

**Transport, Social Exclusion and the Internet -
Could Virtual Mobility Help to Alleviate Social Exclusion?**

Susan Kenyon and Glenn Lyons

Transportation Research Group
Dept of Civil and Environmental Engineering
University of Southampton
Highfield
Southampton SO17 1BJ

Jackie Rafferty

Centre for Human Services Technology
Dept of Social Work Studies
University of Southampton
Highfield
Southampton SO17 1BJ

Abstract

This paper reports the emerging findings from research into the possibility that mobility-related social exclusion could be affected by increasing access to virtual mobility – access to opportunities, social networks, goods and services, via the Internet – amongst populations that experience exclusion. A number of recent studies across the academic, governmental and voluntary sectors have highlighted the link between transport and social exclusion, suggesting that a lack, or denial, of access to mobility can, in turn, reduce the opportunity to participate in society – a finding with which this research concurs. Following the identification of a causal link between transport and exclusion, it is suggested in the majority of these studies that an increase in access to adequate (private or public) physical mobility can provide a re-balancing of the scales to lead to a solution to mobility-related aspects of social exclusion.

This research, however, questions the likelihood that increased physical mobility can, by itself, provide a fully viable or sustainable solution to mobility-related aspects of social exclusion. This paper presents tentative results from both a desk study and public consultation, which suggest that virtual mobility is already fulfilling an accessibility role, both substituting for and supplementing physical mobility, amongst diverse populations.

Introduction

The objective of this paper is to discuss current understanding of the relationships between transport and social exclusion, before introducing new, at this stage largely speculative, research into the interactions and interrelationships between three key areas: social exclusion, transport and information and communications technologies (ICTs) – primarily, the Internet. The paper speculates that a ‘triangle of influence’ exists between these *three* areas, over and above the *two-way* interaction between transport and exclusion that is identified within the current literature. It is suggested that a ‘re-balancing of the scales’ between transport and social exclusion may not, by itself, provide a fully satisfactory solution to mobility-related exclusion. Rather, the role of virtual mobility, in creating a form of virtual accessibility, should be considered within a transport policy which has as its aim improved social inclusion and the reduction of social exclusion.

This paper outlines the concept of mobility-related exclusion; questions the purpose of mobility; and highlights the potential positive *and negative* impacts of virtual mobility. The primary focus of the paper is in presenting the emerging results from public consultation. The results of a series of focus groups, a workshop with experts in the field, an online consultation and a comprehensive desk study are integrated to illustrate the acceptability and adequacy of the concept of virtual mobility; and to cautiously suggest that the substitution and supplementation of physical mobility by virtual mobility in providing access to some opportunities, social networks, goods and services, for some people, is already underway.

Transport and social exclusion – an overview

Social exclusion and lack of access to adequate transport – private or public transport which is acceptable, accessible, affordable and available (DETR, 2000) and which can meet the economic and social needs of the individual or the community – are strongly linked. Indeed, it can be suggested that a lack of mobility is an influencing factor within each of the dimensions of exclusion identified within this research: that many of the causes of social exclusion have a mobility-related dimension. This ‘mobility-related exclusion’ is defined in this research as *‘the process by which people are prevented from participating in the economic, political and social life of the community*

because of reduced accessibility to opportunities, services and social networks, due in whole or in part to insufficient mobility in a society and environment built around the assumption of high mobility'.

Lack of adequate transport and thus mobility-related exclusion disproportionately affects people and communities who are at risk of, or who currently experience, exclusion – for example, rural dwellers, residents of urban 'sink' estates, older people, lone parents, people with disabilities, people who are unemployed and people on a low income, reinforcing exclusion amongst these groups.

Mobility-related exclusion can thus actively enforce and reinforce exclusion, because of the reduced accessibility that occurs as a result of inadequate access to transport¹. For example, difficulties in travelling to an interview or to a job can (re)enforce unemployment; loneliness and isolation can occur without the means to travel to see friends, family and other, more formal, social networks. Access to transport can often determine access to services, including medical, healthcare and educational services, childcare, local government services and shops. Educational opportunities can be missed where travel to attend courses is restricted; and people without access to adequate transport can be reliant upon local shops, which can be expensive. The influence of a lack of mobility upon each of the dimensions of exclusion is illustrated in Table 1.

Dimension of exclusion	Influence of lack of mobility: example exclusionary factors
1. Mobility	The cost, routing, timing, accessibility of public transport and the cost and accessibility of private transport acting as inhibitors to access to opportunities, social networks, goods and services
2. Economic	Unemployment – inability to take a job because of lack of adequate transport to interview and to place of employment
3. Living space	Geographical isolation – lack of mobility reinforcing isolation
4. Organised political	Low participation – linked to inability to travel to meetings, which are often in the evenings in centralised locations
5. Personal	Not directly linked to mobility: factors including ethnicity, culture, gender
6. Personal political	Powerlessness – particularly in the face of social and health care, linked to low levels of knowledge/poor access to information
7. Societal	Poor educational opportunities – inability to travel to learning venues
8. Social networks	Loneliness, isolation – lack of adequate transport to visit family, friends
9. Temporal	Time poverty – time taken to travel reduces time for activities

Table 1. Dimensions of exclusion and examples of the influence of lack of mobility

The links between social exclusion and transport have been under-explored until relatively recently, as concerns about the negative effects of a car-oriented transport system were explored (largely) theoretically in a limited base of sociological literature (for example: Aird, 1972; Berman, 1982; Freund and Martin, 1993; and Gorz; 1971). With the exception of a handful of authors (for example: Wajcman, 1991; and Whitelegg, 1997), it is difficult to identify evidence-based studies into mobility-related exclusion prior to the flurry of activity in this area, across the academic, government and voluntary sectors, in the late 1990s. Perhaps because of the difficulty of quantifying transport access and social exclusion, transport researchers, influenced in addition by the prevailing political climate in relation both to transport and social exclusion, have not tended to factor inclusion into transportation research.

The launch, in July 2001, of a consultation by the Social Exclusion Unit (SEU) into the links between social exclusion and transport indicates the weight which is now being given to this previously unacknowledged dimension of exclusion. It is the result of a traceable progression of thought over four years within two key government offices, the Department for Transport, Local Government and the Regions (DTLR) and the Cabinet Office, regarding the causes of exclusion and the role of transport in society.

The change of UK government in 1997 heralded changes in ideology and thus policy priorities. Upon coming into office, the government established the Social Exclusion Unit (SEU) within the Cabinet Office, with a mandate to investigate the causes, consequences, extent of and possible policy solutions to, growing social exclusion in UK society – and to ensure that social exclusion objectives were included in the work of all government departments. In 1998, the SEU published a report detailing plans for the development of national strategy for neighbourhood renewal (SEU,

¹ A full discussion of mobility-related exclusion is undertaken in Kenyon, et al (2001).

1998), launching the New Deal for Communities, which together aim to economically and socially revive and reduce the isolation experienced by residents of deprived neighbourhoods.

Whilst transport was recognised implicitly in the report as a factor in exacerbating individual and neighbourhood exclusion, none of the policy action teams established as a result of this report were to focus on transport provision – reflecting the peripherality of transport to SEU thinking at this time. The responsibility for neighbourhood renewal is now held by the DTLR, within the Neighbourhood Renewal Unit (NRU), which has published the results of the investigations by the policy action teams and which has yet to explicitly investigate the role of transport in neighbourhood renewal.

In transport, a 'Mobility and Inclusion Unit' (MIU) within the Department for the Environment, Transport and the Regions (DETR) was established – initially to be concerned with issues of disability and transport policy, rather than with social inclusion in general. The government published a white paper, which pledged to place transport policy at the heart of government and to develop an integrated transport system, which would be 'better for everyone'. The white paper was radical in its displacement of the car from the centre of UK transport policy and the emphasis upon addressing the environmental impacts of transport. The paper detailed the aims of government transport policy, focussing upon the improvement of public transport systems, to more adequately fulfil need, achieve environmental objectives, address accessibility issues and to persuade motorists to switch to non-car modes of transport.

The emphasis upon achieving behavioural change was, perhaps, to the detriment of a socially inclusive transport policy, focussing more upon improving services for current travellers and current car users than for those currently excluded from transport, with the exception of travellers with disabilities. The focus upon people with disabilities as the group most affected by mobility-related exclusion is demonstrated throughout government transport policy and DTLR research (DTLR, 2001)², including the guidance to local authorities on the development of local transport plans (DETR, 2000b), published in 2000, which includes the promotion of accessibility with the aim of achieving a more inclusive transport system as a key objective. However, the guidance does not explicitly state social inclusion as an objective and where inclusion is mentioned it is with reference to the accessibility of the public transport infrastructure for non-car users, rather than in the development of a transport strategy that actively seeks to facilitate inclusion.

The ten year plan for transport (DETR, 2000c), published later in the same year, began to place more emphasis upon the social, as well as the environmental, objectives of transport policy, although again accessibility is largely the focus of the concept of inclusion in this report.

The publication of 'Social Exclusion and the Provision and Availability of Public Transport' (DETR, 2000a), research commissioned by the MIU, represented a significant step forward in government thinking about social exclusion and transport. For the first time, the government report looked beyond accessibility issues to identify a positive link between a lack of (public) transport and the experience of social exclusion by all groups in society. The report suggested that inadequate access to transport could be a causal, rather than an incidental, factor in social exclusion.

The development of government thinking has been in parallel to developments in the academic and voluntary sectors³. As long ago as 1992, Torrance (1992) was positing a link between transport policy and exclusion. More recently, authors including Church, Frost and Sullivan (2000), Hine and Mitchell (2001), Lucas, Grosvenor and Simpson (2001) and Root (1998) have discussed the role of transport in exclusion, following from the government's lead to reconsider the role of transport in society. In the voluntary sector, Age Concern London (2001) has researched the links between poor transport and access to health services; and Action for Communities in Rural England has long been concerned with the role of transport in the exclusion of people in rural areas (Simmons, 1997; ACRE, 2001).

The majority of the above research into the relationship between social exclusion and transport suggests a need for an increase in physical mobility – largely, by public transport – to overcome

² The research programme for 2001-2 (DTLR 2001) includes a research section entitled 'Promoting socially inclusive and accessible transport', which highlights a strong focus upon disabilities in forthcoming research

³ A full literature review is provided in Kenyon, Lyons and Rafferty (2001). The short overview presented here is intended for illustration only and does not attempt to present a full analysis of research in this area

mobility-related exclusion. However, this paper suggests that an increase in physical mobility sufficient to tackle mobility-related exclusion, by both private and public transport, whilst undoubtedly having some benefits for some people, is contrary to government environmental aims; is likely to be financially costly; will take a long time to introduce; and is unlikely to be able to meet all of the mobility needs of all of the population. Thus, whilst an improvement in the affordability, accessibility, acceptability and availability of private and public transport could increase use and thus *decrease*, it is unlikely to represent a *complete solution to*, mobility-related exclusion.

The primary function of mobility is to give accessibility⁴. Thus, where mobility is inadequate, access is denied and exclusion can occur. In this sense, lack of mobility is a causal factor and lack of accessibility is the consequence. Perhaps, therefore, it is more useful to think about increasing *accessibility*, rather than increasing *mobility*. Following this conceptual side-step, we can consider the viability of non-mobility-related ways of accessing facilities, services, goods and social participation – we can create virtual accessibility, via Internet-based ‘virtual mobility’.

We define virtual mobility as ‘a shorthand term for the process of accessing activities that traditionally require physical mobility, but which can now be undertaken without recourse to physical travel by the individual undertaking the activity’. Thus, virtual mobility can create accessibility opportunities, enabling access where previously there was an accessibility deficit.

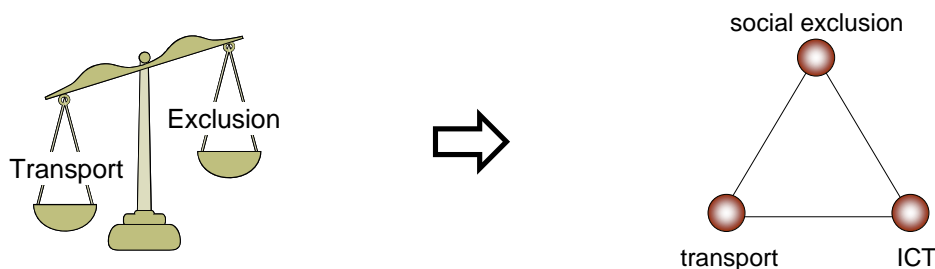


Figure 1. From two-way interaction to a triangle of influence

In introducing virtual mobility into the transport and social exclusion debate, we move beyond the *two-way* interaction between transport and exclusion that is identified within the current literature, to consider a *triangle of influence* between transport, social exclusion and ICTs. This process is illustrated by the diagrams in Figure 1. The first diagram depicts the dual interaction between transport and exclusion, where a reduction in transport is seen to result in an increase in social exclusion and vice versa. However, in introducing virtual mobility, we move to consider the second diagram. It is suggested that transport, social exclusion and ICTs interact and influence each other in ways as yet unknown and in ways which are evolving over time, at the individual, local and national levels. Thus, as an illustration, transport can influence the experience of exclusion, as can access to ICTs, at the individual level; ICTs could affect the national transport network, as could changes in the numbers of people experiencing social exclusion. The aim of the project upon which this research is based is to begin to observe these interactions and to contribute towards the development of an understanding of how each factor influences the other, to enable an understanding of the effects of change in each area upon transport policy and social exclusion.

Effects of virtual mobility - hypothesis

This research suggests that virtual mobility could act as a supplement and possibly, even, a substitute, to physical mobility, enabling access to opportunities, social networks, goods and services without (necessarily) recourse to physical mobility by the person undertaking the activity. Research that has been undertaken to date in this area has been constrained by lack of popular use of the Internet until relatively recently. Society is still adapting and it is too early to predict with certainty the long-term impacts of the Internet. Thus, this paper is to an extent speculative in terms of the issues it raises and the observations made. However, alongside this, it is apparent from this consultation that virtual mobility is happening and it is having an effect upon transport and exclusion *now*.

⁴ The authors do recognise the view outlined by Saloman (1986), citing Houseman, Reichman and Saloman, that mobility has wider functions than accessibility – indeed, that mobility is a right – however, we maintain that in considering the impact of lack of mobility upon social exclusion, we must see mobility primarily in terms of accessibility

'Virtual mobility' has been with us for many years – in fact, for as long as technology has allowed people to communicate without being face to face, today allowing people to talk with friends and family and access goods by telephone, telegraph, fax or mail, receive news by radio or television, or to participate in leisure activities or education in the home, through the printed word. More recently, virtual mobility has come to refer to activities undertaken via the Internet and it is to this type of virtual mobility that this paper now refers.

Dimension of exclusion	Influence of virtual mobility: example	Example web sites (where applicable)
1. Mobility	Overcoming the accessibility effects of constraints upon mobility through use of the Internet	-
2. Economic	Job vacancies posted online; advice about CVs; post CV online; apply online; virtual interviews. Alternative forms of credit	reed.co.uk, letslinkuk.org, peoplebank.com, support4learning.org.uk
3. Living space	Geographical isolation need not result in difficulty in shopping; participating in meetings; making new friends	tescos.com, zoom.co.uk, gingerbread.org.uk
4. Organised political	Participation in party and pressure group discussions; government consultations; contact political representatives; support and information for campaigns	amnesty.org.uk, cabinet-office.gov.uk, nottingham.gov.uk
5. Personal	Masking of characteristics leading to participation; some physical disabilities overcome through technology; support groups; online learning	rnib.org.uk, cancersupportuk.nhs.uk, gayyouthuk.co.uk
6. Personal political	Access to information about health and social care empowering vis-à-vis professionals	nhsdirect.nhs.uk, ebvonline.org
7. Societal	Community policing online; online learning	neighbourhoodwatch.net, learndirect.org.uk
8. Social networks	Virtual communities of interest; geographically based networked communities; contact with family and friends, chat rooms; support	well.org, ukchat.com, twinswolrd.com
9. Temporal	Saving time travelling leading to more time for activities	-

Table 2. Virtual mobility within each dimension of exclusion

Examples of virtual mobility include: working from outside of the office (teleworking); looking for and applying for jobs online; conducting business online; creating new and maintaining old social networks online, in virtual communities and networked communities, via email and personal web pages; accessing medical information and advice; formal and informal education; online banking; and shopping for goods (teleshopping). Through virtual mobility, it is possible to access information about almost anything, without travelling to or needing the skills and confidence to use a library. It is possible to communicate with and attempt to influence people in power, from central and local government to pressure groups or your social worker, through email, as an individual or a group and through knowledge and support gained online. One can access alternative forms of credit, for example, local exchange and trading schemes (LETS) and credit unions; make new friends and keep in touch with old ones; and 'double count time', allowing more activities to be conducted in the day, through the elimination of travel time and the ability to conduct more than one activity at once – for example, shopping online whilst supervising a child's play.

Table 2, above, shows how virtual mobility could have an influence in each of the dimensions of exclusion, identified earlier in Table 1. The data within the Table are not exhaustive and are included for illustrative purposes only.

Effects of virtual mobility – public consultation

Central to the project philosophy is a belief in participatory research – the participation of those being investigated and who will be affected by the topics and potentially the outcome of the research, in the research process (Cornwall, 2000; Masters, 2000; and Mumford, 2001). Participatory research places an inherent value in the knowledge held by the people who are to be affected by implemented social change, drawing upon both a moral obligation to involve those affected by research and change in the design and implementation of this change and an academic imperative, in gathering valuable knowledge from communities and in increasing the likelihood of project success, through participation, ownership and empowerment:

'For participatory development practitioners, a primary aim is to transform conventional development into a process of engagement *with* and *by* local people, rather than to use their own 'expert' knowledge to dictate the shape interventions ought to take...

Rather than importing concepts from elsewhere, the focus... is on enabling local people to articulate and analyse their own situations for themselves, in their own terms.' (Cornwall, 2000).

In addition to the extensive literature review, the project sought public participation on a number of levels: via an online response form; a one-day workshop with experts in the field; and a series of focus groups with people likely to experience social exclusion. This consultation served to highlight the extent to which the Internet has become an integral part of daily life for many respondents, for communication; accessing cheaper or a wider variety of goods; and as an 'encyclopaedia of everything', a tool for accessing information for every area of life. The results of the online survey and the workshop are reported in full elsewhere and it is to the emerging results from the focus groups that this paper now turns. The paper will outline the findings in three areas: firstly, do the groups suggest that lack of transport and social exclusion are linked? Secondly, could and does virtual mobility help to combat mobility-related exclusion? Finally, the paper will examine the acceptability and consequences of an increase in virtual mobility.

Aims. A series of six focus groups were undertaken with groups in society who, traditionally, are considered to be at risk of social exclusion. Table 3 details the composition and timings of the groups. The focus groups aimed to uncover the role of transport in the lives of group members by observing mobility patterns. We wished to observe not only the actual but also the perceived influence of transport upon daily activities, to observe the extent to which participants recognise the role of travel, or lack of travel, in their lives. A more difficult aim was to uncover the extent to which lack of access to adequate transport affects quality of life – to uncover the activities that participants are prevented from undertaking because of transport difficulties – and the possible influence of an increase in physical mobility. Through this, it was hoped that it would be possible to begin to understand the influence of lack of physical accessibility upon lifestyle and the experience of exclusion, to observe the dimensions of exclusion that could be affected by changes in accessibility.

Through discussion about current use of ICTs – the telephone, mobile phones, television and computers – and patterns of Internet use – what people use the Internet for and why – the groups aimed uncover the extent to which participants are 'virtual mobility ready'. The discussion aimed to highlight Internet access issues – who currently has access to the Internet and whether or not decisions regarding access and non-access are self-selected or are rooted in wider issues of social exclusion. We were also interested in participants' current awareness of the full functions and possibilities of the Internet. The group discussions aimed to determine whether or not the Internet is part of everyday life, influencing quality of life or acting only as a form of entertainment. The groups introduced the concept of virtual mobility to participants, prompting discussion regarding the acceptability, accessibility, affordability and availability of virtual transport, vis-à-vis the physical alternative and the extent to which this form of mobility could enhance or possibly reduce participants' quality of life. A topic guide was used to structure the debate around four discussion areas: to uncover the role of physical mobility in people's daily lives; to discuss the potential impact of an increase or decrease in physical mobility; to find out about the extent of use and role of ICTs, in particular the Internet, in daily life; and to discuss the potential impact and acceptability of virtual mobility as both a substitute for and a supplement to physical travel.

Composition. Through careful consideration of the composition of the focus groups, it was possible to gain input in to the research from representatives from a wide population. Group characteristics were selected to reflect both the clustered nature of exclusion, drawing participants from defined geographical communities and the scattered nature of exclusion, selecting participants from person-centric criteria. Representatives were sought from people living in both rural and urban areas, to ensure that the differences between urban and rural areas in terms of transport, Internet access and access to other ICTs, access to services and the different experience of poverty and exclusion as a result of differences in living space were considered. More person-centric attributes from which representation in the focus groups was sought include older people, young people, people from minority ethnic groups (including refugees and asylum seekers) and lone parents. Each of these characteristics can indicate a higher propensity to the experience of exclusion, in particular, poverty, isolation and reduced access to adequate mobility.

Are transport and social exclusion linked? In discussing the role of transport in daily lives, participants were asked to talk about how they currently travel and the reasons underlying use of these modes. This uncovered significant differences in travel choices, influenced by the

characteristics of the group. It emerged that participant characteristics influence both the availability and use of different modes and that, as hypothesised, lack of access to physical mobility directly results in a reduced access to participation.

Date	Location	Composition
12/09/01	Semi-rural, Hampshire	55+, mixed gender, retired, ABC1. Mix of car/public transport users. All seen demonstration of Internet; at least half regular users. (7 participants).
12/09/01	Semi-rural, Hampshire	16-18, mixed gender, mix of school leavers/sixth formers, ABC1. Mix of car/public transport users. All seen demonstration of Internet; at least half regular users. (7 participants).
19/09/01	Urban, Hartlepool	Users of online community centre. Mixed age, gender, employed/ unemployed, children, C2DE. Mix of car/public transport users. All regular Internet users. (7 participants).
20/09/01	Urban, Stockton	Users of online community centre. Mixed age, gender, children, all unemployed, C2DE. Mixed ethnicity – half refugees or first generation immigrants. Mix car/public transport. All regular Internet users. (7 participants).
21/09/01	Semi-rural, Hampshire	25-50, mixed gender, employed/ unemployed, ABC1. Lone parents with children under 12. Mix car/public transport. All seen demonstration of Internet; at least half regular users. (7 participants).
25/10/01	Urban, Hampshire	18-40, mixed gender, employed/ unemployed, C2DE. Mix car/public transport. At least half never seen demonstration of or used the Internet. (9 participants).

Table 3. Focus group composition

The discussions corroborated hypotheses in the transport and social exclusion literature. There is strong evidence to suggest that modal choices, that is, the modes available for use and the modes used by the participant, are restricted by the following characteristics: economic status; location; and age. There was little evidence to suggest that other characteristics, although significantly influencing the likelihood of experiencing poverty, were significant in influencing modal choice. Indeed, each of these characteristics is seen by participants to remove the element of choice from their transport decisions. For many people, primarily but not exclusively those on low incomes, not only is car ownership beyond their means, but making a journey by car, or by public transport – bus, taxi and train – and as a passenger in a friend or family member’s car (an important source of mobility for many participants) is often unaffordable and/or unavailable. It emerged strongly that the choice of whether or not to travel is often determined by finances. If participants cannot afford to travel, the journey will either be made on foot, or not made at all. If a journey by motorised transport is necessary, sacrifices are made in other areas of life and journeys are prioritised, in order that the essential journeys can be made. It is not only the cost of transport that is exclusionary. The routings, timings and accessibility of public transport in particular, strongly influenced by location and participant needs – with more people on lower incomes, people outside of employment (linked to age) and with children travelling off-peak or on non-radial journeys – are seen to contribute towards exclusion, affecting participants’ access to activities.

In discussing daily activities that require travel away from the home, it emerged that, whilst characteristics do not appear to influence the types of activities that are undertaken, they do influence the number and the location of activities. People with access to a car and people in employment – despite having less free time available for travel – are observed to fulfil more activities and to travel further than other participants, highlighting the influence of access⁵ to motorised mobility upon accessible activity ‘zones’, or ‘time-space prisms’ (Golob and Regan, 2001) – the activities that are available to an individual taking into account travel time and the time taken to undertake the activity – resulting in severely localised horizons for many participants.

It became clear that the activities that participants have been unable to undertake because of mobility difficulties are not just superficial activities, but are those which influence the quality of life and the life chances of participants. Participants discussed how lack of or reduced access to transport has prevented them from visiting, or attending nights out with, friends and family; prevented attendance at a first choice college; and has stopped them from being able to take children on day trips or evenings out. One participant had been prevented from attending a funeral because of lack of transport. Two had been unable to attend a family member’s wedding; and another discussed how an ‘African night’ that he is trying to organise for his fellow refugees, to showcase African music and culture to the residents of the area to build contacts and

⁵ In terms of accessibility, affordability and availability of convenient routes and timings

understanding between the communities, is facing difficulties because of the lack of adequate transport between refugee settlements.

Participants in all groups discussed the need to travel out of their home town or village to access employment opportunities – without mobility, participants have been unable to find employment. Participants also discussed being unable to access information; being unable to access quality groceries at reasonable prices; having difficulties shopping for other goods; finding it difficult to get to medical appointments; and having an inability to multi-task, or to complete a single activity, for example, shopping, in a single journey, with the result that the number of activities that can be undertaken on any one day is reduced, directly resulting in time poverty. Thus, it is apparent that transport is directly related to participation in activities. The authors would go as far as to suggest that for many participants, transport is not only a constraint on activities but is a direct determinant of the ability to undertake the activity.

Could or does virtual mobility help to overcome mobility-related exclusion? It emerged that not only is 'virtual mobility readiness' high amongst participants, but that participants are already supplementing and, on occasion, substituting for access to, physical mobility, with virtual mobility.

	Access	Home	Work/college/ school	Centre	Other	No access
Group 1	3 (of 7)	3	0	0	3	1 ⁶
Group 2	7 (of 7)	6	6	0	1	0
Group 3	7 (of 7)	2	0	7	0	0
Group 4	7 (of 7)	3	0	7	0	0
Group 5	6 (of 7)	2	2	0	2	1
Group 6	6 (of 9)	3	3	0	3	3

Table 4. Internet access by group

ICT exposure amongst participants is high, across all characteristics and suggests a readiness for virtual mobility. Text messaging and the popular use of Teletext illustrates comfort with visual communication and with importing information into the home, indicating that text-based communications and electronic information are valued by and have a value to participants. Access to the Internet, however, is more varied, according to characteristics, primarily economic status; age; (un)employment status; and education levels, which influence the point of access – primarily, in the home, workplace/college or friend/family member's home. This highlights the importance of community access points, without which participants in groups 3 and 4 would be excluded.

In examining participants' use of the Internet, it is possible to identify the extent to which Internet use is currently substituting for, or acting as a supplement to, offline 'real world' activities. As was observed in regard to daily activities involving travel, the types of Internet activity undertaken by participants do not appear to vary greatly with characteristics. It is the access to the Internet, as it is the access to motorised mobility, which is seen to vary with characteristics – the same characteristics that restrict access to mobility are repeated in determining access to the Internet, highlighting the dangers of a double exclusion, from both physical and virtual mobility (discussed below). Participants' use of the Internet is given in Table 5.

As Table 5 illustrates, the primary uses of the Internet can be grouped into three categories: work/education; entertainment; and daily chores. Within this, the primary uses are: communication; shopping; and research, or use of the web as an 'encyclopaedia of everything'. It is important to stress that the Internet is seen to have an impact upon quality of life – it is not just an entertainment medium, although use of the Internet as entertainment is high, but it is a tool which empowers participants, giving access where previously access was low.

In discussing Internet use, it emerged that substitution for physical travel is low. Participants tend only to use the Internet *instead of* travel in fulfilling their daily chores – for example, shopping and banking. In discussing reasons for using the Internet, participants did not naturally give substituting for physical mobility as a reason: suggesting instead that it is faster, or easier, to use the Internet, freeing time for other activities in the place of the time taken to undertake the activity in person, rather than the time taken to travel to the activity. At this level, it would appear that the mobility impact of the Internet is and will be slight.

⁶ In this group, 3 people who did not use the Internet could access at a friend or family member's house, if they wanted to. Thus, strictly speaking, only 1 had *no* access, but 4 *did not* access the Internet, despite having a point of access

Work, education and voluntary work, escort	Entertainment / social / leisure	Daily life
Research for college work Research for children's homework Pictures to colour, posters, stories Medical information, diagnosis Online courses Street maps Benefits advice College/university information/applications Communicate with colleagues, business contacts Finding information for others, print and send	Entertainment listings – cinema listings, clubs TV listings Communicate with friends and family – email, web cam, personal web pages, voice chat Communicate with strangers/new friends Information about hobbies – music, gardening, recipes Purchase cinema/theatre tickets Downloads – ring tones, music, games Football results Information about day trips/holiday areas General surfing Gambling Reading, poetry Browse auction sites	Shop: for groceries, clothes, shoes, holidays, flights, car, CDs, books, gardening, magazines, insurance, jewellery, flowers, gifts Banking Medical information, diagnoses News(papers), UK and overseas Recipes Job search, application

Table 5. Internet activities

However, when examining Internet activities more closely, it emerges that the majority of activities are *in addition* to activities undertaken if Internet access is not available. In the words of one participant, the Internet provides access to activities that participants cannot ordinarily do, because of lack of access. Thus, participants would not ordinarily be able to access specialist medical information, lacking the money, time, skills, contacts, confidence or mobility to research in a library; they would not ordinarily be able to communicate with friends abroad, because of the cost of telephone calls, inadequate postal systems or the time or money to visit. Participants search for jobs and apply for jobs online, where previously they could not because they could not travel to the job centre; they take courses online, where previously they could not travel to college.

The focus groups suggest that, rather than influencing *existing* mobility, having a substitution effect on physical travel, the real value of the Internet lies in its ability to substitute for an *increase* in physical mobility. Where participants cannot access information, goods, entertainment, communications and opportunities offline, there is compelling evidence to suggest that they are turning to the online world to fulfil these accessibility needs. Thus, the Internet is being used as a supplement to physical travel, where physical travel is unavailable. This finding would suggest that there is the possibility that virtual mobility could alleviate some aspects of social exclusion that are caused by lack of access as a result of exclusion from adequate mobility. Virtual mobility is already acting to alleviate mobility-related exclusion.

Problems with virtual mobility. However, there are a number of issues with virtual mobility: differential access to virtual mobility; the acceptability of virtual mobility, related to the social effects of the online world; and the hypothesised transport effects. It is to these concerns that this paper now turns. Firstly, there is a strong possibility that a 'virtual mobility-related dimension' to exclusion could occur. There is a digital divide in the UK – a gap in access to ICTs that is determined by an individual's characteristics. As illustrated above, those who experience social exclusion and mobility-related exclusion are likely also to be excluded from access to the Internet and that without access to the Internet, disadvantage and exclusion will be further reinforced (Graham, 1999, PAT 15, 2000). The financial barrier to in-home connection is clear and was restated in the focus groups, not only in terms of initial purchase of hardware and software but in paying for and sustaining telephone line connection and the credit approval, or bank account, necessary to sustain connection. Access to the Internet also requires skills, knowledge and, importantly, exposure, most often in the workplace or via family and friends, without which both the ability and the inclination to go online will be lacking. The lack of exposure to the benefits of the Internet and, even amongst those online, an awareness of the possibilities of the Internet, are key barriers to its effective use and to its use as a supplement to physical travel. In light of this, the importance of online community centres and of appropriate marketing of the Internet and the concept of virtual mobility, to increase exposure and inclination to go online, cannot be overstated.

Despite the fact that participant are already engaged in virtual mobility and despite the ready acceptance of ICTs into their lives, the concept of virtual mobility is not readily accepted. Participants expressed concern about the social effects of the online world, closely paralleling

concerns in the literature, with regard to the decline of human relations; the importance of face to face and physical contact; an increase in social isolation; deception and misrepresentation in the online world; and the decline of community (Adams, 2000; Graham, 2000; Hamburger and Ben-Artzi, 2000; Cornwell and Lundgren, 2001 – contrary views from Rheingold, 2000; and Baym, 1995). However, when questioned, participants could only discuss an extension of community and contacts online – there was no evidence of a negative social impact as a result of the online participants' lives. This is also the case in the literature – there is little writing of substance that suggests that either side of the debate has the upper hand. What is clear, however, is that level of exposure to the Internet is directly related to the level of concern about negative social effects – the more experienced Internet users were highly sceptical about negative social effects, whilst the reverse was true for less experienced users. The influence of the media upon perceptions is also observable, with participants citing news stories and television fiction, particularly Coronation Street's Internet abduction story line, as evidence of the dangers of the Internet. The authors suggest that at this stage, discussion about and acceptance of virtual mobility will be influenced by concerns about the negative social effects – however, these concerns will decline with increased popular exposure to the Internet.

Finally, the transport effects of virtual mobility. Participants did discuss some substitution effect of Internet access – however, the majority of Internet use was as a supplement to existing physical travel and a substitute to increased physical travel. There was no evidence of current or future Internet use being motivated by a desire to undertake alternative travel to alternative activities. Thus, from this limited study, it would seem that the transport effects of virtual mobility will be largely in stemming an increase in travel. Concerns in the literature regarding an inevitable increase in physical mobility in response to the use of ICTs have long been hypothesised (for example, Black, 2001; Graham, 1998; Graham and Marvin, 1999; Nilles, 1994; Golob and Regan, 2001; and Salomon, 1986). It is true that earlier forms of ICT, including the telephone, wireless, telegraph, mail, radio and television, have not led to a reduction in the amount of travel – indeed, that travel has increased apace with advances in ICTs. However, the imperative to reduce travel and the disbenefits to the individual of travel have never been as stark as today; nor has such a rapid adoption or development of ICT been observed.

Concluding remarks

The Internet naturally attracts enthusiastic speculation regarding what it can or will do and what the consequences might be. At the turn of the millennium we were momentarily caught up in a 'dot.com' frenzy as large sums of money were invested in companies providing on-line services. Many in the financial sector seemed convinced that people would be turning in their hoards to spending time and money on line. The fact that the dot.com bubble in many cases subsequently burst is a stark reminder that we should not be hasty in reaching conclusions regarding what impacts the Internet and virtual mobility will have on society and transport.

Much consideration to date regarding the various forms of ICT has concerned the resulting consequences for transport, notably whether or not travel demand is reduced or increased. This paper has traced recent developments in research and government policy and highlighted that a third dimension must be added to consideration of transport and ICTs - namely social participation (and the consequences for quality of life). Preliminary observations from the exploratory qualitative research undertaken suggest that virtual mobility may (already) be performing a role in improving people's quality of life by enabling them to enrich their lives through participation in new on-line activities without a requirement for increased physical mobility. At the same time, evidence of virtual mobility substituting for and thereby reducing existing levels of physical mobility is scant. These observations highlight an important point. In terms of addressing the problem of social exclusion it is not a discrete choice between enhanced physical access or enhanced virtual access. This research highlights that the two can work together to improve social participation. However, the research has also pointed to the concern that differences in the level of virtual access between individuals can reinforce or augment exclusion caused through differences (deficits) in real-world access.

There is a need to better understand the triangle of influence highlighted in this paper. However, attaining an improved understanding is complicated by the evolving, and in some cases rapidly changing, underlying issues. Access to the Internet across the population is rapidly increasing. The quality and range of services available on the Internet today has the potential to be dwarfed by those of future on-line services. People's familiarity with the Internet and incorporation of its use

into their daily lives is increasing. Daily routines are being adjusted though not necessarily in dramatic and easily observed ways. The aim of this paper and the research behind it has been to raise the profile of this important convergence of three driving forces in our everyday lives - social participation, transport and telecommunications. It is a complex topic but one that requires further study. National statistics institutes are now active in periodically monitoring Internet access and usage. However, to date there appears little if any detailed monitoring of Internet access and use alongside transport access and use. Monitoring is urgently required although the research methods employed will need to be sensitive to the often subtle causes and effects that are at play.

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