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Transport: challenging disabling environments

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Abstract

This article brings together the concerns of environmental and disability movements through examining the role of transport. Both movements critique current transport policy and practice. The disability movement has analysed how it marginalises the needs of disabled people, while environmentalists argue current transport trends are unsustainable and marginalise alternatives. Although these critiques operate independently and even seem opposed to each other, a common agenda can be developed through extending the social model of disability. The social model can be used to understand how car dominated transport systems can be understood as disabling populations larger than those conventionally recognised as "disabled". The car offers the technological fix of enabling abilities, in particular speed and strength, but in practice disables in a number of ways. Urban sprawl and traffic increase barriers to participation and access for many both "able-bodied" and "disabled", while car dominance damages social interaction and limits sensory perception. Furthermore, the car economy is a major cause of impairment through crashes and physical inactivity. Understanding these together requires integrating the social model of disability with an eco-social model of impairment. This can show how unequal forms of social organisation are embodied in people and environments to produce patterns of impairment, disability and disadvantage. Finally we suggest policies that point towards sustainable societies with increased opportunities for broader social participation. The article argues that the two movements can create and benefit from a shared vision of socially inclusive, low energy, sustainable transport.

Keywords

Transport from an environment and disability perspective

Transport is discussed critically in both the environmental and disability literature. However, despite potential commonalities, connections are rarely made between the two critiques and they seem to conflict.

The environmental movement criticises energy intensive, fossil fuel powered transport, with climate change seen as the predominant, potentially catastrophic, environmental threat (Monbiot 2007). Transport is the fastest growing source of greenhouse gas emissions. With rapid motorisation in China and India and ongoing rises in richer countries' emissions, transport emissions are predicted to rise threefold by 2030 (Woodcock et al. 2007).

Climate change occurs in the context of broader ecological strain: the Intergovernmental Panel on Climate Change state (2007:5): "The resilience of many ecosystems is likely to be exceeded this century by an unprecedented combination of climate change, associated disturbances and other global change drivers." Transport is implicated in environmental problems from oil spills to urban air pollution. Road building carves up habitats, isolating species and facilitating other forms of resource exploitation, most notably rainforest logging. Land hungry cars allow functional segregation, creating sprawled, low density living with a high environmental footprint. Runoffs from roads cause water pollution and flooding.

Meeting UK climate change targets requires major changes in transportation, including significant behavioural change. Increased active transport (walking and cycling) combined with public transport could play a substantial role in meeting greenhouse gas targets and would dramatically improve public health (Woodcock et al 2007). Because of this the environmental movement supports public and active transport modes; but the needs of disabled people are often marginalised.

In surveys transport is the most commonly cited local problem, disproportionately so among disabled people (48% *v* 39%: DPTAC[1] 2002). People with disabilities affecting their ability to travel make considerably fewer trips than those without. This can mean less access to education, employment, health services, social events, and leisure: all essential for social inclusion.

Policy responses remain inadequate. The 1995 Disability Discrimination Act explicitly excluded transport vehicles from accessibility requirements; while recently modifying this, the current government suggests 2020 as the target for train compliance. Moreover, policy focus on accessible buildings may be at the expense of transport-related accessibility. New Private Finance Initiative

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[1] Disabled Peoples Transport Advisory Committee

hospitals may improve building accessibility yet result in services moving to less accessible out of town sites (Aldred 2007). Similarly, Post Office closures adversely affect many disabled people.

Disability movement writers stress the profound failures of public transport to accommodate disabled people; these are compounded by deregulation and privatisation. Perhaps because of this the Disability Rights Commission (DRC) wants to ensure that measures to limit environmental and health harms of car use do not apply to disabled car owners. Lobby group Mobilise calls pedestrian schemes "of particular concern", keeps a "close watch" on the "anti car lobby", and seeks integration through motorisation (Mobilise undated). Although the DRC and disabled people's organisations support inclusive walking environments, in a car dominant society this message is marginalised.

In the UK disabled people have extremely low rates of cycling (the active transport mode with the greatest potential to substitute for urban car trips) but disability groups rarely campaign to improve access to cycling[2]. While this low take-up partly reflects cycling declining as age increases, age-related inactivity is not inevitable. Holland shows no clear tendency for the percentage of trips by bicycle to decline with age: 24% of trips by over-75s are by bicycle compared with 0.2% for over-65s in the US (Pucher 2003).

Applying the social model of disability

Despite these apparently conflicting agendas, we argue for potential commonalities based upon the role of car-based transportation systems in creating disabilities and impairments. Extending the social model of disability, we understand such systems as disabling people conventionally categorised as "able-bodied" and as "disabled". Furthermore we suggest how the social model can be integrated with a broader eco-social perspective on impairment and disability.

From the 1970s onwards the social model has inspired disability studies (DS) theorists (and has been applied to transport and disability: Wixey et al 2005) while remaining marginal within sociology. DS theorists trace the model's roots to the 1976 declaration by the Union of Physically Impaired Against Segregation that disability is a consequence of social oppression, not a person's impairment (Thomas 2002:39). This radical definition roots the problem in social structures rather than prejudiced or discriminating individuals (Clear and Gleeson 2001).

Many DS writers explicitly locate disablism materially and historically, linked to other forms of oppression and exploitation. Oliver (1990) argues that the development of institutions under early

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[2] A few "disability cycling" organisations or programmes exist (see below), but are small, underfunded, and seen as "specialist".

industrial capitalism produced the modern concept of disability. While factories disciplined workers, parallel institutions (prison, workhouse, asylum) were developed to discipline those excluded from capitalist production (Foucault 1979). Terms such as handicap contained and explained those defined as unable rather than unwilling to work. Gleeson has extended and developed this approach to analyse how disablement "is deeply inscribed in the discursive, institutional and material dimensions of capitalist cities" (1999:129).

In our view, part of the social model's power lies in its transcending the disabled/non-disabled binary to understand how categories are rooted in broader social forms, and subject to change. This should mean resisting the temptation to see environments as unproblematically including "non-disabled" people. Firstly, places that exclude disabled people may exclude other groups, such as the poor (Davis 1990). If environments are made "in the image and likeness of non-disabled bodies" (Hughes 2002:71), whose likeness is this? Not a working-class mother of three juggling buggy, children, and shopping.

Secondly, using a life course approach "non-disabled" people may better be viewed as "temporarily able-bodied" likely to experience disability at some point over their life (Lee 2002), especially given growing elderly populations and more years lived with multiple chronic conditions. Longitudinal survey research undermines the "common perception that disabled and non-disabled people make up two entirely distinct and fixed groups" (Burchardt 2000:661-2). Moreover certain situations and environments are inherently disabling to large numbers of people. Definitions of impairment fluctuate and are socially produced, sometimes in order to justify disabling barriers (Goodley 2006). Finally, the basis of inclusion should be questioned. Within car-based economies, those "included" are often identified as car drivers, submerging their other identities as pedestrians, cyclists, and/or public transport users. Policies to promote their interests "as motorists" may make their lives more difficult, especially for those with limited car access.

Economic and social construction of automobilities

Considering transport economically and socially allows us to update and develop the materialist base of the social model of disability. Transport creates new abilities and disabilities, with mass motorised transport (and within this, the shift from public to private motorised transport) fundamentally changing economies and societies, and their requirements for participation. As DS writers (e.g. Oliver 1990) point out, the separation of home from work transformed the positioning of people with impairments relative to family units and workplaces. Motorised transport allowed this separation to increase, starting with rail and underground enabling an exodus from overcrowded urban areas.

More recently the car has facilitated and extended suburbia in the context of desire for social segregation caused by class inequalities and racism. It is the most heavily advertised, even

paradigmatic commodity. As the number of car users increases, ownership becomes increasingly necessary for others, due to traffic danger and increased distances. The car allows the creation of distances and obstacles only it can overcome.

Central to the development of contemporary capitalism, motorisation supports industries including insurance, construction, rubber, glass, advertising and oil. In free market discourse, distance is friction restricting a smoothly flowing world market; restricting road travel becomes a barrier to trade and freedom. Negative environmental, social, and health impacts of prioritising motorised modes are generally externalised by motorisation's beneficiaries (Dora and Phillips 2000).

Our environments are continually reshaped by transport, geared to accumulation and consumption rather than need. Transport infrastructures are intimately linked to firms' capital accumulation strategies, increasing mobility of people and goods while decreasing access. The out-of-town supermarket means people travel further to shop, and prioritises motor transport; "shopping villages" are unpleasant or impossible to reach by bus, foot, or bicycle. Retailers benefit from economies of scale, and exclude the least valuable consumers (car free households being on average lower income). Meanwhile the pedestrian's ability to experience greater detail and depth is only prized within the retail environment.

As services and workplaces have moved further from people's homes, mobility becomes increasingly important for everyday life. This affects the construction of particular disabilities. A small minority of the workforce can attain virtual mobility, and some DS writers believe that current trends in work organisation provide more opportunities for disabled people. Conversely, Abberley predicts that "disabled people will continue to be in the forefront of those groups who cannot provide the versatility and work rates demanded by the labour market" (1999:12). In the UK, half of disabled people of working age are in work, compared with three-quarters of non-disabled people of working age (Department for Work and Pensions 2006).

Most disabled people in motorised societies aspire to car ownership and value its convenience, as do most non-disabled people. This is unsurprising given environments that demand automobility (Böhm et al 2006). Car use appears ever more "normal" and for a minority of disabled people the technological modification of individual motor vehicles offers benefits within a motorised system. To an extent the car's properties become those of the driver, providing superhuman speed, force, and size.

However, most disabled people do not have household car access (60% of disabled people in the UK in 2002, compared with 27% of the general population: DPTAC 2002). Reliant on taxis, relatives, or friends where car trips are needed, many can be considered as marginal car users.

Disabled people would benefit from improved access to non-car transport, but welfare systems may even inhibit access to active travel. The UK system often reinforces "the ablist cultural hegemony ... linking disability with inability" (Roulstone and Barnes 2005:3), with tests of functional inability potentially discouraging people from healthy exercise.

Transport as disabling

Some temporarily able-bodied people find themselves restricted and excluded, indeed disabled, by environments problematic for people conventionally classed as disabled. Outside war zones, motor vehicles are the predominant source of danger, circumscribing people's behaviour and independence. Driving can negate impairment and increase the driver's mobility, but car use simultaneously disables active travellers by limiting their use of the street.

To navigate motorised streets safely, non-car users need a range of abilities: judging vehicle speed, reacting fast to new information, crossing roads quickly, hearing vehicles approaching, and seeing over parked vehicles. As vehicle numbers and sizes increase, environments demand ever greater abilities. The need to see over ever larger vehicles disproportionately affects people of lower height including children and wheelchair users.[3] The average human size and fitness is now insufficient to navigate streets safety, with even greater obstacles for those with impairments. Smoothing the path of motorised traffic (through road barriers, fast bypasses, one-way streets, etc.) makes local amenities less accessible, increasing the distance pedestrians have to travel and excluding those who can only walk limited distances.

Danger and noise from high traffic volumes can sever communities, reduce access to services and employment, increase stress and reduce social support networks. Children's independent mobility has suffered greatly (Hillman et al 1990): compared with previous generations they have been disabled. In the US pedestrian crossings are designed so that 85% of users can get through in time, explicitly excluding others.

Steps and stairs cause problems for those with mobility impairments, parents with small children, those with heavy bags, and cyclists. The withdrawal of support staff (e.g. estate caretakers, guards on public transport) adversely affects all these groups. Conversely accessible environments can benefit different groups e.g. Sustrans' off-road routes are widely used by people with disabilities (Sustrans 1998). The pavement is a key area: in the UK two thirds of disabled people (65%) are dissatisfied with pavement maintenance and half say they would go out more if walking conditions improved (DPTAC 2002).

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[3] The failure to make these judgements accurately has potentially devastating consequences.

Sprawled car dependent patterns of living create distances too great to traverse on foot or even cycle, particularly for those with lower than average speed. The social structures that demand and promote mobility simultaneously immobilise many: some people are excluded most of the time, and over the life course everyone faces such problems. Changes to benefit people with impairments should not be seen as 'special' environmental adaptation (c.f. Verbrugge and Jeffe 1994). Our (constantly changing) abilities lie on a continuum, and universal design recognises this and seeks to include everyone (Jackson and Kochtitzky undated).

The social model can also be used to analyse and critique the effects of driving upon the driver. Even apparently safe driving reduces sensory and social interaction. Cycling, pedestrian travel, and electric scooters all allow communication with other road users: with relatively slow speeds, the traveller forms part of the local environment. The car driver is shut inside a sealed metal and glass cage, with restricted sight range focused on the road ahead, unable to communicate with those outside the vehicle except by horn or basic hand gestures.

Driving's demands upon attention combined with low energy expending repetitive physical movements produce stress, tiredness, and boredom. In the traffic jams produced by rising numbers of vehicles on the roads, a machine built for speed turns its masters into immobilised, unwieldy prisoners. Even drivers can be seen as disabled by a motorised society.

A social model of impairment

The case of transport demonstrates the importance of extending the social model to deal with impairment. By this we do not mean returning to the medicalised focus on individual experience and suffering criticised by disability theorists (Oliver 1990). Rather we mean theorising how impairment is socially constructed discursively (disabling structures shaping our concepts of what is an "impairment") and materially (economic and social forces producing such impairments). This latter, linking social theory to critical epidemiology, is particularly crucial to people in the Global South at higher risk of injury from war, unregulated toxic industries, road crashes, etc. (Stone 1997). "As far as the majority of the world's disabled people are concerned, impairment is very clearly primarily the consequence of social and political factors." (Abberley 1997:9). For transport this approach can connect the threat of environmental catastrophe (hence "eco-social model") to the creation of impairment and disability within a movement for inclusive, sustainable environments.

Road traffic injuries are a major cause of temporary and permanent impairment. The World Health Organization estimates that 1.2 million people were killed and 50 million injured on the roads in 2002 (Peden et al 2004), most pedestrians in low income countries. Even in the UK there is a strong class gradient for injury risk. In the European Union more than 150,000 people are

permanently disabled by crashes each year (Peden et al 2004).

Motorised economies construct diverse roads to impairment and ill-health (Woodcock et al 2007). The stress of traffic noise and danger can harm mental health, as can post-traumatic stress after an injury. In the longer term urban sprawl entrenches inequalities and depletes social capital. Cross-sectional studies show worse self-reported health among people living in sprawled cities (Strum 2004).

As Crow (1999:8) comments, the types of interventions made to prevent impairments matter greatly, and should interest disability theorists. Currently "[t]he isolation of impairment from its social context means that the social and economic causes of impairment often go unrecognised." Those "at risk" are targeted at an individual level: for transport safety this has meant protecting, restricting, and marginalising vulnerable road users (e.g. USA laws forbidding "jaywalking") while leaving the source of danger unchecked. This approach increases physical inactivity, a major cause of impairment through conditions including diabetes with its associated risks of visual impairment and amputations (Williamson 2004). Disabled people, disproportionately excluded from the streets, have higher rates of physical inactivity and obesity (Ells et al 2007).

Traffic noise is the main source of noise pollution, disrupting sleep and increasing cardiovascular risk (Dora and Phillips 2000). Air pollution creates impairment through respiratory morbidity, allergic illness and symptoms, cardiopulmonary mortality, non allergic respiratory disease, and myocardial infarction (Krzyzanowski et al 2005). Many of these conditions can limit mobility. People with impaired mobility or other disabilities may move more slowly through traffic and so suffer greater exposure to pollution.

Transport leads us to analyse the *process* of disablement with its biological and social components, including social organization and oppression, functional limitation, impairment, and pathology. A recent study found that for a given level of physical function, older adults reported greater independence in more walkable environments with mixed land use (Clarke and George 2005). Analysis from the USA found living in an area with excessive noise, heavy traffic, or limited access to public transportation to be important risk factors for faster functional decline in older people, even after adjusting for health behaviours such as physical activity. Residents of such areas were more likely to be female, black, and poor (Balfour and Kaplan 2002).

These processes can be understood through the eco-social concept of embodiment, meaning how we literally incorporate the world we live in over the life course (Krieger 2005). An embodied account integrates social life and its structures of power, production, and consumption with our biology. Roads to disability and disadvantage are not coincidentally joined but represent the

playing out of social processes, including capital accumulation, impoverishment, racism, sexism, and disablism.

Potentials for policy: disabled people and active transport

People with mobility impairments would gain much from inclusive urban environments, as would other marginalised road users. Such environments need regular resting facilities for wheelchair users, visually impaired people, stick users, and others (Wixey et al 2005). However, this way of being in the world is marginalised by motor-centric cities; it is more pleasant to speed along a busy, noisy road by car than to sit down by it. Policies to promote social participation and health – and avoid environmental crisis – demand fundamental change. This means challenging car dominance in favour of accessible, inclusive environments with major increases in walking and cycling, and a major reduction in car use.

Even now most trips are short trips; in London 72% of car trips are less than 8 km long, a distance suitable for cyclists or vehicles of similar speed, such as electric scooters. However, like the Department of Transport's handbooks on transport (1982 onwards) the DPTAC prioritises private cars, stating that for many disabled people private cars are the only form of accessible transport, and that restrictions on car use are negative for disabled people. This demonstrates a failure to understand the harms of car based transport systems and to imagine how people with impairments could benefit from a society prioritising active and green transport. The DPTAC pays little attention to electric scooters and less to cycling. Yet these could play a key role in enabling local mobility, if combined with measures to counteract urban sprawl and provide employment, services, leisure activities, and retail close to where people live.

BOX: We conducted expert interviews with two people involved with disability cycling to supplement our analysis in this under-researched area. Their words are paraphrased below to indicate the potential options, and possible benefits from cycling.

Jim Blakemore recently set up Bikeworks, a not for profit inclusive cycling company, in East London. Currently his activities include cycle training for adults and children with learning difficulties (on traditional two wheelers and recumbent bikes, tricycles, and linked cycles) and for people with obesity referred by health professionals. For some people cycling is primarily exercise, fun, and independence, whilst for others a form of transport, perhaps an accompanied cycle journey (e.g. cycle trains, linked cycles, or multi-user cycles) replacing a taxi or community bus ride

Paul M. Smith sits on the British Handcycling Association Committee and studies health benefits of handcycling, suitable for many wheelchair users (and others). He finds that handcycling offers considerable health benefits, improving energy balance, developing aerobic fitness, and

postponing secondary diseases. It is less likely to result in overuse injuries sustained by wheelchair users. Handcyclists travel considerably faster than a standard day wheelchair and can cope with varying terrain more effectively. Some handcycles can be attached to the front of wheelchairs, while others resemble recumbent bicycles.

Jim and Paul agree the biggest barriers to take-up are knowledge and cost. Many disabled people cannot afford traditional or modified cycles, even though they are much cheaper than modified cars. Unlike modified cars, there is no national subsidy scheme available, and very limited project funding is available.

Jim finds that other problems include stereotypes: support workers may assume that people with learning difficulties are unable to cycle, whereas they may actually only need additional training. There is a lack of instructors and inclusive, effective cycle training is only now being developed.

The health benefits from increasing active travel, makes it important that people with impairments are not excluded. Cycling can be more inclusive than is often realised (see box) and a range of electric scooters exist, with speeds ranging from cycling to walking paces. Smaller and lighter than cars, these vehicles have much lower greenhouse gas emissions, and a much smaller environmental footprint. If necessary they can be enclosed. Scooters could offer a high degree of independent non-car based mobility, with door to door access, in the urban environment. But in a system prioritising the car and those without impairments, these vehicles appear inferior – and the risk of injury in heavy motorised traffic is real. This can lead to conflict on the pavement as vehicles better suited for the road compete with pedestrians.

Cycling for disabled people is a neglected area lacking support. Small organisations, often reliant on short-term grant funding, exist in some areas including Jim's Bikeworks in East London and Cycling Projects in North West England. York-based Company of Cyclists provide disability try-out roadshows stating that "[c]ycling is liberating for disabled people …[y]et the potential and the possibilities are largely unrecognised by both the public and professionals in the caring services." Increased financial, social, and organisational support are needed to realise this potential.

In a society that prioritised active and green transport, all people travelling by active modes, semi-active modes (pedal cycles with a small electric motor), and small electric scooters would be much safer than at present. As the number of cyclists increases, so cycling becomes safer (Jacobsen 2003). There would be a range of low energy travel options, with low maximum speeds, and urban speed limits of 20 mph or less producing much safer and calmer environments.

Such an environment would not re-create the current "disabled"/"non-disabled" binary. A range of

active transport options would be used (including skateboards, scooters, and rollerblades). Many people with impairments can use traditional cycles, including some who find walking difficult. Electric scooters and power-assisted cycles (foot or hand pedal) would fulfil important functions; in hilly terrain, for longer journeys, or when pulling heavy loads. Taxis would retain a role, although they could be replaced by light electric vehicles, rickshaws, and tandems. For long distance travel, a comprehensive and accessible public transport system is essential. However, here we concentrate on the majority of journeys that could be substituted by pedestrian travel, cycling, or electric scooters.

Conclusion

Transport mediates our unequal relationships with each other and with Earth, economically, ecologically, and socially. As the eco-system is now heavily geared to meet social demands, choices about transport systems will be a major determinant of the sustainability of human life. Transport is central to the material construction of inequalities embodied as impairment and experienced as disability. Automobility promises the annihilation of distance, but prioritises some people's journeys at the expense of others. Some distances become larger, as when dual carriageways and fast one-way systems bisect inner-city areas, speeding up commuters while forcing local people to detour. Rather than dissolving space, the car economy redistributes it, and most disabled people are among the losers along with people in poor neighbourhoods and children.

While there are significant variations between cities, increasing levels of motorisation (in terms of passenger vehicle kilometres) in all countries threaten gains achieved in some towns and regions. In poor countries, levels of disability and road traffic injuries are relatively high and the issues discussed here are even more pressing.

Despite existing conflicts over this issue, environmental and disability movements do have common interests in challenging the car economy, and proposing sustainable and inclusive alternatives including accessible forms of active and green transport. This means prioritising access for all above mobility; small-scale, liveable, mixed use developments. This offers the chance to counteract the social construction of disability and reduce rates of motor-related ill-health and illness, so providing socially and environmentally sustainable places.

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