
Flexi-Mobility: Helping Local Authorities Unlock Low Carbon Travel?

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Abstract

This paper sets out eight key contentions about the need to re-think transport policy that emerged from three years of quantitative and qualitative research into people's travel practices. Based on these contentions we suggest the need for a 'toolkit' to be assembled to take a new approach to enabling a transition to the wider use of low carbon mobility. This approach would be centred around evidence that there is much wider variation and flexibility in people's travel patterns than has previously been recognised. Cultivation of this could allow sustainable transport policy, particularly at a local level, to set ambitious but achievable goals that aim to get *more* people, travelling by non-car modes *more* of the time, rather than seeking to achieve *complete* changes in travel practices *all* of the time.

Introduction

This paper is based on the early findings and conclusions from an EPSRC/RCUK Energy Programme funded project "*Disruption: Unlocking Low Carbon Travel*". The project has spent over 3-years undertaking an extensive programme of empirical work looking at people's everyday lives and the role that travel plays in these. The research was based around the contention that disruptions¹ provide a useful lens through which to study travel behaviour as "*they make visible the assumptions around which travel patterns are based*" (Marsden and Docherty, 2013, p.51). The research included: following over 30 families in longitudinal socio-ethnographic studies in two cities, a major national quantitative survey (Anable & Budd, 2013); using mixed methods to study short-term disruptions to travel such as flooding, winter weather, office relocation and fuel shortages, as they happened; and undertaking a range of interviews and focus groups with key stakeholders and citizens.

We set out eight key contentions that have emerged from the project and which are discussed here primarily in the context of local transport planning. These contentions have led to the development of a concept that we have termed '*Flexi-mobility*' (Anable et al. 2014) that recognises widespread variation in how we all travel. In order to develop a coherent and practicable strategy for travelling less by car, our transport policy should be nurturing pre-existing multi-modality so that everyone is able and willing to travel a bit less by car where we can across our lives. As well as looking at what transport policies should be applied to meet this end it is also necessary to look beyond transport at a range of issues surrounding working practices, schooling and leisure. Our travel is not just defined by whether or not we want to use a car but by a series of complex and interconnected activities and constraints.

¹ Defined, drawing on the work of Graham (2010), as '*periods of time where systems cease to work as commonly expected and which have a discernible temporary or longer lasting impact on mobility.*'

1. There is more flexibility in people's travel behaviour than is often thought

Travel behaviour has tended to be seen as quite difficult to change, partly because it is often viewed as fixed and 'habitual' (Schwanen et al., 2012) and locked into regular daily or weekly cycles, but also because it relies on fixed and large-scale infrastructures that limit what choices are actually possible. Despite this, our research has found that there is much more variability in how people travel, including in mode, route and the actual journeys that they make than conventional wisdom suggests, even to the extent that it is often difficult for people to identify specific circumstances that they would describe as 'normal'. This variability in travel patterns is masked by standard approaches to collecting data on travel, such as the National Travel Survey (NTS) which asks questions such as "How do you usually travel to work?" or even "When you cycled in the last 12 months, where did you usually cycle?" This line of questioning not only reflects common assumptions about lack of flexibility in people's travel, but also goes on to reinforce these views by generalised reporting statistics that do not account for the other ways and means of travel that people might use.

In our survey of council employees in York, almost half did not know how many days they would be in the office the following week. High levels of variation in travel patterns have also been found in other research, both in terms of variation across life-times and within single weeks. In an analysis of the British Household Panel Survey which ran between 1991 and 1998, Clark et al. (2014) found that on average, people using car as their main mode of travel to work would change to another mode after six years, and those using public transport, walking or cycling would change after three years. Over shorter periods, Chatterjee and Bartle (2014) found in a study of commuters that one third of people who 'usually' drive a car to work, and a half of people who 'usually' cycle had used at least one other main mode instead during the week of their survey. Previous research for DfT (King et al., 2009) found that people were less resistant to changing patterns of trips than mode of transport. However, the two are not inseparable and changing journey destination, particularly to more local facilities, might unlock potential for the use of more sustainable modes, as was found to be prevalent in the Sustainable Travel Towns (Sloman et al., 2010) and advocated in Marsden et al. (2010).

2. The traditional classifications of journey purpose are breaking down

The NTS presents information based on single journey purposes, e.g. commuting, education, shopping, etc. However, whether due to intentional changes to travel patterns in order to reduce costs or emissions, or as a response to the increasing complexities of everyday life, not least the increase in dual income households, trip-chaining is an increasingly common activity, with key examples being taking children to school on the way to work, or doing shopping on the way home from work (Schmöcker et al., 2010, Anable et al., 2014). Recognising and addressing these complexities will be essential in supporting people in making changes to how they travel as they have been found to reduce people's perceived ability to use sustainable modes (Pooley et al. 2013). Increasing use of mobile technology (discussed later) is also changing the nature of journeys, so the commute, or other business travel, can increasingly become part of the 'working day'.

For various reasons the journey to work has traditionally received the most attention from transport researchers (Hanson, 1980; Pooley & Turnbull, 2000). However, our work has suggested that for the traveller, this is often not the journey of most significance. As particularly found in the case of child-care arrangements, many people have become dependent on complex social networks with strong burdens of reciprocity and so responsibilities to employers may be less important than picking up their own, and often other people's, children from the school gates. Admittedly, this importance may change depending on whether it is the employer, employee or policymaker being asked, but in a context of increased emphasis on individual responsibility, this needs to be taken into account.

3. It is Necessary to Think beyond Individualism and Choice

Much current policy thinking on ‘behaviour change’ is concerned with individual responsibility and choice. This is well demonstrated in the 2011 UK Government white paper ‘Creating Growth, Cutting Carbon: Making Sustainable Local Transport Happen’. This presents the ‘Ladder of Interventions’ (see Figure 1) and states that “*The concept of enabling choice following provision of better information and education is what the Government’s approach to sustainable travel is all about. We do not want to eliminate or restrict choice – our goal is to enable and encourage more healthy and sustainable choices*” (DfT, 2011, p.13).

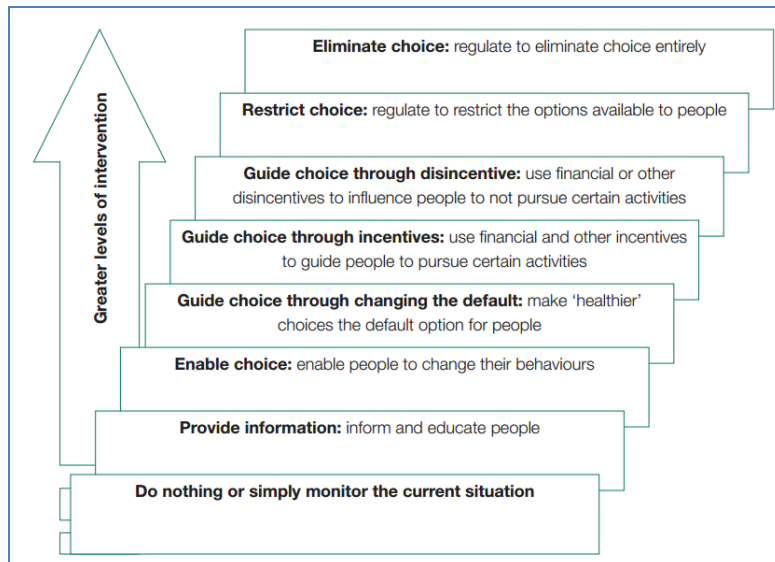


Figure 1: Ladder of Interventions (Nuffield Council on Bioethics, 2007 - reproduced from DfT, 2011)

Much of the effort to create ‘Voluntary Travel Behaviour Change’ to date has relied on these two strategies of providing information and attempting enable choice, alongside a limited use of incentives. There is little evidence that approaches grounded in traditional forms of social psychology aimed at modifying individuals’ attitudes, behaviours and decision making in order to reduce car driving are a) effective enough to achieve the reductions necessary, and b) where there has been change, that the methods used are scalable to the level necessary to create sufficient change, (Graham-Rowe et al., 2011; Arnott et al., 2014). Indeed, choice, particularly within the domain of transport, is arguably illusory (Marsden et al., 2014). Behavioural economics has had an increasing profile in policy as an additional tool for creating behaviour change, particularly following the publication by the Cabinet Office of the MINDSPACE guide in 2010 (Dolan et al., 2010). It argues that economics over-estimates the extent to which humans act in a rational manner and instead, for many tasks, the brain uses heuristics, or mental short-cuts, which make for efficient decision making but preclude the ability to simply rely on information and choice to guide decisions. However, the tools behavioural economics provides face significant challenges with regard to transport due to the significant physical and spatial constraints on and determinants of how people travel (Chatterton & Wilson, 2013), and are essentially still a choice based approach (Marsden et al., 2014).

Research undertaken by the project into the City of York Council’s office consolidation highlighted how a change in a person’s journey to work can have very significant impacts on the lives of others, particularly spouses/partners, constraining their freedom to act. ‘Individuals’ exist within a range of constellations of others who have expectations and norms that impact mobility options that are realistically available. Cultures of ‘presenteeism’ restrict the degree to which home-working is considered acceptable, and work by the project into travel behaviour during the Olympics (Parkes et al., 2014 shows the extent to which changing expectations can have a significant impact on travel behaviours, with 54% of people changing their journey to work during the games.

Rather than simply encouraging actions higher up the 'Ladder of Interventions', alternative sociological approaches, such as Social Practice Theory (SPT), provide a way of understanding why traditional methods have been unsuccessful, and open up the way for devising new types of intervention that work by changing the contexts of travel rather than simply targeting individual decision making. In particular, SPT can help highlight where and how travel is locked in by other sectors, helping to 'think beyond transport' (see Point 7 below). SPT 'de-emphasises' the role of individuals within what is commonly referred to as 'behaviour' (Wilson and Chatterton, 2011). By taking as the central unit of enquiry 'practices' i.e. "*routinised way(s) in which bodies are moved, objects are handled, subjects are treated, things are described and the world is understood*" (Reckwitz, 2002 p.250), SPT is primarily concerned with neither "*the experience of the individual actor, nor the existence of any form of societal totality*" (Giddens, 1984, p.2) but instead how practices emerge, exist, adapt and expire through their performance and reproduction in society. The role of individuals becomes relegated to that of 'performers', 'carriers' or 'reproducers' of practices" (Shove and Pantzar, 2007). In the case of transport, an SPT perspective look at the hows and whys of travel more generally, over and above the reasons why any individual might choose to travel or the mode(s) they opt to use. So rather than concerning itself with the rational or quasi-rational decisions that an individual might make when making a journey, instead an SPT approach might consider what equipment and infrastructure is provided to support different modes of travel, whether appropriate skills and knowledge are available for people to travel sustainably, what the meanings might be associated with both different modes of travel and travel itself, and most importantly how these all interact to script the way that we travel. This type of analysis lends itself to taking on unsustainable travel at a societal rather than individual level. When over 30% of Dutch people have cycling as their main mode of transport compared to only 2.2% in the UK (Gallup, 2011) it makes sense to question what makes Dutch society (as an entity encompassing both physical and cultural aspects) different to the UK rather than what makes Dutch individuals different to those in the UK.

Increasing attention is being given to the opportunities for change in the way that people travel presented by 'Life Transitions' such as changing job, moving house, retirement etc. (Thompson et al., 2011, Clark et al., 2014). A lot of this work has taken an individualistic perspective and focussed on how interventions could take advantage of "times in a person's life where existing habits and behavioural patterns are disrupted" (Thompson et al., 2011, p.6). However, a more socially orientated approach to this issue may consider that people are regularly changing one or more major aspects of their lives and therefore things need to be arranged such that car travel becomes the last option that people decide on (particularly as car-use appears to be a more stable and longer lasting choice of travel than active modes or public transport) (Clark et al., 2014). SPT has much to offer to a Life Transitions perspective, particularly by considering some of the moments of change, not simply as breaks in individuals' otherwise stable behavioural contexts, but in examining how such moments might change meanings (such as representing rites of passage, or other changes in status), enable or hinder access to particular materials (cars, bus passes, dial-a-ride schemes) or provide opportunities to develop, or learn new skills and competences.

4. Rethinking Resilience

The overarching policy concept of resilience focusses on being able to 'withstand' shocks rather than flexing to accommodate them. It also tends to prioritise returning to the pre-shock status quo instead of moving to a new state. This was recognised by Coleman (1990 cited in Volmer, 2013, p69) who describes how, when disruptions occur, "*attention is fully occupied with the case at hand; when that manifestation is over, the relief that order is restored often leads to a turning away from such upsetting events – until the next time.*" However, other interpretations of resilience take a wider systems view and emphasise the role of 'adaptive capacity' (e.g. Nelson et al., 2007), and the ability for systems to continue to meet their goals through flexibility rather than rigidity.

There is plenty of evidence to suggest that many of the systems at the centre of our society, e.g. transport, communications, energy etc. are becoming more susceptible to disruption from a range of sources. These include extreme weather, age of infrastructure and funding

available for maintenance, resource shortages, extended supply networks, civil unrest, increasing demand, a growing reliance on complex IT networks, and even just an increased perception of disruption due to growing expectations of service (Chatterton and Williams, 2014). At some point systemic shocks are inevitable, and efforts to continue as we are in the face of them may only lead to a bigger fall when a problem becomes insurmountable or unavoidable. Thinking on resilience needs to change in order to move away from “*How can we stop this happening again?*” to “*What can we change in the wider system so that if/when this happens again it won't be such a big problem?*”. In order to do this we need to start thinking about social resilience rather than just network resilience.

Resilience can also be considered at the personal level, that of individuals or households. Much work has been done on the role that cars can play psychologically, in terms of personal identity and status, and in permitting freedom of movement. Our research has suggested that for many people the car is seen as a ‘coping mechanism’, a tool for personal resilience, both in terms of dealing with (expected) disruptions, and for managing the complex routines of everyday life involving meeting the expectations that are put upon us by ourselves and others. This reflects the ‘macro-social’ and spatial notions of ‘car-dependency’ put forward by Mattioli (2013). This complexity translates into often seeing the car as essential for participation in certain activities, and then a subsequent dependence on ‘reliability’ which for many is seen as always equalling ‘car’. Paradoxically though, our work has also shown that it was those people who used their car least in their daily lives who felt the most able to cope with disruptions.

5. Disruptions Can Provide Opportunities to Better Understand Behaviour and to Bring About Change

By using disruption as a lens for our research, it has become apparent the extent to which it is part of normal life, at a wide range of scales. In implementing an ‘on-call’ study of national and regional level disruptive events, we were faced not with a problem of whether these events would happen during the course of the project, but which events to study (from winter weather, fuel-crises and seemingly perpetual flooding). Our major survey found that 11.3% of respondents were ‘always’ or ‘often’ disrupted for at least one of their regular journeys, and respondents generally built in time to journeys to account for possible disruption (Anable and Budd 2014). However, disruption emerged to have a very subjective threshold, with some people’s disruption registering as ‘business as usual’ for others. The ability to regularly manage disruptions highlights the extent to which many people have a significant degree of flexibility and adaptability in when and sometimes how they travel (despite external constraints) as indicated in Point 1.

The perception of disruption allows us to recognise some of the tacit expectations that people have about the transport system, such as the role of the state in enabling freedom to travel, and at what point unremarkable travel delays become problematic. The project has considered a number of case studies (including the Workington Bridge outage following the Cumbrian floods of 2009 and the closure of Bridge Valley Road in Bristol due to subsidence in 2010/11(Williams et al., 2012). These sorts of events, in a similar way to life transitions, provide sudden moments of change in how people travel. However, experience demonstrates that in these situations, the primary intention of transport authorities tends to be to return things to ‘normal’ as soon as possible (see the quote from Coleman in Point 4). At the very least these types of disruptions can provide valuable insights into how transport networks operate and, in some cases, the ‘disrupted’ situation might bring about benefits that are then removed with a return to business-as-usual. For example, during the Bridge Valley Road closure, congestion appeared to be significantly improved but little information was garnered on why, or what had happened to all the usual traffic. When the road was reopened the council felt it necessary to issue a formal apology to road users for the restoration of traffic to normal (i.e. congested) conditions.


Both psychological and sociological understandings of behaviour suggest that people’s actions, particularly those that are often seen as ‘habitual’, are maintained by the stable context in which they occur, and that individual change without a change of context is difficult to achieve. This means that even with all the measures possible in place to *enable* people to

use sustainable transport people, without some direct impact on their current travel patterns, there will be a tendency for them to continue to travel as they were. At this point it becomes necessary to either deploy interventions from the top rungs of the ladder of intervention (see Figure 1) that actually disrupt people’s routine behaviour, to begin to change the social context of people’s travel as indicated by social practice theory. Through a better understanding of how people react to disruption during temporary events, it should be easier to design transport/mobility interventions that create this disruption but that are seen by as reasonable, and for them to feel supported in changing their behaviour.

6. Increasing Virtuality Needs to Be Acknowledged

Alongside many other societal level changes that are continually occurring, the virtual realm is having an increasingly significant impact on people’s lives and mobility. This is not just through things like tele-conferencing where the need to travel is reduced or altered, but also in supporting real world travel. Interruptions to the internet are seen as more disruptive than interruptions to the transport network with inability to access the internet for three days being perceived as being a greater cause of disruption than a range of other disruptions to mobility over the same time frame – see Table 1 (Anable & Budd, 2014).

Table 1: Perceived disruption by different events (Anable & Budd, 2014)

	Event	Score (avg)
Most	Unable to access the internet for three days	3.92
	Bad weather made travelling by all modes of transport difficult for 3 days	3.51
	Had to care for a friend or relative for three days at short notice	3.16
	A fuel shortage at all petrol stations for three days	2.85
	Local bus network was out of action for three days	2.04
	Local rail network was out of action for three days	1.83
Least	A problem caused all flights to be grounded in the UK for three days.	1.66
N=2700 respondents were asked to rate how disruptive they thought different events would be to their life (5=Extremely disruptive, 1= Not at all disruptive).		

The reasons why the loss of internet was perceived to be so disruptive are unclear, but over the last decade the internet has become a normal part of life for most people in Great Britain. In 2014 84% of households in Great Britain had internet access, with 73% of adults accessing it every day (almost double the number for 2006) (ONS, 2014). Although the number of people ‘usually’ working from home is increasing it is still fairly low (up from 3% in 2003-4 to 5% in 2012 (DfT, 2013)) the internet is playing a wide role in other parts of people’s lives with 74% of adults purchasing goods or services online in 2014 (ONS, 2014).

In addition to providing the opportunity for ‘virtual mobility’ the internet is also significantly meshed with physical travel options through its use to plan routes and journeys, buy tickets, check travel conditions, etc. Whilst in some ways the information available to people to enable them to travel sustainably is better and more comprehensive than it has ever been, it is also in competition with other information (both on travel related issues and more widely). In relation to Point 2, relying on behaviour change strategies that provide more information and increase choices, rather than changing the wider social contexts, may end up leading to states of ‘information overload’ or ‘option paralysis’. This could actually prevent changes to more sustainable modes through adding to the already significant cognitive and affective load experienced by travellers (Stradling, 2002; Besedes et al., 2012).

Supporting mobile connectivity through increased implementation of good quality, free WiFi and provision of charging points on public transport, both in vehicles and at stations would recognise the increasing importance of internet connectivity in two ways. Firstly, the increasing use of mobile devices is partially responsible for the over-turning of traditional views that travel time is simply a disutility or burden (Lyons and Urry, 2005; Jain and Lyons, 2008) through making travel-time (more) productive. Secondly, the ability to use mobile devices effectively is recognised as an important way of improving the ability of travellers to respond to disruption.

7. Thinking Beyond Transport

'Conventional wisdom' generally sees transport as a derived demand resulting from other sectors (work, education, leisure etc.) (Mokhtarian & Salomon, 2001; Balcombe et al., 2004; Rodrigue et al., 2013). However, transport policy has historically tended to meet these demands as a given and, at best, attempted to make some influence on choice of modes or, less frequently, by attempts at rescheduling (for example peak fares on public transport, or delivery time constraints in London) with little attempt to actually reduce *overall* demand. However, considering the significant societal dis-benefits that are now associated with our transport system (road safety, air pollution, greenhouse gas emissions, poor public space, inadequate physical activity and the associated health problems. etc.) there is a need to move beyond an attitude of simply meeting or managing these demands. The sectors from which demands are derived put particular demands on how, whether and when particular journeys are made (or not) and we argue that they need to play a greater role in actively managing their impacts. This thinking is not necessarily new, for example Stead and Bannister (2001) conclude that "*decisions made in many sectors have transport implications—these include the housing sector, the location of businesses, recreational facilities, shops, schools, health services and a multitude of other factors*" (p328). However, the use of SPT to frame much of our project has emphasised the extent to which travel becomes a constituent part of these activities rather than simply a by-product. The car has become an integral part of how activities are participated in, and without it they might look very different. Engagement with employment and education in particular were found to put particularly strong constraints on when to travel (Anable & Budd, 2014), leading both to time pressures on individuals and families, but also the general problem of rush hour. Potential solutions go beyond simple requirements for institutional travel planning, but may require looking at how, and when, activities occur, as well as why they occur. This may involve approaching some very complex issues, as not all travel is the consequence of clear institutional requirements, for example, the increased travel that occurs to meet expectations of being a 'good parent'.

The arrangements between employer and employee tend to involve the employee having responsibility for delivering themselves to their place of work. There are increasing numbers of cases where this is already changing, e.g. employer run bus services (such as Orange and the University of the West of England in Bristol), tax-free bicycle purchase schemes, interest-free loans for season ticket purchases). These show that there is ground to be covered in developing this relationship. There are mechanisms by which it could be incentivised such as widening requirements to include employee travel to work within carbon reporting for businesses and encouraging companies to act either by simply using awareness or publication of this information, or by setting business rates based on emissions levels to pressure on companies to address their employees emissions and to help fund local sustainable transport schemes.

Schools place a well-recognised burden on the transport system, one that was not helped by the increase in choice engendered by the Education Reform Act 1988 (Stead & Davis, 1998). It is claimed that the school run is accountable for nearly a quarter (24%) of traffic at peak times (Sustrans, 2013) adding considerably to congestion within term time. 43% of primary school children are currently driven to school by car, despite the fact that the average distance from primary school is just over one mile and this is driving the development of guidance on school travel plans by DfT (DfT, 2014). However, in-line with the reduction in single purpose journeys discussed above, for many people taking children to school or picking them up is part of a complex web of daily travel. This means that even without the school run, many of these cars would be on their way to work and on the road anyway even if they didn't have a child to drop off (albeit potentially more spread through the peak period). Aside from the provision of cycle/scooter parking school travel plan guidance tends to be outward focussed looking beyond the school gates. There may be opportunities to review school timing through breakfast/after-school clubs or changes to the time-tabling of the formal school day to increase sustainable travel to/from school. Also, to address the issue of parents who choose schools other than their nearest, the framing of school choice could be changed to accentuate the numerous benefits to children of active travel to school

over and above the impact of league tables and other factors that currently lead to journeys by car. Some councils such as Dorset County Council (where over 40% of children in the main towns do not attend their local school) are already taking a lead on this (DCC, 2014).

However, as highlighted by the term-time congestion caused by the *combination* of school-run and commuter traffic, these problems are not just the result of one single institution or even a single sector. In order to address these issues local authorities will need to play a steering role to encourage employers, institutions and service providers to make changes such as more flexible opening times and models of working that would allow the travel to be carried out in different ways.

8. The Need to Develop a Stronger Narrative for Low-Carbon Mobility

There is currently no strong narrative for supporting the need to move towards lower carbon forms of transport/mobility. Within national policy, a perceived requirement for economic growth and a belief that the requirements for growth are at odds with carbon reduction (Marsden et al., 2014) effectively 'trumps' any call for lower carbon emissions (even when it is recognised that climate change places a significant threat to future growth (Stern, 2006)). Similarly, although neo-classical views of people as *homo economicus* have been widely dismissed, price does play a significant role in influencing people's travel practices choices (either directly or indirectly) and depending on how pricing is determined, as well as methods of payment, this has potential to act as a barrier to more sustainable travel. In addition, most transport investment defines success in terms of *more* mobility, not *less* and non-car modes are often described as 'alternatives'. As with arguments about national emission reductions that see little point in attempts to reduce UK emissions in the face of lack of action from the US or China, individuals may see little point in reducing their own emissions without a (clearly visible) broader societal move in that direction. Similarly, within the development of policies and plans, sufficient weight has to be given to carbon reduction (or other environmental and public health concerns) to ensure that they are not just paid lip-service in individual schemes, but that they can form the basis of an over-arching, long-term strategy.

Our research suggests that local authorities are already doing many of the right things to help bring about significant increases in sustainable travel. However, they are being implemented in a piecemeal way that fails to build synergies between the different schemes and elements. Funding for transport initiatives in the UK is usually split between capital and revenue streams, with the former permitting the construction of new infrastructure, whilst the latter allow for staff, operational budgets marketing and so forth, that are often central to many sustainable transport projects. This division is peculiar to the UK and is recognised as being unhelpful in allowing local authorities the freedom to build, operate, market and maintain schemes as they judge necessary (see for example CfIT (2010)). Schemes such as the Sustainable Travel Towns (STT) demonstrate that significant benefits can be achieved through the development of area wide narratives on sustainable travel. The STT projects were possibly hampered by their main focus on 'Smarter Choices' and were thus provided with revenue only funding. Accompanying infrastructure projects were reliant on Local Transport Plan (LTP) funding, and though the high profile of the Sustainable Travel Town projects meant that sustainable travel infrastructure possibly did better out of the LTP process than it would have otherwise, this did not necessarily lead to a well-integrated expenditure on revenue and capital. Estimates of final outlay suggest that supporting capital expenditure constituted between 40% and 65% in the three towns (Sloman et al., 2010).

The Cycling Demonstration Towns (2005-8) and Cycling City and Towns programme (April 2008-March 2011) provided a mixed revenue stream, with between 52% and 74% spent on capital projects (Redfern et al., 2011). However, the subsequent Cycling City Ambition grant scheme, conversely to the Sustainable Travel Towns funding, only provides for infrastructure improvements (capital funding). Whilst these schemes all show some commitment towards promoting sustainable transport mode other than cycling, the emphasis on cycling does not follow the example of the over-arching narratives set by the Sustainable Travel Town programme.

The Local Sustainable Travel Fund (LSTF) 2011-15 provided an average of 54% revenue funding (from a national government pot of £620 million) across 77 different local authorities to deliver a broad range measures “that support economic growth and reduce carbon emissions, delivering cleaner environments, improved safety and increased levels of physical activity” (Butcher, 2014), often as well integrated packages. Whilst this funding scheme is arguably a good step forwards, it can potentially be criticised on three accounts. Firstly, it only provides very uneven support for local initiatives. Although 95% of Local Transport Authorities received funding directly or indirectly through the LSTF, the total funding varied by a factor of 40 between the highest and lowest amounts with Reading Borough Council receiving £20,468,877 and Derbyshire County Council only £525,100. This discrepancy was even greater when calculated per capita of the population in each area, with Reading Borough Council receiving an average of around £33 per person per year, compared to only £0.17 per person per year for Derbyshire County Council. Overall mean per capita per year spend was £3, and this compares poorly with calls from the House of Commons Select Committee on Transport for funding on cycling alone of £10 per person per year (House of Commons, 2014). Secondly, the amount spent by government on the LSTF funding accounts for less than 9% of all local transport funding between 2010/11 and 2014/15, so despite providing a welcome addition to local authorities, it was not particularly seen as a ‘game-changer’ in the way local transport planning was undertaken. Thirdly, the scheme has no long-term future planned, with funding frameworks being radically overhauled post-2015/16 with funding being distributed by Local Transport Boards and LEPs. LEPs do not at the present time have a clear revenue funding stream set out, nor any built-in evaluation framework to assess and understand what works.

In order that a significant local narrative can be developed on sustainable transport, it is essential that local authorities or LEPs develop their own one, as there is little sign of a lead being taken by national government. This needs to incorporate both infrastructure and skills/information, and needs to join together different modes, rather than simply treating people as drivers/cyclists/pedestrians/bus users etc. Allowing greater flexibility in how funding is used may help localities develop the particular narratives that is best for them.

Discussion and Conclusions

Considering the UK needs to almost entirely decarbonise road transport by 2050 to meet current climate targets (>90% reduction in emissions from surface transport (Committee on Climate Change, 2013)) efforts are making a slow start. Emissions from road transport have fallen by 11.6% between 2007 and 2012 (though only 3% from 1990). This reflects both improved efficiency of the vehicle fleet, and reduced vehicle km travelled, the latter primarily due to the recession (DECC, 2014). The extent of the post-recession drop, particularly in private transport, gives lie to the significant contribution that demand reduction and modal shift could make to overall emissions. This drop though may not solely be due to the recession as growth in vehicle km had already levelled off over the last decade. This phenomena of ‘peak car’ is likely to be the outcome of a wide range of on-going changes across society (Goodwin & Van Dender, 2013). Given the extent of societal change that is occurring anyway, and taking into account the degree to which our work shows that there is considerable variability and potential for flexibility in people’s personal travel, the challenge of bringing about widespread changes in travel behaviour may not be as great as it often appears. However, it may require very different thinking, and the eight points set out in this paper show some of the ways in which thinking might need to change.

If our contentions are right then we need a new and expanded toolkit of ideas and measures for unlocking low carbon mobility. It is not that we currently don’t have a good idea of what sort of measures are likely to help improve the proportion of mobility that is carried out in a sustainable manner. Indeed there are very many good examples being implemented in many places. However, we do lack an over-arching logic that can accept both where we are at now, and how we can work towards our goals without an impractical, and politically problematic step change. The project has developed a concept of ‘flexi-mobility’ which we have set out in a Green Paper (Anable et al., 2014) which looks at what mobility policy might look like when taken away from a purely transport focus. In this we highlight five ‘domains’

that we believe currently limit or increase the degree to which people are able to travel by the most sustainable means.

Systems: Transport infrastructures and services are an integral enabler of the mobility experience and do matter. They determine the possibilities and the desirability of travel options. However, we also recognise the interaction between transport and a host of other systems, including education, health, employment and shopping which, structure everyday life.

Competency: Needing the (perceived) skills, and ability to get around by different forms of transport, take new routes, or work in different ways places the user's experiences, and experience, central to our vision. These skills and abilities need to be nurtured across the life course, but particularly over the transition to early adulthood.

Time: The timing of practices in everyday life, and the temporal relationships between practices, place specific requirements on people to be in certain places at certain times, constraining the perceived suitability of certain modes of transport and putting excessive strains on the transport system at particular times. Adjusting the temporalities of travel may open up new options for policy.

Social norms: The expectations of others need to create possibilities for and the acceptance of flexi-mobility. This can be through workplace culture, deliberate transport interventions, rewarding behaviours and a consistency of approach to encouraging change.

Spatiality: The geography of society and everyday practices needs to better facilitate flexi-mobility. Land-use and service planning should work with, not against, the promotion of alternative ways of doing things.

Space constraints prevent us discussing these in detail here, but what is particularly relevant is how we see these interacting (see Figure 2), with each of the five domains co-evolving. Recognising the complexity of how our travel patterns emerge in this way allows a very different perspective to that forwarded by 'The Ladder of Interventions' (Figure 1).

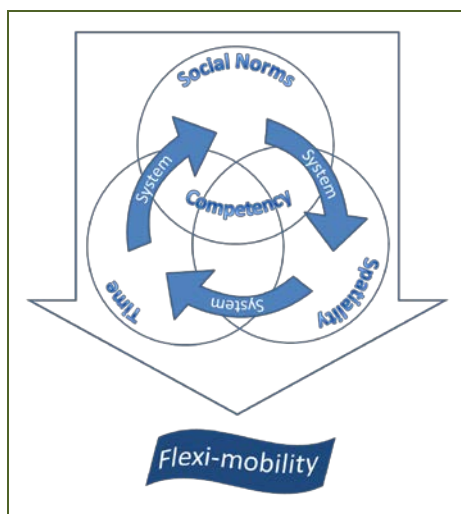


Figure 2: The domains of flexi-mobility (Anable et al., 2014)

Evidence from both the Disruption project and other areas of transport studies suggest that there is real potential for creating change on a larger scale than is often thought, as there is much more change already occurring in the system than is commonly believed. Given that we already know, and in many cases do, some of the things that would support the increased use of sustainable forms of mobility, what is required most is a change in attitude and ambition by decisions makers impacting on mobility. Reappraising current travel behaviour not only allows the challenge ahead of us to be put in to a new perspective (we are further ahead than we often think) but it also redirects the aim from needing to turn a set of car drivers into walkers/cyclist/PT users/homeworkers, into supporting behaviour that is already there (if latent) across most of the population, and setting conditions so that this can flourish.

Transport policy needs to accept that sustainable travel needs to become the central focus of future work. It is currently questionable whether people overall are seeking to drive more

than they do already. We certainly don't need to put more effort into supporting this. Funding needs to be rebalanced to take account of the different needs of sustainable transport policy, and to recognise the extent to which (almost) everybody already uses sustainable modes, and needs to be supported in using them more. Only by a strong lead (which can in part be provided through appropriately packaged funding) will it be able to provide the support to these modes that is necessary to help normalise their use, particularly for all journey purposes not just occasional leisure uses. The roles of various actors need to change, including ones outside the conventional transport paradigm. The preeminent concern with individual responsibility needs to be reduced, and the economic and psychological thinking that has informed efforts at behaviour change to date need to be supplemented by sociological views that help reveal the complex way that unsustainable travel patterns have become locked in through the demands of everyday life.

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References

- Anable, J., and Budd, T. (2014) Work Package 1 Questionnaire Survey – Descriptive Statistics, Disruption Project Working Paper.
- Anable, J., Anderson, B., Shove, E., Torriti, J. (2014) *Categories, Concepts and Units: Representing energy demand in and through time*. DEMAND working paper 4. August 2014. www.demand.ac.uk
- Anable, J., Cass, N., Chatterton, T., Docherty, I., Doughty, K., Faulconbridge, J., Marsden, G., & Roby, H. (2014) Flexi-mobility: Unlocking Low Carbon Mobility Opportunities, Disruption project Green Paper, November 2014.
- Arnott, B., Rehackova, L., Errington, L., Sniehotta, F.F., Roberts, J. & Vera Araujo-Soares, V. (2014) *Efficacy of Behavioural Interventions for Transport Behaviour Change: A Systematic Review with Meta-analyses* Unpublished Manuscript, Newcastle University/Sheffield University.
- Balcombe, R., Mackett, R., Paulley, N., Preston, J., Shires, J., Titheridge, H., & White, P. (2004). The demand for public transport: a practical guide. <http://www.demandforpublictransport.co.uk/TRL593.pdf>
- Besedes, T., Deck, C. A., Sarangi, S., & Shor, M. (2012). Reducing Choice Overload without Reducing Choices. Available at SSRN 2041512.
- Butcher, L. (2013), Local transport governance and finance in England, 2010, Standard Note: SN5735 House of Commons Library, 23 July 2013
- CfIT (2010) Transport Challenges and Opportunities – Getting more from less, Campaign for Integrated Transport, May 2010.
- Chatterjee, K. (2014) Changing journeys to work, Presentation to the Transport Statistics Users Group, Arup, London, 10th November 2014.
- Chatterton, T. & Williams, D. (2014) Rethinking Disruption: Inevitability, Opportunity, Necessity, Disruption Project working paper.
- Chatterton, T., & Wilson, C. (2014). The 'Four Dimensions of Behaviour' framework: a tool for characterising behaviours to help design better interventions. *Transportation Planning and Technology*, 37(1), 38-61.
- Clark, B., Chatterjee, K., Melia, S. (2014). Stability and change in commuting mode. The role of life events and spatial context. Life Transitions and Travel Behaviour Working Paper.
- Committee on Climate Change (2010) The Fourth Carbon Budget: Reducing emissions through the 2020s Chapter 4 – Decarbonising surface transport, December 2010.
- DECC (2014) GHG Inventory Summary Factsheet – Transport
- Department for Transport (2011) Creating growth, cutting carbon: Making sustainable local transport happen, Local Transport White Paper, HMSO, London.
- Department for Transport (2013) National Travel Survey Statistical Release (Revised) 19 September 2013
- Department for Transport (2014) National Travel Survey: 2010 Driving licence holding and vehicle availability
- Department for Transport (2014) Sustainable School Travel Guidance (Draft), August 2014.
- Dolan, P., Hallsworth, M., Halpern, D., King, D. & Vlaev, I. (2010) *MINDSPACE: Influencing behaviour through public policy*. Cabinet Office, 2010.
- Dorset County Council, (2014) Local Sustainable Travel Fund website <https://www.dorsetforyou.com/408284>
- Gallup (2011) Future of transport Analytical Report, Flash Eurobarometer Series #312 – Report by the Gallup Organization for the Directorate General Mobility and Transport
- Giddens, A. (1984). *The constitution of society: Outline of the theory of structuration*. University of California Press.
- Giulio Mattioli (2014) Where Sustainable Transport and Social Exclusion Meet: Households Without Cars and Car Dependence in Great Britain, *Journal of Environmental Policy & Planning*, 16:3,379-400.
- Goodwin, P., & Van Dender, K. (2013). 'Peak Car'—Themes and Issues. *Transport Reviews*, 33(3), 243-254.

- Graham, S., 2010, "When infrastructures fail", in *Disrupted cities. When infrastructure fails* Ed S Graham (Routledge, London) pp 1-26.
- Graham-Rowe, E., Skippon, S., Gardner, B., & Abraham, C. (2011). Can we reduce car use and, if so, how? A review of available evidence. *Transportation Research Part A: Policy and Practice*, 45(5), 401–418.
- Hanson, S. (1980). The importance of the multi-purpose journey to work in urban travel behavior. *Transportation*, 9(3), 229-248.
- House of Commons (2014), Cycling Safety, Transport Select Committee, Third Report of Session 2014-15, 14/7/14.
- Jain, J., & Lyons, G. (2008). The gift of travel time. *Journal of Transport Geography*, 16(2), 81-89.
- King, S., Dyball, M., Webster, T., Sharpe, A., Worley, A., DeWitt, J., Marsden, G., Harwatt, H., Kimbl, M. & Jopson, A. (2009). Exploring public attitudes to climate change and travel choices: Deliberative research. *Final Report for Department for Transport*.
- Lyons, G., & Urry, J. (2005). Travel time use in the information age. *Transportation Research Part A: Policy and Practice*, 39(2), 257-276.
- Marsden, G. & Docherty, I. (2013) Insights on disruptions as opportunities for transport policy change, *Transportation Research Part A*, 51, 46-55
- Marsden, G., Lyons, G., Anable, J., Ison, S., Cherret, T. and Lucas, K. (2010) *Opportunities and Options for Transport Policy*. Universities Transport Study Group 42nd Annual Conference, Plymouth, January 2010.
- Marsden, G., Mullen, C., Bache, I., Bartle, I., & Flinders, M. (2014). Carbon reduction and travel behaviour: Discourses, disputes and contradictions in governance. *Transport Policy*, 35, 71-78.
- Mokhtarian, P. L., & Salomon, I. (2001). How derived is the demand for travel? Some conceptual and measurement considerations. *Transportation research part A: Policy and practice*, 35(8), 695-719.
- Nelson, D. R., Adger, W. N., & Brown, K. (2007). Adaptation to environmental change: contributions of a resilience framework. *Annual review of Environment and Resources*, 32(1), 395.
- Office of National Statistics (2014) Statistical bulletin: Internet Access – Households and Individuals 2014
- Parkes, S., Marsden, G. & Jopson, A. (2014) The longevity of behaviour change: A case study of the London 2012 Olympic and Paralympic Games, hEART 2014 – 3rd Symposium of the European Association for Research in Transportation 10-12th September 2014.
- Pooley, C. G., & Turnbull, J. (2000). Modal choice and modal change: the journey to work in Britain since 1890. *Journal of Transport Geography*, 8(1), 11-24.
- Pooley, C. G., Horton, D., Scheldeman, G., Mullen, C., Jones, T., Tight, M. & Chisholm, A. (2013). Policies for promoting walking and cycling in England: A view from the street. *Transport Policy*, 27, 66-72.
- Reckwitz, A. (2002). Toward a theory of social practices: A development in Culturalist theorizing. *European Journal of Social Theory*, 5(2), 243-263. DOI: 10.1177/13684310222225432
- Redfern, R., Tarry, S., & Knight, P. (2011). Evaluation of the Cycling City and Towns Programme—Interim Report.
- Rodrigue, J. P., Comtois, C., & Slack, B. (2013). *The geography of transport systems*. Routledge.
- Schmöcker, J. D., Su, F., & Noland, R. B. (2010). An analysis of trip chaining among older London residents. *Transportation*, 37(1), 105-123.
- Schwanen, T., Banister, D., Anable, J., 2012. Rethinking habits and their role in behaviour change: The case of low-carbon mobility. *Journal of Transport Geography* 24, 522-532.
- Shove, E., & Pantzar, M. (2007). Recruitment and reproduction: the careers and carriers of digital photography and floorball. *Human Affairs*, (2), 154-167.
- Shove, E., Pantzar, M., & Watson, M. (2012). The dynamics of social practice: everyday life and how it changes.
- Slooman, L., Cairns, S., Newson, C., Anable, J., Pridmore, A., & Goodwin, P. (2010). Effects of smarter choices programmes in the sustainable travel towns.
- Stead, D., & Banister, D. (2001). Influencing mobility outside transport policy. *Innovation: The European Journal of Social Science Research*, 14(4), 315-330.
- Stead, D., & Davis, A. (1998). Increasing the need to travel? Parental choice and travel to school. *PTRC-PUBLICATIONS-P*, 75-88.
- Stern, N. (Ed.). (2006). *The economics of climate change: the Stern review*. Cambridge University Press.
- Stradling, S. G. (2002). Transport user needs and marketing public transport. *Proceedings of the ICE-Municipal Engineer*, 151(1), 23-28.
- Sustrans (2013) Reduced school run congestion could save economy billions, Press Release, 14th June 2013, The Poverty Site (2014), Ability to Travel, <http://www.poverty.org.uk/75/index.shtml> [Accessed 13 November 2014].
- Thompson, S., Michaelson, J., Abdallah, S., Johnson, V., Morris, D., Riley, K., & Simms, A. (2011). "Moments of change" as opportunities for influencing behaviour. nef (the new economics foundation). Defra, London.
- Vollmer, H. (2013). *The sociology of disruption, disaster and social change: Punctuated cooperation*. Cambridge University Press.
- Williams, D., Chatterton, T. & Parkhurst, G. (2012) Using disruption as an opportunity to change travel practices. In: *1st International Conference on Urban Sustainability and Resilience*, University College London, 5-6 November 2012. London.
- Wilson, C., & Chatterton, T. (2011). Multiple models to inform climate change policy: a pragmatic response to the 'beyond the ABC' debate. *Environment and Planning A*, 43(12), 2781-2787.