in a group, and whoever arrives has to ask 'Who is last?', [otherwise] you might get shouted at [by those who think you are trying to cut in]"). Other examples include carrying change which covers the exact price required, but not in coins so small as to risk being rejected by the driver; negotiating with a ticket inspector in order to get out of paying a fine; or learning which ticket gate readers are sensitive enough to validate a smartcard in its card holder, and which respond with an error message.

The affordances of affording mobility can thus behave in

unanticipated and contingent ways, from one user to the next, and even for the same user, from one occasion to the next. The capriciousness of technology is, of course, nothing new (Latour, 1996; Arnold, 2003). The resulting disadvantages and privileges have real implications for transport un/affordability. As different transport users and non-users face different types of barriers in dealing with the intricacies of ticketing affordances, these socio-material interactions can determine what transactions happen or not, and what journeys take place or are foregone. This is especially salient when the ambiguity of technological affordances is experienced alongside limited financial resources, or limited access to, and/or unfamiliarity with, particular transport technologies. Another research participant pondered this. Having commuted by bus and tram, Toni had recently become a metro commuter. In one of our go-along interviews, she described her hesitancy around the validity of the single metro tickets:

The metro ticket is valid only 30 min. Does this mean you have 30 min to enter [after the ticket was issued], or that your whole journey can last no more than 30 min? (...) Imagine I buy my ticket, but then I realise that I need to go buy cigarettes. If (...) there is a queue at the shop, the ticket won't be valid [by the time I return and reach the turnstile]. (Toni, 25 years old, administrator with a labour union, March 2014).

Thus, Toni articulates the extent to which the seemingly straightforward transaction, involving a ticket with a single value clearly printed on it, causes concern and hesitancy. Since buying an extra ticket is not a negligible expense to her, Toni carefully considers what needs to be in place to avoid doing so. In terms of spatial and temporal relations of un/affordability, transactions are thus not reducible to instances. The effects of their ambiguities take place before, during, and after individual journeys, as transport users continuously renegotiate what is and is not feasible or desirable. How transport un/affordability shapes actual and possible journeys, and shapes them in turn, is explored in the next section.

5.2. Un/affordable journeys

Unlike a more generalised relational conceptualisation of unaffordability, transport un/affordability speaks directly to the economic constraints within which movement through space is accomplished. In the case of public transport, the range of possible interactions with fares – paying, paying in different ways, not paying, or paying in part, – modulate the capacity to move or remain still in a range of different contexts and situations. As the discussion of transactions suggested, un/affordability is not necessarily a matter which is resolved prior to a journey taking place. Neither, as it is often assumed, is the transport fare a straightforward material expression of a transport user's mobility needs and wants (see Scheiner, 2018 for a related argument). As the socio-material affordances of fares continuously redraws the repertoire of the journeys that are attainable, desirable, or necessary, the linear temporality of transaction-journey is problematised. For example, several research participants who had bought a monthly public transport travelcard felt that the travelcard acted as a long-term constraint on what was affordable:

In October it was cold and rainy. So, I stopped cycling and bought a monthly travelcard. And even though the weather then got better, I had a travelcard already, so I just kept getting the metro. (Emma, 33, graphic designer, November 2013).

I don't need a travelcard for the other kinds of public transport [other than metro], because I don't use them. And the other way around – I don't have a travelcard for those modes, so I try to avoid them. (Maria, 20, student, February 2014).

Even though the weather had improved since October, Emma continued to commute by metro. This was despite the fact that in the course of the interview, she had made clear that her budget was very

modest, and that cycling was something she had taken up largely for economic reasons. Maria made explicit the two-way connection between the fare one already has, and the journeys which come to be experienced as affordable in relation to that fare: she opts for a particular type of travelcard as it mostly covers her needs, and her needs are then circumscribed by that travelcard. In other words, what was affordable at the time of a past journey shapes the affordability of future journeys. The opposite is equally true: as the number of journeys performed with a monthly travelcard increases, the cost of journeys already completed continues to change. Thus, not only are transactions and journeys interrelated in multiple ways, but also past, present, and future journeys reconfigure an individual journey's un/affordability. Several participants described how having a travelcard allowed them to hop on and off public transport on a whim, for instance stopping off to buy something, then catching a different bus further along their route. Often, what was being afforded, or not, was the ability to be mobile or immobile without precise calculation, a not insignificant achievement given how tiring many participants found the daily worries which come with a modest budget (see next section; see also Wilkinson and Ortega-Alcázar, 2019; Dawney, 2020). An all-network travelcard could afford not only unlimited journeys, but also spontaneous ones. This highlights the implications of predictability and spontaneity in configuring the un/affordability of transport, demonstrating how in different contexts, each can signal both disadvantage and privilege. The role of daily, weekly, and monthly caps should be highlighted here as a way of addressing the inherent injustice of cheapest fares per journey only available to those who can plan their journeys weeks and months in advance, and pay for them upfront.

It should also be noted that the interconnections of transport un/affordability and im/mobility are not straightforward. It is not the case that affordability necessarily equals mobility, and unaffordability results in immobility conceived as the opposite to being able to move. The account of Jenia, who works in a restaurant, illustrates how a foregone journey can illuminate the diverse spatialities of experiencing un/affordability:

If I am working a late shift, it finishes around midnight, and I usually leave around 1 am. By then, there is no public transport. I have to call a taxi, always one specific company, which is cheaper. If that company has no cars [available], I won't call another one. I walk to Eagle Bridge, where there is a taxi stand. I have to haggle there for a while, usually. If you don't pay attention, getting a taxi from the street costs three or four times what it should be. (Jenia, 24, waitress, June 2018).

In Jenia's description, there are two different journeys that never take place: a journey by night-time public transport, which would have been affordable, but is impossible; and a journey from work directly to Jenia's flat, which is what she hopes to have, but does not always manage to secure. As the above account demonstrates, thinking in terms of relations of transport un/affordability problematises the current near-exclusive focus on journeys actually made, which defines much transport geography, as well as transport research more broadly. Of course, journeys which do not take place present a methodological challenge from the perspective of established methods in transport geography. From a transport un/affordability perspective, journeys foregone, imagined, anticipated, or missed, are not journeys which do not happen; instead, they offer important and consequential insights into how mobility becomes affordable or unaffordable in everyday life. The third dimension of budgets helps to address this, as it traces how un/affordability extends outwards from the individual instances of transactions and journeys, to encompass different places, times, and people.

5.3. Negotiating transport budgets

While the affordances of public transport fares bring into view the situated, embodied, and technology-enabled negotiations of purchasing mobility, they are part of, and not substitutes to, the considered, on-

going economic decision-making of spending. However, budgeting is itself not an abstracted and disembodied process, but a set of practices of inhabiting everyday spaces and times (see, in particular, Vines et al., 2014, and Hall, 2016). The notion of transport un/affordability thus extends beyond individual instances of paying and travelling to encompass longer-term and multidirectional temporalities of incomes, expenditures, and budgets; people other than the subject undertaking a particular public transport journey, e.g. household members and employers who issue subsidised travelcards or penalise lateness; and spaces which are not obvious spaces of transport, from the home to the supermarket. Consider how one research participant, Vladko, had been using only single public transport tickets ever since moving to Sofia, despite a vague sense that paying less per journey was possible:

I don't have a travelcard. The metro ticket is cheap, and also it's a convenient amount, just one lev, a single coin, very easy. (Vladko, 35, photographer, May 2013).

While Vladko lived on a very modest and precarious budget as a self-employed photographer, he did not take every opportunity to minimise transport costs. He felt that taken on its own, a ticket made very little difference to his overall economic precarity. His response was thus not to calculate more, but to calculate less. Instead, he focused on the material properties of the one-lev coin; "a single coin, very easy."¹ Living on a limited budget has been examined in terms of the emotional demands it imposes; the intense, meticulous, and often exhausting budgeting which never seems to stop (Dawney, 2020). In a small but not insignificant act of defiance, Vladko resisted what Dawney, 2020 describe as the 'hypervigilance' of rigorous budgeting. The materiality of the single coin invested each metro ticket purchase with a lightness which other daily transactions did not have. However, echoing the discussion of (possible) journeys in the previous section, this approach also meant that Vladko avoided transfers even when they would have been helpful. While in some cities single tickets allow unlimited transfers within a set time period, in Sofia a separate single ticket is needed at every boarding.² Vladko's case demonstrates how such a policy constrains affordability in specific ways, making journeys longer and more complex for those already experiencing transport disadvantage as a result of low and/or precarious incomes, and/or unpredictable schedules.

Vladko's approach to budgeting was the exception rather than the rule. Many of the interviewed participants, and particularly those who lived on lower incomes, described elaborate calculations and planning around transport costs. Assya, an administrator in a real estate agency, described in painstaking detail the plans, and continuous reworking of plans, which were involved in organising her transport budget, while also highlighting how affordances other than the fare – in this instance, her work laptop – are implicated in affording mobility:

If it expires during the weekend, I renew it on Monday. If it expires on a Thursday, I have even wondered if it makes more sense to renew on Monday, buying a single ticket on Friday, and thus gaining a few extra days. And now, in February, since it's short, I am thinking to not renew my card, which expires on 17 February, until 1 March. Maybe I can even take the laptop home and work from home a few days, and thus not have to buy single tickets on all of the remaining days of February. (Assya, 26, February 2014).

Intricate negotiations of current circumstances, familiar habits, and anticipations of the future thus shape un/affordability. Household and social relations come into play here, as Assya also considered whether her partner was likely to need the home office on days when she was planning to work from home in order to save money. The spatial relations of transport budgets are equally diverse. An obvious one is the

¹ The price of the single public transport ticket was increased in 2016, from 1.00lv to 1.60lv.

² This policy finally changed in late 2022.

spatial extent of the transport network itself, i.e. the routes and timetables which define where the holder of a fare can go. In the case of Sofia, a different spatial pattern is presented by ticket points of sale, many of which are external to the network itself (e.g. bus tickets can be bought in a grocery store, exemplifying both a convenience and an expectation of planning ahead). Additionally, with many peripheral neighbourhoods equipped with only minimal ticket vending facilities, renewing a travelcard had to be planned to coincide with a trip to the city centre. Negotiating journeys and their un/affordability thus involved an intricate combination of forward planning and acting as opportunities presented themselves. Seeing a long queue at the ticket office on the way to the station (as discussed by Emma above) could postpone the renewal of a monthly travelcard, and the single ticket kept in the wallet for just such times would be used.

[Renewing my monthly travelcard] is the first thing I buy, even in advance of it expiring. In November, I put three months on my card, because I knew I wouldn't have much money in the next months, so I thought I would get it done. I don't think it's cheaper to buy a three-month card – you don't save money, you just save yourself the worry of having to deal with another expense you will have in the near future. (Gregor, 23yo, student and receptionist, January 2014).

The considerations discussed in the previous two sections of the affordances of transport fares shaping both situated transactions and broader im/mobility behaviours, were as prominent for participants living on small budgets as for the better-off. However, accounts of managing modest budgets are specially relevant in highlighting the impact of instances of greater intensity – situated interactions in which budgets 'fall apart' and have to be redrawn, yet again:

– Do you buy a ticket?

– The truth is, it really depends on how long I'm riding for. If it's for two stops, I'm not going to buy one [laughs]. If it's for longer, I buy one. Although sometimes I don't, when I really don't have any money.

– Have you had problems with the ticket inspectors?

– (...) A couple of times they caught me, and once they made me get off the bus (...). Sometimes it worries me, but let's say I am prepared to react instantly [laughs]. To buy a ticket as soon as I see them. Usually I don't have a ticket on me. I would just try and buy a ticket from the machine or the driver [when I see the inspectors]. (Ivelina, 35yo, performer, January 2018).

For Ivelina, who relied on occasional work in the performance arts, and who sometimes 'really doesn't have any money,' a transport budget is not a pre-planned monthly allocation, but a set of practices of affording to be mobile by responding to changing circumstances. By watching out for ticket inspectors and buying a ticket only when absolutely necessary, she was able to 'budget' for transport in the course of the journey itself. Affording mobility is demonstrated here to be both rational and calculative, and lived and embodied, as budgeting for transport budgets involves numbers and devices, whims and affects (Anderson et al., 2019).

6. Conclusion

This paper has aimed to demonstrate that there are ample opportunities to extend geography's already sophisticated engagements with everyday mobile lives into further theorising transport unaffordability, and exploring it empirically in different contexts (Bissell, 2018; Middleton and Byles, 2019). Similarly, research on transport justice and inclusion could give greater attention to the ways in which nominally purely economic barriers to mobility are enacted, lived, and felt (Banister, 2018; Nikolaeva et al., 2019; Pereira et al., 2017). The concept of transport un/affordability offers a theoretical lens through which to examine how mobility is afforded in practice. As the above discussion demonstrates, Everyday transport un/affordability involves many minute negotiations. The transport users I interviewed sought out,

or came across, subtle details of how fares work; they developed knowledges of their various uses, and updated and adjusted these knowledges as part of changing budgets and daily routines. They managed transport costs in deliberate ways, and sometimes very deliberately skipped the deliberations. These findings demonstrate how mundane ambiguities, small miscalculations, and unanticipated events, whilst often having negligible impacts on transport users with high incomes, can have decisive impacts on transport affordability for many others.

In aiming to document and critically engage with the geographies of (not) affording mobility, I have suggested three conceptual directions based on the empirical findings discussed above. First, the need to consider the who, where, when, and how of transport-related transactions. While situated transactions have often been rendered invisible in mainstream research on transport costs and affordability, they represent a key setting in which un/affordability takes place, whether in relation to a specific journey, when a digital payment fails upon boarding a bus (MASKED), or through a far-reaching set of spatial and temporal relations, e.g. when the purchase of a monthly card is foregone due to a long queue. The second proposed direction concerns journeys, as a way of accounting for the multiple ways in which affording and moving are entangled. Existing research may not typically engage with the multiple temporalities of affording, or implicitly assume that affordability is resolved in advance of a journey being undertaken. In the discussion above, I have aimed to show that the 'when' and 'where' of transactions are complex and on-going; past, present, and future transactions are involved in the affording of past, present, and future, journeys. Finally, a proposed focus on budgets points to the relations of transport un/affordability not only to one's own income and expenditure, but also to the incomes, journeys, and expenditures of other people, including household members, or work colleagues. While much transport geographic research remains focused on either individual transport users, or overly simplistic framings of the household 'unit,' attending to the geographies of transport un/affordability means accounting for the ways in which the costs of transport is negotiated across these two scales of analysis.

Finally, the concept of transport un/affordability has implications for understandings of changing fare systems. The role of the public transport fare as a type of socio-material affordance is increasingly shaped by digital technologies (Lathia and Capra, 2011; Fontes et al., 2017). Thus, the relations in which the fare participates connect the spaces of human mobility, economic life, and digital space (drawing on Dodge and Kitchin's code/space framework, Zook and Graham, 2018, make this point in relation to frequent flyer programmes). The increasing digitalisation of fares has often been driven by expectations that new technologies would remove existing loopholes and thus address issues such as fare evasion (Brakewood and Kocur, 2011). In practice, new types of digitally-connected fares such as smartcards do not reduce ambiguity, but rather introduce new and distinctive contingencies and 'hackability' (Zook and Graham, 2018; MASKED). By highlighting the contingencies of affording, the concept of transport un/affordability can help to qualify and refine the expectations which decision-makers place in new ticketing technologies. Similarly, ticketing policies which are more attuned to how a 'malfunctioning' ticket barrier differently impacts those with greater monetary and non-monetary resources, and those without, resulting in a minor inconvenience or in missing out on an essential journey, can contribute to fairer and more inclusive transport systems.

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CRediT authorship contribution statement

Anna Plyusheva: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing.

Data availability

Data will be made available on request.

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