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MOBILITY SYSTEMS

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This paper discusses mobilities from the viewpoint of the systems that structure, organise and permit multiple mobilities. This is considered both historically and in the current century. The paper shows that in the twenty first century interdependent digitised systems of mobility are at the core of contemporary societies. It also shows more generally that the study of mobilities cannot but be central to deciphering the principal contours of life in a world that combines exceptional freedom (at least for some on some occasions) and exceptional system dependence. Methods and theories need to be ever on the move to keep up with new systems of individualised scheduling and of system structuring and monitoring.

Key words : Mobilities, System, Presence, Absence.

All the world seems to be on the move. Asylum seekers, international students, terrorists, members of diasporas, holidaymakers, business people, slaves, sports stars, refugees, backpackers, commuters, the early retired, young mobile professionals, prostitutes – these and many others seem to find the world is their oyster or at least their destiny. Criss crossing the globe are the routeways of these many groups who intermittently encounter each other in

transportation and communication hubs, as they search out in real and electronic databases the next coach, message, plane, back of lorry, text, bus, lift, ferry, train, car, web site.

The scale of this travelling is immense. It is predicted that by 2010 there will be at least 1 billion legal passenger arrivals each year (compared with 25 million in 1950); at any one time 300,000 passengers are at any time in flight *above* the US, equivalent to a substantial city; 31 million refugees roam the globe; and there are 700 or so million cars. 'Travel and tourism' is the largest industry in the world. And this mobility affects almost everywhere, with the World Tourism Organisation publishing travel statistics for over 180 countries, with most sending and also receiving significant numbers of visitors. Schivelbusch states for 'the twentieth century tourist, the world has become one large department store of countrysides and cities', although of course most people in the world can only dream of voluntarily sampling that department store on a regular basis (1986: 197).

This pattern of mainly but not entirely voluntary travelling is the largest ever-peaceful movement of people across borders. Such travel shows little sign of *substantially* abating in the longer term even after September 11, SARS, Madrid bombings and other global catastrophes. Being physically mobile has become for both rich and even for some poor a 'way of life' across the globe, with Iyer identifying: 'an entirely new breed of people, a transcontinental tribe of wanderers...the transit loungers, forever heading to the departure gate' (undated: 6; and see 2000).

Objects too are on the move. Recent developments include the multinational sourcing of different components of manufactured products from around the world as labour costs are squeezed. There are just-in-time delivery systems so that components are delivered by long distance trucks only as they are required. The 'cosmopolitanization' of taste means that consumers in the 'north' expect products and especially fresh foodstuffs from around the world 'air-freighted' to their table. And there are massive flows of illegal if very valuable goods including drugs, guns, cigarettes, alcohol, and counterfeit products (such as DVDs).

This movement of people and objects is hugely significant for the global environment with transport accounting for one-third of total carbon dioxide emissions. Transport is the fastest growing source of greenhouse emissions, and with the predicted growth of car and lorry travel within China, global warming and many 'refuseniks' (as in the George W Bush White House), there is little likelihood of this abating. Many other 'environmental' consequences follow from the growth of mass mobilities, reduced air quality; increased noise, smell and visual intrusion; ozone depletion; social fragmentation; and many medical consequences of 'accidental' deaths and injuries, asthma and obesity.

Simultaneously and paradoxically the internet has grown more rapidly than any previous technology, with significant impacts throughout much of the world. There are soon to be 1 billion users worldwide. What I term 'virtual travel' has yet to slow down the growth in physical travel. Mobile telephony based on many societies jumping direct to this new technology is calling into being new ways of interacting and communicating across very many different societies, especially in some less well-developed which have jumped directly to mobile rather than landline phones.

These converging mobile technologies may come to transform many aspects of economic and social life increasingly conducted in some sense on the 'move' or away from 'home'. In a mobile world there are extensive and intricate connections between physical travel and modes of communication that seem to be forming new fluidities and difficult to stabilize. Material changes appear to be 'de-materialising' connections, as people, machines, images, information, power, money, ideas and dangers are 'on the move', making and remaking connections at often rapid speed around the world.

Issues of movement, of too little movement for some or too much for others or of the wrong sort or at the wrong time, are central to many lives and organisations. From SARS to train crashes, from airport expansion controversies to SMS texting on the move, from refugees to global terrorism, from obesity caused by the 'school run' to oil wars in the Middle East, issues of 'mobility' seem centre-stage on many academic and policy agendas.

Partly in response analysts are mobilizing a 'mobility turn' that is spreading into the social sciences, mobilizing analyses that historically have been static, fixed and concerned with a spatial 'social structures'. Contributions from cultural studies, feminism, geography, migration studies, science studies, sociology, transport and tourism studies and so on are contributing to this transformation of the human sciences. This turn emphasizes how all social entities presuppose an array of movements. The turn connects the analysis of different forms of travel, transport and communications with how social life is performed and organized through time and across various spaces. Analyses of the complex ways that social relations are 'stretched' across the globe are generating theories, research findings and methods that are 'mobilizing' analyses of the social ordering achieved on the move and contingently as a process of flow.

Such a generic 'mobilities' includes various kinds and temporalities of physical movement, ranging from standing, lounging, walking, climbing, dancing, to those enhanced by technologies, of bikes, buses, cars, trains, ships, planes, wheelchairs, crutches. Movements examined range from the daily, weekly, yearly and over lifetimes. They also include movements of images and information on multiple media, as well as virtual movement as communications are effected one-to-one, one-to-many and many-to-many through networked and increasingly embedded computers. A mobilities turn also involves examining how the transporting of people and the communicating of messages, information and images may overlap, coincide and more recently converge through digitised flows. And the ways in which physical movement pertains to upward and downward social mobility is also central to a mobilities analysis. Moving between places physically or virtually can be a source of status and power, an expression of the rights to movement temporarily or permanently. Or where movement is coerced it can be generate deprivation and suffering.

Analysing mobilities thus involves examining many consequences for different peoples and places located in what we might call the fast and slow lanes of social life. There is the proliferation of places, technologies and 'gates' that enhance the mobilities of some while reinforcing the immobilities of others. And mobilities are often also about duties, about the obligation to see the other, to return the call, to visit the ageing relative. These networks of often

reciprocal obligations between people are the stuff of life, of how families, work groups, political organisations perform themselves and develop over time.

Moreover, the time spent traveling is not dead time that people always minimize. Activities occur while on the go, being on the move can involve 'occasional' activities. Mobilities often involve an embodied experience of different modes of travel, seeing them in part as forms of material and sociable modes of dwelling-in-motion, places of and for activities in their own right, to climb a mountain, to do a good walk, to take a nice train journey (Lyons, Urry 2005).

Mobilities also entail risks, accidents, diseases, trafficking, terrorism, surveillance and environmental damage. The contemporary mobile world seems to be characterised by awesome new dangers as well as new opportunities for mobile risky lives.

Mobilities have been a black box for the social sciences, mainly regarded as a neutral set of processes permitting forms of economic, social and political life explicable by other more causally powerful processes. To the extent to which transport and communication studies occurred they were in separate categories with little interchange with the rest of social science. The social sciences have *neglected* various kinds of physical movement and communications and how they are economically, politically and socially organized. Thus holidaymaking, walking, car driving, phoning, flying and so on are ignored by the social sciences although they are manifestly significant within people's lives. Further there has been *minimization* of the significance of movement for work, family life, leisure, politics and protest. They all involve movement or potential movement and these affect the form taken by social entities. Moreover, the social sciences overly concentrate upon *subjects* interacting together and ignore the highly enduring systems that provide what we might call the infrastructures of social life. Such systems enable the movement of people, ideas and information from place to place, person-to-person, event to event, and yet their economic, political and social implications are mostly unexamined in social science.

Each of these intersecting 'mobilities' presupposes a 'system' (in fact many such systems). These systems make possible movement: they provide 'spaces of anticipation' that the journey can be made, that the message will get through, that the parcel will arrive. Centrally important here are

systems that permit predictable and relatively risk-free repetition of the movement in question. Systems enable repetition or iteration. In the contemporary world these systems include those of ticketing, oil supply, addresses, safety, protocols, station interchanges, web sites, money transfer, inclusive tours, luggage storage, air traffic control, barcodes, bridges, timetables, surveillance and so on.

The history of these repetitive systems is in effect the history of those processes by which the natural world has been 'mastered' and made secure, regulated and relatively risk free. For people to be able to 'move', and for them in turn to move objects, texts, money, water, images, is to establish how it is that nature has been subdued (on nature see Macnaghten and Urry 1998; Latour 2004). There is a metabolism that is effected by human societies over the physical world especially through developing and spreading diverse 'mobility-systems'.

Marx wrote: 'Nature builds no machines, no locomotives, railways, electric telegraphs, self-acting mules, etc. These are products of human history...of human participation in nature' (1973: 706). In that human participation *in* nature it is the production of ever more extensive systems of circulation that is of central significance, as both process and as discourse. This was so especially following Harvey's discovery of how blood circulates within the human body and Galileo's notion that a natural state is to be in motion (and not at rest). Circulation is a powerful notion here that had many impacts upon the social world; thus : 'Enlightened planners wanted the city in its very design to function like a healthy body, freely flowing....the Enlightenment planner made motion an end in itself' (Sennett 1994: 263-4). Virilio maintains that systems are increasingly developed in which there is an obligation to be circulating, and this is true of water, sewage, people, money, ideas (1986). There is in the modern world an accumulation of movement analogous to the accumulation of capital – accumulations of repetitive movement or circulation made possible by diverse, interdependent mobility-systems.

Historically many of these currently significant systems date from England and France in the 1840s and 1850s. Their interdependent development defines the contours of the modern mobilised world that brings about the 'mastery' of the physical world. In mid-nineteenth century Europe nature gets dramatically and systematically 'mobilised'. Systems dating from that

exceptional moment include a national post system (the Penny Post), the invention of photography and their use within guide books (Daguerre in France, Fox Talbot in England), the first railway age and the first ever national railway timetable (Bradshaws), the first city built for the tourist gaze (Paris), the first inclusive or 'package' tour (organised by Thomas Cook), the first scheduled ocean steamship service (Cunard), the first railway hotel (York), the early department stores (in Paris first in 1843: Benjamin 1999: 42), the first system for the separate circulation of water and sewage (Chadwick in Britain) and so on (as well as the first telegraph message in the US in 1844). In 1854 Thomas Cook declared as a slogan for the period: 'To remain stationary in these times of change, when all the world is on the move, would be a crime. Hurrah for the Trip – the cheap, cheap Trip' (quoted Brendon 1991: 65).

The twentieth century then of course saw a huge array of other 'mobility-systems' develop, including the car-system, national telephone system, air power, high speed trains, modern urban systems, cheap air travel, mobile phones, networked computers and so on. And as we move into the twenty first century these 'mobility systems' are developing some novel characteristics now briefly summarised.

First, such mobility-systems are more complicated, made up of many more elements and based upon an array of specialized and arcane forms of expertise. Mobilities have always involved expert systems but these are now highly specific, many being based upon entire university degree programmes and specialised companies. Second, such systems are much more interdependent with each other so that individual journeys or pieces of communication depend upon multiple systems, all needing to function and interface effectively with each other. Third, since the 1970s onwards, systems are much more dependent upon computers and software. Software we might say paraphrasing Thrift writes mobility (2001). There has been a massive generation of specific software systems that need to speak to each other in order that particular mobilities take place. Pervasive computing produces a switching and mobility between different self-reproducing systems, such as the internet with its massive search engines, databases of information storage and retrieval, world money flows especially through the ubiquitous 'spreadsheet culture', intelligent transport systems, surveillance systems and so on. Fourth, these systems have become especially vulnerable to what Perrow terms 'normal accidents', accidents that are almost certain

to occur from time to time, given the tightly locked-in and mobile nature of many such interdependent systems (1999).

So what is the point, we might ask, of such increasingly complex, computerised and risky systems? As daily and weekly time-space patterns in the richer parts of the world are desynchronised from historical communities and place, so systems provide the means by which work and social life can get scheduled and rescheduled. Organising 'co-presence' with key others (workmates, family, significant others, friends) within each day, week, year and so on becomes more demanding with this loss of collective coordination. 'Clusters' dissolve into what Wellman terms 'personalised networking', a person-to-person connectivity most revealed now with those machines that enable immediate, mobile connectivity. The greater the personalization of networks, the more important are systems to facilitate that personalization. There is a spiralling, adaptive relationship effected through 'scheduling systems', while of course much of the world's population are unable to participate in a life on the move and are thereby more socially excluded.

With de-synchronization the use of scheduling becomes more necessary. There is an increasingly 'do-it-yourself' scheduling society commonplace in at least large cities across the world. And the greater the personalization of networks, the more important are systems to facilitate that personalization. There is a spiralling, adaptive relationship between systematisation and personalization and this is effected through the 'personal schedule' (including various technologies of such rescheduling). There are irreversible changes taking place that are moving social connections towards person-to-person networks requiring specific personalised scheduling systems in order for life on the intermittent move to take place. And those systems are especially necessary as system risks and failures abound and arrangements need to be endlessly renegotiated.

The importance of such systems in turn transforms individuals who are moving around and being moved around. According to Giddens many people exercise an apparently increased freedom and choice and are less determined in life choices by overarching *social* structures, such as family, age or career (1994). And as people move around developing these very varied and personalised life projects so they can extend their personal networks. There is said to be increased 'agency',

changing social structures forcing more personalization. This also results from how contemporary capitalism presupposes and generates increasingly expressive bodies. In order to develop those bodies in their rich and complex variation, so bodies are on the move, buying and indulging new experiences in new places and buying them for real or ironically. Expressive capitalism develops into a mobile and mobilising capitalism.

But as people exert apparently increased 'agency', so information about them as human subjects gets left behind in traces. Indeed we might say that movement now is almost never without those traces left on many computers, including mobile phone records, ATM use, creditworthiness ratings, CCTV images, differentiated insurance rates through GIS software, hotel bookings, GPS data, fingerprints, travel itineraries, bibliometric data and so on. Humans are progressively reconfigured as bits of scattered information distributed across various 'systems' of which most are unaware. Individuals thus exist beyond their private bodies. They leave traces of their selves in informational space, as they are more readily mobile through space because of 'self-retrieval' at the other end of a network. People are able to 'plug into' systems of information through which they can 'do' things and 'talk' to people without being present in a particular place. Illocutionary acts used to require co-presence and utterances in public; they now require a click on 'ok'. Much of what was once 'private' already exists outside of the physical body and outside we might say the 'self'. The self is spread out as a series of traces in mobile cyber/space.

In particular as vast numbers of people are on the move so these traces enable them to be subject to systems of intrusive regulation. In what has been called the 'frisk society', places are increasingly like airports using novel systems of monitoring, surveillance and regulation to control those mobile bodies. As those bodies are on the move so the world is increasingly organised to control and regulate personal schedules, through gates, camps, sniffer dogs, CCTV cameras, face recognition biometric cameras, smart cards, iris recognition, satellites, listening bugs and Total Information Awareness. Human life comes to depend upon sorting systems, systems of increasingly detailed detection, to determine who or what should enter and exit, including cyber-imagery of 'strangers' and 'familiar'. Systems are morphing into a Big Brother that would have George Orwell turning in his grave.

Rather than there being a single ‘observing tower’ of the panopticon as described by Michel Foucault, there now is a ubiquitous panopticon in which no single sovereign or state official is in control. Everyone is inside what we might describe as a ‘global panopticon’ with multiple systems necessary for ‘security’. As populations are on the move so what Foucault terms societies of security develop fluid systems of ‘mobile security’.

Moreover, as people travel so there are ‘strangers’ in their midst appearing on ubiquitous mobile, computer and TV screens - in the workplace, home, car, airport, shopping centre, post office, bar, store, garage, train, aircraft and so on. People seem to ‘know’ many such strangers, and many strangers are in turn monitoring, regulating and recording each other’s movement. Mobility systems seem to involve transformations of much social life. ‘Human beings’ are in some way different by virtue of their mobile interchanges with ‘others’ locally, nationally and across the world. Because of landline phones, mobile phones and mobile text messaging, there are what Licoppe terms a more continuous pattern of mediated relationships, involving a distinct blurring of the boundaries of co-presence and physical absence (2004).

More generally, while there appears to be increased freedom (as Microsoft says: ‘where do you want to go to today?’), there is simultaneously more dependence upon systems that strip people of certain human powers, sense of the self and abilities to move unnoticed. There is a pervasive and increasing switching and mobility *between* different systems, such as the internet with its massive search engines, databases of information storage and retrieval especially relating to each individual, world money flows especially through a ‘spreadsheet culture’, intelligent transport systems, vision machines, GIS/GPS systems and so on. As people increasingly lament it is almost impossible to get ‘lost’ these days because of the interconnectedness of these multiple, intersecting systems, until of course they break down and systems crash, something that as Law emphasises in relationship to almost all closely coupled systems is a routine happening (2005).

Further, the twenty first century will see new kinds of ‘machines’ enabling ‘people’ to be even more personally mobile through space, forming connections ‘on the go’ often indeed with strangers. ‘Persons’ will occur as various nodes in multiple machines of inhabitation and mobility. The twenty first century will be the century of machines inhabited by individuals or

very small groups. Such machines are closely interwoven with the corporeal (the Walkman, the mobile phone and the personal organiser being primitive forerunners). There will be increasing convergence between transport and communication, 'mobilising' the requirements and characteristics of co-presence. Storage in such machines is digitised and hence is not only just-in-time but also just-in-space. Such inhabiting machines entail a person-to-person connectivity. There is a shift from place-to-place to person-to-person communities facilitating the development of what Rheingold terms 'smart mobs' (2002).

Thus there is an adaptive and co-evolving relationship between systematization *and* personalisation that irreversibly moves the world into new configurations of what Latour terms 'circulating entities' (1999). Circulating entities for this coming century are complex, arcane and risky systems that facilitate the speeded up circulation of people, goods and information. These systems produce *and* presuppose personalised networking and 'do-it-yourself' scheduling through machines that are individualised, smart and corporeal. Circulating entities we might say are increasingly productive of circulation itself.

So while it is true that all societies have involved multiple mobilities, the twenty first century places interdependent digitised *systems* of mobility at its very core. This is why their study cannot but be central to deciphering the principal contours of life in a world that combines exceptional freedom (at least for some on some occasions) and exceptional system dependence. We might say that we can go wherever we want to go but only because Big Brother got their first and always knows (if the systems have not crashed) where we are choosing to go, with whom we are going, where we have been and where we are likely to go next. These changes involve novel, extensive and 'flickering' combinations of the presence *and* absence of peoples, enemies and friends that new mobilities are bringing about as the new century unfolds. Methods and theories need to be ever on the move to keep up with new forms of mobility, new systems of scheduling and monitoring and new pervasive modes of mobilised social inclusion and massive social exclusion.

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