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Justice in Transport Policy

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ABSTRACT

For the last hundred years or so, transport and planning systems have been based on the assumption that people had access to a car. What happens to people who have no such opportunity? Rural shops and facilities close, urban city centres degenerate leaving poorer people with little or no local goods and services. The increase in movement accorded to that part of the population with access to a car has left the other part of the population worse off than they had been before. This has had particularly bad consequences for those members of society who are already losing out, especially poor, elderly, disabled and young people. These people are dependent on others: neighbours, family or friends (if they have them), or what society chooses to dispense (if they do not).

This is often seen as a transport, urban or rural planning problem. However, it is much more serious than that. People are being left without access to fundamental aspects of society: health care, education, legal and electoral rights in addition to affordable nutritious food. As a result they are losing out on the benefits of living within a society because the transport system is unable to accommodate their needs. The direction taken by transport and planning over the past hundred years or so has managed to open up enormous opportunities for some elements of society at the expense of restricting access to basic rights for others.

The problem now is that society has designed itself to be inaccessible for certain parts of the population who have no means of reaching what are often considered basic aspects of modern life. These people are excluded from full participation in society as a result of a conscious decision to encourage movement rather than access. This has the unintended consequence that those who are unable, for whatever reason, to avail themselves of the means of movement, are also unable to obtain independent access to activities to which they are theoretically entitled as of right. This is inherently unjust.

Transport should be available to all in a form that they can use independently because it is the means by which access to the fundamental activities is obtained. In general, this means what we might call 'public transport': a transport system which the public is able to use. This suggests that the default transport system – the one that should be designed and implemented as a starting point – is the public transport system in its widest sense. Design for car traffic is secondary: it includes one part of the population at the expense of the rest. Devising measures that will help planners to plan such a system and which will demonstrate that access is sufficient is a matter of urgency. Such a measure would allow society to decide exactly what it means by 'sufficient' transport – e.g. maximum walking time to a doctor's surgery, fresh food, school – and to allocate funds accordingly. The provision of accessible transport is a necessary element of making a just society.

1 INTRODUCTION

At the moment when someone decided to climb onto an animal and use its superior speed to enable them to travel faster, the maximum speed at which people could travel changed from rather less than 20 to about 30 km/h (over short distances). This expanded their travel opportunities by increasing the distances they could travel in a reasonable time (e.g. the length of a day). It stayed that way until the early nineteenth century. By the turn of the twentieth century people could travel at over 160 km/h for a few hundred kilometres. In the early twenty first century – just two hundred years after people had been restricted to a day's journey of a few tens of kilometres and speeds in the low tens of kilometres per hour – people routinely travel several thousand kilometres at speeds approaching 1,000 km/h – well in excess of that in some cases. Returning to earth, in 1975, people in the UK travelled nearly 8,000 km in land-based transport. In 2001, they travelled almost 11,000 km. Importantly, the proportion for which travel was made by car increased from 71 to 81% in the same period. The quest to increase journey length and speed has accelerated remarkably over the last two centuries: how has this affected the way society operates? Has it been a benefit to everybody?

The next section discusses the approach I will adopt to describe society and various concepts relating social justice and transport within a societal context. Then I will discuss accessibility issues, including disability, accessibility and movement and a brief discussion of the relationship between accessibility and independence. I shall then turn to put these issues in the context of public transport provision before drawing some conclusions about the overall concepts and the two questions posed earlier.

2 SOCIETY

2.1 How do people live in society?

The Oxford English Dictionary (1989) defines society as "the system or mode of life adopted by a body of individuals for the purpose of harmonious co-existence or for mutual benefit, defence, etc.". One can therefore view a society as a social community living in close proximity on the basis that as a group they face a better chance of survival than by acting individually. However, by coming together, people juxtapose their different lifestyles, needs and desires. This can be seen clearly in areas of high population density where many people choose – or are forced – to give up their individual preferences for self-determination in order to enjoy the benefits of urban living such as close proximity to goods and services. In some cases this is a positive aspect of social living, but in others – especially where people are not living this way out of choice – there is a risk that the negative aspects of high population density become too strong and the 'harmonious co-existence' becomes one of grey sameness. Taylor (1975) refers to such 'homogenisation' as one cause of disengagement in urban politics arising from the massive concentrations of population and economic interdependence. Homogenisation in turn means that a lot of detailed decisions have to be taken for society as a whole, rather than being

directed to the specific needs of particular groups. It is not only a problem in high density neighbourhoods though – people in rural communities may also give up individual preferences in order to live in small communities. Easy access to facilities such as health care, shops, libraries, or cinemas is often difficult to provide in rural areas. For many people the anonymity of city centre living is preferable to the common knowledge of one's affairs, which can easily be the experience in village communities in remote rural areas. One of the issues that marks out living in societies is that people, who as individuals choose to take on an activity, often desire – or need – others to participate in order for the activity to be feasible. A football team or an orchestra could not happen without the coming together of a number of like-minded individuals.

There is a functional difference between activities undertaken individually and those which depend on joint or social activity. There is also a difference in terms of where the activity can take place. Individuals could review their stamp collections in isolation at home, but in order for them to trade with like-minded people, they must find some place to congregate. Even in these days of electronic trading via the internet there seems to be a need for face-to-face contact between like-minded individuals. Other, more obviously gregarious activities such as football can only be undertaken in places where people can gather.

Some social activities provide pleasure – sport for example – and others enable the economy to turn (e.g. employment or trade). Yet others are concerned with the well-being of members of society (e.g. health, social services or education) or of society itself (e.g. the democratic process). These are examples of a notion of "social activities" and constitute a major part of living in society. If someone is denied access to one of these activities they are being denied full membership of society.

There are many ways in which social activities can be denied to people – either deliberately or unintentionally – because of unsuitable access arrangements, for example:

- Locating an activity very far away might make it available only to those with access to a car

- If the only access to an activity is a flight of stairs it prevents a wheelchair user from participating in the activity.

In each case, preventing a person from gaining access means preventing them from participating in the activity. Failure to provide adequate access means that some people will be denied opportunities for leisure, employment, trading, health care, education – even for taking part in the electoral process. Access is not just about being "nice" to people with difficulties – it is about ensuring that the benefits and responsibilities of living in society are truly available to – and shared between – the vast majority of its members. Understanding this becomes more important if the outcome is likely to result in an unequal distribution of benefits – whether these are of income, accessibility or other societal concerns such as education or health. It is

more common to consider distribution of benefits when considering income, so I shall start by considering this and then showing how accessibility is distributed unequally within society.

2.2 Trade-offs

Most societies contain rich and poor people. A lot of society's activities are directed towards ensuring that the poorest members of society are not left in a state of unacceptable poverty. The resources used to achieve this are redistributed from people in better economic circumstances, often through taxation. It is not the purpose of this paper to discuss the rights and wrongs of taxation or of any particular taxation policy. Nevertheless there are some issues that arise when thinking about taxation that will help to direct our approach to accessible bus systems.

The first issue is the concept of thresholds defined by society over which it considers that people should not pass. For example, society declares a level of poverty that it considers unacceptable. This can be defined in several ways – one is the level of income below which the State decides to contribute towards household income through some statutory payment (another is the level of income at which income tax becomes payable). However, some people may require more resources than others in order to survive and thus the level of payments needs to be adjusted according to individual circumstances. Another way of describing this process is that some people may be entitled to or eligible for payments from the State (granted in the name of society) while others may not. Sen (1987) argues that even Adam Smith would have supported the "creation of entitlements of victim groups through supplementary income generation, leaving the market to respond to the demand resulting from the generated incomes of the would-be victim groups" (p 27). Who should be in receipt of such payments or the associated adjustments to their income? The answer to this question is defined by a set of eligibility criteria which are determined by society (by means of intervention by the State or some other body). The complexity of such criteria has resulted in a plethora of legislation which has sought to bestow benefits on the basis of excluding people who do not comply with some condition or other, linked of course to a system of policing to ensure that ineligible people do not benefit by mistake. The general point here is that there is a default level of income which is determined by society (through its willingness to support levels of contribution through taxation) and which can take into account the particular circumstances of different individuals. There may be much debate about what that default level of income actually is, but the principle holds in any case.

Other aspects of communal living are subject to thresholds. The education system, for example, attempts to ensure that every member of society has some basic skills (e.g. reading writing and numeracy): "The Government remains committed to ensuring that over the country as a whole, at least 85% of 11 year olds should reach Level 4 and above in English and mathematics as soon as possible; it hopes to achieve this by 2006." (DfES 2003). We can consider these levels as society's consideration of the basic level of education that its members should have. Society votes resources towards establishing and maintaining such education standards. The health system is

another example where society takes a view about the basic level of health of a member of society and this is set as a default. In the UK this is enshrined in the level and type of health care available under the National Health Service (see for example TSO 1976). Some treatments are not deemed to be necessary to ensure that every member of society is able to live above a certain threshold, but others are. Some treatments are considered differently in different circumstances. Elective cosmetic surgery might be considered to be beyond the scope of treatment within society's norms in one case, yet if required as the result of injuries sustained in a road accident could be deemed to be within society's scope.

Many approaches to access work on a similar basis: for example, access to a bus may be restricted to wheelchair users who can use a chair up to a certain size (TSO 2000a). Society can debate what is a reasonable maximum size for a wheelchair – and could change its views about this over time (for example as technology changes). However, in the end, society decides on a reasonable size to use when trying to make buses accessible and expresses this decision in the form of legislation that must be followed until a change is deemed to be desirable. The Public Service Vehicles Accessibility Regulations 2000 (TSO 2000a) define a "reference" wheelchair" (corrected in TSO 2000b) for which buses and coaches must be designed to provide access to people using wheelchairs of this size or smaller.

Why are these defaults important? The principles by which decisions are made in the examples just given are examples of society taking a decision about a base acceptable level – of education or health for example – and allocating its resources in a way that attempts to establish and maintain the quality of society above that level. Different societies have different views about what should be the default value – the UK is different from the USA, Sweden or France in its choices just as surely as, at a more local level, two counties might make different choices about how society will function in their area. One possibility might be to determine everything centrally, as in a strongly totalitarian society such as Communism. However this has other problems, which might make the choice of a totalitarian state rather unattractive to many people. Nevertheless, Taylor (1975) argues that an ideology that rejects a totalitarian view of progress "cannot cope with the complexity and fragmentation of a large scale contemporary society" and that the idea of a return to Rousseau's vision of a highly decentralised federation of communities is no longer feasible. If no one identifies strongly with the "manageable units" into which a society breaks itself, then participation will be minimal, evidence of which he gives as the disengagement of the population in urban politics. On the other hand, the encouragement to become involved in local public decision-making has shown that to some extent at least self-interest can be set aside in an agreed compromise so that others can benefit, the key being to define precisely where different actors' involvement in the decision process begins and ends (Tyler 2003). Whatever the scale of the societal unit we consider, in each of the aspects discussed so far (and of course there are many more), there is a concept of unequal distribution. Some people are better-off than others – whether we are looking at income, health, education or access – and it is up to society to ensure that nobody falls below its base acceptable level in each case.

The "quality" of some aspect of society (e.g. income) can be considered in two ways:

1. It can measure the default or fundamental level below which it is deemed unacceptable to allow members to fall; and

2. It can count the number of people at various levels above and below the default line (e.g. at different levels of income).

It is possible to consider these as, respectively, (1) the "level" and (2) the "distribution" of whatever aspect of society is being considered. In either case, this means establishing some method for measuring the levels attained by members of society. In the case of income this is reasonably easy, and even in the case of health or education this can be done in an understandable way. It is much harder – and no less essential – to measure access in a similar way.

There is also a need to look at both the level and the distribution of "quality" in order to gain a complete picture of the effects of a given policy and to avoid perverse results. For example, if a policy were based only on income *distribution* it would take no account of the *levels* involved and there would be no consideration of what the acceptable threshold would be. The result of such a policy would be that some people would be in absolute poverty yet still appear to be acceptable to the policy makers because there is no definition of the "acceptable level".

Analysis of only the *level* means that only the actual level – e.g. of income would be considered. One could choose to examine a high level (e.g. the maximum) or the average or even the lowest level of income. Yet without consideration of the distribution of incomes would be as false as the picture before. The average income could be maintained at an acceptable level while some people are destitute, simply because there are enough people with enough affluence to offset the effects of the number of people on unacceptably low incomes. Considering only the highest level of income takes no account of how many people are living below the minimum acceptable level.

Society therefore needs to find a policy appraisal method which takes level as well as distribution into account. John Rawls proposed a particularly interesting approach to this problem in his book "A Theory of Justice" (1971). Rawls was trying to establish how social justice could be thought about in relation to the movement of wealth. There is an equivalent concern in relation to other aspects of society, for example decisions about the provision of health or education. Replacing the idea of poverty with that of health shows how social justice could affect policy decisions about a non-quantitative issue.

Acknowledging the ubiquity and usefulness of utility theory in establishing the distribution of benefits following a given policy decision, Rawls set out to consider how to incorporate the analysis of the level of benefits into policy appraisal. Rawls framed his thoughts in the context of "Social Justice". He felt that the weak

consideration of the level of benefits usually incorporated in utility-based decision assessments meant that some people could be intolerably worse off as a result of a decision, even though the analysis of benefits showed a net gain to society as a whole. The key word here is "intolerably": very few policy decisions result in everyone being better-off, but Rawls maintained that society, to be just and fair, should ensure that nobody should fall below the minimum acceptable standard and that the people who were worst off before the decision should at least be in no worse a position afterwards. The key issue for Rawls was the difference between the net benefits obtained by the least well-off compared with those obtained by the better-off. Rawls expressed this as follows: *"the higher expectations of those better situated are just if and only if they work as part of a scheme which improves the expectations of the least advantaged members of society"* (Rawls 1971, p75). Rawls called this the "Difference Principle" and explained it by comparing two groups following a policy decision.

Figure 1 shows the contribution to the expectations of the less well-off group (X2) as a result of the increased expectations of the better-off group (X1) following a decision. If X2's expectations increase exactly in line with X1's, both groups benefit in equal measure and the curve would be equidistant from the axes as shown in Figure 1 by the line OA.

Figure 1

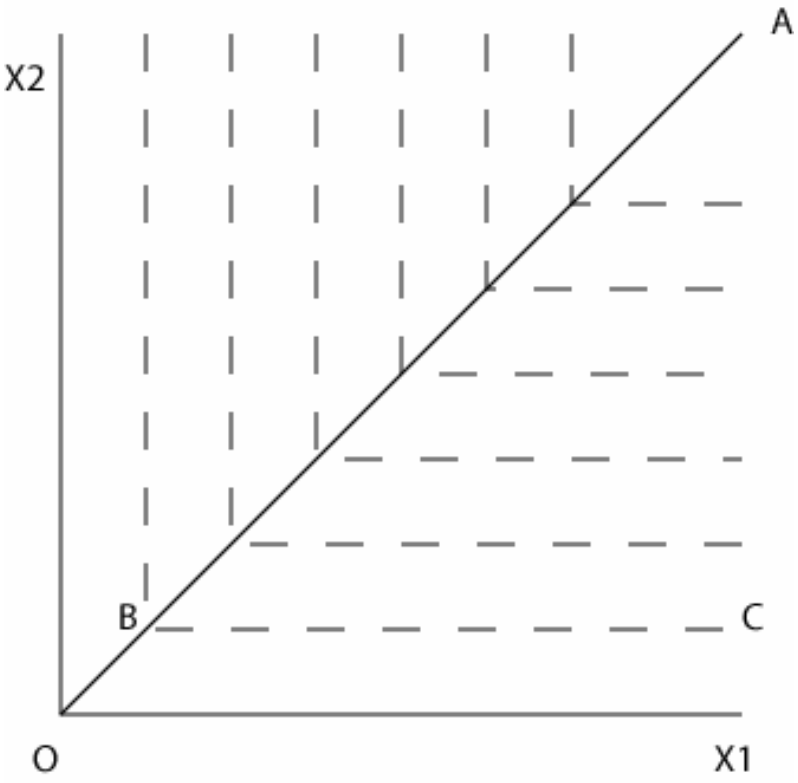


Figure 1 Equal expectations of benefits to better-off (X1) and worse-off (X2) groups following a decision. *Source Tyler (2002)*

Rawls considers the situation where the expectations of X2 as an effect of the increased expectations of X1 are represented by the curve OP in Figure 2. In this case,

the Difference Principle is perfectly satisfied only where OP is at its maximum (point a). This is where the expectations of benefits from the decision are maximised. Subsequent increases in the expectations of X1 are only achieved as those to X2 are reduced. This suggests that the quality – amount – of justice and fairness in the society thus depicted depends on the state of the least well-off group in that society. This means that a socially just system must search for the solution at which the least well-off group's expectations are maximised. Seeking to improve the benefits to the other group beyond this point will always be at the expense of the less-well-off and thus to the quality of social justice and fairness in society as a whole. Point a in Figure 2 represents a compromise. X1 could accrue more benefits (although X2 could not), but would do so only if society were to accept the unfairness of the resulting position for X2. This solution is not necessarily ideal for any group, but it does seek to ensure that the worst-off in society do not become even more worse off after a given decision has been made.

Figure 2

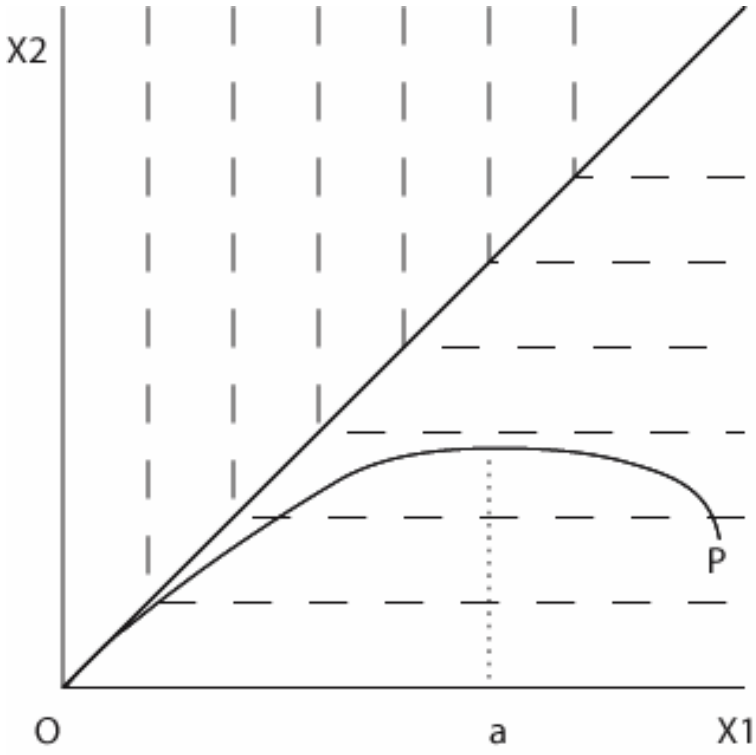


Figure 2 Unequal expectations of benefits to better-off (X1) and worse-off (X2) groups following a decision. *Source Tyler (2002)*

Rawls was trying to establish how social justice could be brought into the decision process regarding the movement of wealth. There is an equivalent concern in relation to other aspects of society, for example decisions about the provision of health or education. Replacing the idea of poverty with that of health shows how social justice could affect policy decisions about a non-quantitative issue.

Consider a decision to locate a certain level of health intervention in a centralised facility. As the concentration of specialisms increases so the benefits to patients must surely increase: they will be able to reach all the necessary experts in a single place – possibly during the same visit. This presupposes that patients can reach this facility. Those patients with access to their own transport would receive increasing benefits as more treatments become available at the centralised facility and a single journey suffices for a lot of treatments. Those with no such access also receive some benefits because they can reduce the amount of travel by arranging several treatments on the same visit. Even if the journey is longer and more complex than the simple local journeys it replaces, it is still just one journey instead of many. However, after a certain point they begin to lose because the greater concentration means that local facilities, to which they would have access for many treatments, close, thus forcing patients to make the longer and more complex journeys to the larger centralised facility. So concentration of health facilities has a point beyond which it cannot go without causing an overall loss in social justice and fairness. The people who had least access in the first place (because they had no access to their own transport) are even worse off because they are unable to reach any facility at all. We shall discuss below how this approach affects our view of accessibility and the use of the transport system.

Dworkin (1993) reveals how important it is to determine what should be contained in a socially just package, using health care as an example. He suggests that "no one can complain *on grounds of justice* that he has less of something than someone else does, so long as he has all he would have if society were overall just" (original emphasis). Thus inequality in the provision of health care could be seen to be just even though some people could afford to purchase better health care than the 'just minimum' provided by society. However, this approach places considerable emphasis on ensuring that the basic package really can be considered to be socially just, thus making the link between a socially just minimum level and a socially just distribution.

Social justice is much more than simply choosing the correct trade-offs. It is about ensuring that everyone has at least some fundamentally acceptable amount of health, wealth, education and so on before determining how the overall benefits should be distributed. Rawls' model shows that simply improving things for one sector of society can only be justified to the point at which another group begins to become worse off. Dworkin points out that justice does not require society to prevent a wealthy person from purchasing a higher quality of health care: actually it would be better "*to put an excise tax on special health care and use the proceeds of that excise tax to improve public education, or the economic infrastructure, or to reduce public debt that blights employment prospects, or in some other ways that would make the community distinctly more egalitarian*" (*ibid.*). In the end Society has to learn to deal with compromises where perhaps nobody feels that they have received as many benefits as they deserve, but yet where the delivery of social justice is maximised. To make compromises of this sort work in practice Society has to be reassured that the improvement in social justice will be delivered, that it is worth having and that the corresponding "losses" of benefits are justified. One way of providing reassurance

that future actions will be delivered is to enter into a contract. In the case pertaining to this paper, the contract is between individual members of society and the controllers of its transport system – a sort of "Transport Contract" (Tyler 1997).

2.4 A "Transport Contract"

The first thing to say about this concept of a transport contract is that it is not about the specific duties placed on transport system designers, operators or planners. I am dealing with the wider issues from which such a contract might result: what society needs from its transport system and what the transport system requires from society. In this sense it is similar in concept to the Social Contract of Jean-Jacques Rousseau in which the "contract" was between a sovereign and their citizens.

So far, I have identified that people living in society undertake a variety of activities, many of which are located some distance from their homes so that at least some people will have to travel to undertake them. I have also established that a failure on the part of society to ensure that such access is possible for everyone results in some people being excluded from some activities with a consequent reduction in social justice and fairness. The next step is to determine the points at which social justice is maximised – the point where the expectation of benefits to the worst off are maximised – for various aspects of society's needs from the transport system. To consider this further, I shall consider a simple example concerning access to a health centre.

Suppose that society has determined that an equitable and socially just level of access to a health centre is that everyone should be able to reach it comfortably from their home within thirty minutes. Some people will require more resources than others in order to meet this standard. For example, some people may live within 30 minutes' walk at their comfortable walking speed. Others may need to walk more slowly than this and therefore would require some form of conveyance to the health centre in order to meet the criterion. Their alternative would be to move home, but requiring this would be unlikely to meet social justice criteria. As a result, a social duty is placed on society to ensure that:

(a) the provision for walking to the health centre is such that the journey could be completed comfortably, securely and safely and

(b) suitable transport provision is made for those members of society for whom the criterion would otherwise be unachievable.

The requirement for good quality safe pedestrian infrastructure is a matter of social responsibility on the part of society. The same also applies to the provision of transport for those who cannot take advantage of that infrastructure. Our "transport contract" has to define the minimum standards for planning, design, operations and information provision so that socially just access is available to everyone. This could be set out in terms of network design – e.g. a bus stop within 10 minutes' walk from a journey origin – but it should not specify how this would be achieved. These

minimum standards are derived from knowledge obtained from people about what they need from the public transport system in order to use it. Such needs can be expressed – and met – in the form of design criteria for infrastructure, operations, vehicles and the supply of information. As with any contract, evaluation criteria must be set out so that achievements can be checked against the requirements.

So, one could construct a contract between society and its members. On the one side, people can determine what they require from the public transport system; on the other society can determine what is required of the people. Meeting particular demands might place obligations on the public budgets, thus requiring changes to the amounts, sources and ways in which public money is spent. The concept of a contract has another effect: the statement that there are minimum standards means that the system has to be designed to meet them. Failure to do so means that the contract has been broken. The contract acts as some protection for people who would be disabled by the failure to design a system which provides the ability to reach and use facilities that are available to others. The socially just minimum standards are, by definition, those that can meet the needs of most disadvantaged groups in society. However, this does not mean that everyone has to have access to a low-price door-to-door transport service. It acknowledges that some people will require such a service and that this should be provided for them so that the standards can be achieved. There are many reasons why people may need special transport services in order to function more completely in society. These include the presence of some circumstances that make it difficult to use conventional transport services.

Of course, the minimum standards have to be defined. The temptation is to define standards in terms of inputs: e.g. measurements of size or distances. However, these become very inflexible and can become outdated very quickly. Also, it is very easy for a standard which has been set as a minimum to become the norm in practice, thus tending to reduce the possibility for improvements over time. This also tends to reduce the basic standard in the short term to that of the worst acceptable level.

Another way of looking at standards is on the basis of outputs, usually expressed as levels of performance. Performance-based standards determine what should be achievable. For example, rather than define the minimum dimensions for a wheelchair space, a performance-based standard would require that a wheelchair user can reach, enter and leave the wheelchair space comfortably and with dignity in a forward direction. A performance standard needs to be devised with users. It is necessary to find out what users need from the performance, then extract from this the elements that are both repeatable and testable as measures of performance. These might be described in terms of time, e.g. "if the test cannot be successfully completed within a minute or so the layout and configuration of the bus should be reviewed …" (DETR 2000). This would only be to provide guidance to the technicians overseeing the test. It is not a target for "real" users in a "real" situation. The test should be designed so that it can be repeated with the same results at different testing stations and when carried out by different people. Performance-based standards are harder for manufacturers than dimension-based criteria, but if determined properly they are

much better for users. On the whole, a performance-based criterion means more pre-production practical testing and user involvement, but once a design has been produced that satisfies the performance test, its dimensions then become the production design and the manufacturer can construct the product accordingly, safe in the knowledge that the performance test will be satisfied.

Cepolina & Tyler (2003) argue that even such outputs are complicated by the fact that they result from the interactions between the person, the activity they wish to undertake and the environment in which the particular tasks contributing to completion of the activity have to take place. Changing any one of these could change the outcome, although changing the activity would defeat the object of the exercise and only limited changes to the person would be likely to be acceptable. This leaves changes to the environment as the only realistic way to improve access.

Cepolina & Tyler suggest an approach which seeks to determine the difference between the capabilities required by the environment and those provided by the person, as a first step in determining the performance output of any given facility.

3 ACCESSIBILITY ISSUES

3.1 Disability

For a long time the concept of disability was dominated by the medical profession. Disability was seen as a problem of a person arising from some form of medical condition or traumatic event that resulted in the loss, or reduction in use, of some physical, sensory or cognitive function. The problem rested with the person concerned and the medical profession attempted to relieve or remove the offending condition. Failure to remove the problem resulted in a person being unable to carry out some function – i.e. they had a disability. The easiest way to treat a person with a disability was to put them in some form of hospital unit at which medical facilities could be provided and for this reason, many disabled people were kept in institutions, away from any involvement in society.

The medical view of disability ignored many of the social dimensions of the problem, especially where these were not under the direct control of the person concerned. This gave a very narrow view of disability, in which all the problems were seen as "belonging" to the individual, who therefore had to adapt (or be adapted) to "fit in" with the rest of society as best they could.

During the latter part of the twentieth century, it became increasingly apparent that the "medical model" of disability was unable to reflect the needs of disabled people. It was difficult to understand how society could function legitimately while excluding many of its members simply on the basis of a disability. The concept began to emerge that disability was a problem of society rather than the individual. In this view, a person does not have a disability which prevents them from doing something; they might be disabled by society's inability to design a facility in such a

way as to permit them to use it. This view has been termed the "social model" of disability (French 1993).

The consequences of the social model are that much more attention must be paid to the design of all facilities so that people are not excluded from them. People can be excluded from an activity by all sorts of barriers, whether these are physical, sensory, cognitive, social or economic. The social model places the emphasis on society to resolve the problem: society has the disability which disables the person.

The medical model tends to depersonalise disability in the sense that it views a person simply as a collection of conditions. The social model positions the disability firmly within society, thus removing the problem from the person. This raises the question of how to ensure that the social justice criteria are being met for everyone. For example, it may prove impossible to provide a bus which everyone can use and Society therefore has to consider how it can meet its social justice obligations in such circumstances. Inevitably, this brings forward the issue of who is excluded from the bus and this is where the social model is less helpful in suggesting a solution. The broad intention is to provide a bus that is accessible to everyone. The reality is that there will still be some people who will have to use other means of transport to reach their chosen activities because it is currently physically impossible to design a bus to accommodate them. In order to ensure that society can meet their particular needs, their requirements must be taken into the design process. For this we must look at the interfaces between their needs and the facilities that can be designed to cater for them. This would seem to advocate an approach in which we try to ensure that the design process:

(a) Accommodates as many people as possible in a mainstream solution;

(b) Determines how to provide the service for those excluded from this mainstream solution, and

(c) Works continuously to find and incorporate new ideas, materials, technologies and methods into on-going designs so that more people can be included in the mainstream solution in the future.

I agree wholeheartedly with the social model that people are not the problem. I also believe that far from removing disabled people from the problem, they should be at the very centre of the solution. There is however a personal element to the detail of the problem because barriers have different impacts on different people. This means that designers need to understand individuals' difficulties in depth with a view to incorporating their needs in the development of a solution. Designers must involve people in the process of establishing their design criteria. This requires people to participate fully in the design process. Everyone must take their share of the responsibility for making society function in accordance with the best principles of social justice and fairness.

Society should seek to include people in all its activities, irrespective of their social status, intellectual capability, economic circumstances, health, age, gender or their physical, sensory or cognitive abilities. This is referred to as "social inclusion" and where an activity succeeds in including people in this way, it is described as "inclusive".

3.2 Accessibility, Movement and Mobility

In order to simplify the discussion in this paper, I use particular definitions of the words "accessibility", "mobility" and "movement":

1. Mobility is the ease of movement from place to place, and thus represents the ease with which they can reach an activity. This consists of two elements, movement and accessibility.

2. Movement is the act of moving, i.e. the physical displacement required in order to reach the activity. Sometimes the movement required to reach a facility is minimal, but in most cases there is a need to use some form of conveyance – a vehicle, for example – to enable this displacement to occur. If it is not possible to reach and use this vehicle, the movement is impossible and the activity cannot be reached.

3. Accessibility is the ability to be approached, reached or entered and in this context represents the ease of reaching and using a bus.

Transport has a leading role in making sure that activities are accessible and available to all. The ability to use a facility is dependent on the ability to reach it (mobility), which is in turn dependent on the ability to reach and use the transport system (accessibility) and the ability of the latter to provide the means of reaching it (movement).

What would be the result if someone were to design a transport system on the basis of these terms? For example, a major consideration in the thinking that underlies many transport decisions has been related to facilitating movement between one place and another – seeking time savings, reductions in delay etc.. Making it easier to travel further and faster implies that measures to increase speed would be helpful and the need to locate activities close together could be reduced. Such movement-based objectives could have unfortunate effects: for example travel time could be decreased by increasing the distance between bus stops and thus increasing the commercial speed of the buses. However, this would make the bus stops less accessible to people experiencing difficulties in walking to the bus stop.

Accessibility to the bus system is the ease with which people can reach and use it. We could, for example, improve accessibility by moving the bus stops closer together, thus reducing the distance it is necessary to walk to the bus stop. However, this would tend to reduce the commercial speed of the buses and thus work against the

movement-enhancing objective discussed earlier. In short, an easy way to think of the relationship between these three concepts is in the form of the equation:

$$Mobility = Movement + Accessibility$$

which suggests that Movement and Accessibility are in some way mutually exclusive: if Accessibility is increased it is more than likely that Movement would have to be reduced and *vice versa*.

A failure to meet movement-based objectives will act as a disincentive to travel. However, failure to meet accessibility-enhancing objectives will prevent – rather than reduce – travel and thus would result in the exclusion of some people from society. Indeed, enhancing movement for some may actively reduce accessibility for others.

I can now turn to see how our earlier discussion about Rawls' approach to maximising social justice bears on the provision of accessible transport. I will consider two groups of people: (X1) people who expect greater benefits from movement-enhancing objectives and (X2) people who have expectations arising from accessibility-enhancing objectives. As movement-enhancing objectives are encouraged, people in X1 increase their expectations. Although there is an increase in expectation for people in X2, this is not at the same rate as for those in X1. Eventually, the expectations of people in X2 begin to decline, for example, because movement is being enhanced by increasing the distance between bus stops and this begins to prevent people from reaching the bus system. Increasing the implementation of movement-enhancing objectives beyond this point will result in a reduction in social justice because of the inevitable exclusion from society of those members of X2 who would, as a result, be prevented from travelling.

The point I am seeking is where the maximum acceptable movement-enhancing objectives coincide with the maximum acceptable accessibility-enhancing ones. As noted above, it has tended to be more common in the past to think in terms of increasing the rate and amount of movement and as a result accessibility-enhancing objectives have often lost out. As inaccessibility prevents – rather than discourages – travel, it is better to meet accessibility objectives before tackling movement-enhancing ones. After all, a person cannot benefit from easier movement if they cannot reach the means of transport that provides it. A decision to make society more accessible for everyone means that even if there are some disadvantages in terms of movement, society will be a more inclusive, more just and fairer place. It would seem that a socially just sense of mobility must place accessibility above movement when prioritising decisions about transport. Design objectives should therefore reflect this order.

3.3 The Accessible Journey Chain

Accessibility objectives need to be applied throughout the journey in order to eliminate all barriers. A public transport journey is a set of linked elements, each of which has to be accessible for the whole journey to be achievable. This is often

referred to as the "accessible journey chain". This concept can be illustrated with the example of a journey involving travel on a bus. This stresses the importance of the accessibility of every link in the transport chain:

1. the bus stop will not matter if the walk to reach it from the origin is not accessible;

2. it will not be possible to enter the bus if the bus stop and bus are not designed for accessible boarding;

3. the bus cannot be used at all if it is not designed to accommodate the needs of users;

4. the walk to the destination cannot be achieved if it is impossible to alight from the bus because the bus and bus stop are not designed to provide an acceptable interface for alighting passengers;

5. the destination cannot be reached if the walk from the last bus stop to the destination is impossible; but

6. none of this will be possible at all if the potential passenger cannot find out that the service exists and how to use it by means of an accessible information system. The final link is that every element in the chain feeds into the information used when undertaking the next journey, thus the chain forms a connected whole.

A potential passenger needs to be certain that the entire journey is accessible before they can have any confidence in setting out on the trip. Some people require more certainty about more of the journey than others in order to have this confidence. This is because they are more sensitive to barriers than others and are thus susceptible to very small changes in the details of a journey. Whereas some people could easily adapt to a barrier – e.g. by changing route – others would not be able to do so without a lot of difficulty. In such cases they have to establish that the entire chain is accessible to them, including any possible diversions, before they can contemplate setting out on a journey. This can only be done if the information system is able to provide sufficient information to give this level of confidence. The inability of an information system to provide this exacerbates the difficulties encountered during the actual journey to such an extent that it could prevent journeys from being made even if they were actually quite accessible. Putting accessibility into practice depends on correct and adequate performance in detail of all aspects of the journey chain at all times. It is for this reason that the design details throughout the transport system are so important.

What happens if the chain is broken? I mentioned earlier the example of bus stops being set too far apart for some people to reach them: what is the resolution to this problem? To think through the answer to this question, imagine a conventional bus network. This has large buses with two or three steps at the entrance and exit, high-

floors inside with more steps inside the bus, an infrequent service, a network of routes covering most of the main road of a town but poor elsewhere, and a lack of basic information about the service. For a person who cannot use this bus system – maybe because the bus stops are too far apart – there is no alternative except to rely on a taxi or possibly, in certain circumstances, transport provided on behalf of some statutory authority. For brevity in this discussion, at this point I shall call these "specialised transport services". There is a difficulty here: a person who is just unable to use the conventional bus system, but who for some reason is not eligible for the specialised transport services will be unable to make a journey using the transport system. They fall into what we call the "Accessibility Gap" which arises between the mainstream public transport services and provision for people for whom these are not sufficient. One reaction to this is for people to use a car for their journeys: another is not to travel at all. Even where specialised transport services are being used, society acknowledges that there will inevitably be people using these where they could use conventional transport if only it were more accessible.

If the conventional bus operator were to purchase some low floor buses, more people would be able to use the new bus system. Some of these "new" passengers would come from the accessibility gap and some would have been using the specialised services. The gap could be further reduced by, for example, improving the design of the network to bring buses closer to the people and by providing accessible information about the services.

3.4 Dependence and Independence

For some people, the possibility of using the public transport system means that they can have some control over the choices in life. Most specialised transport services are scarce and must be booked in advance. Therefore a spontaneous journey – whether for pleasure or necessity – might not be possible if it relies on the availability of a specialised transport service. The opportunity to act spontaneously is a sign of independence and control over one's life so it is interesting to consider how accessibility and independence interact. To do this, I have divided the concept of independence into five categories:

Table 1 - Independence categories

Category	Assistance required to make a journey	Dependence on others
No Assistance:	People can travel alone without the need for any technical or personal assistance	Independent
Technical Assistance:	People can travel alone if they have the aid of some form of technical assistance (e.g. hearing aid, assistance or guide dog, wheelchair)	
Personal	People can travel alone if they have some	

Assistance (localised):	personal help at specific points in the journey (e.g. to board a train)	
Personal Assistance (continual):	People can only travel if they are accompanied by someone throughout the journey	
Full Assistance:	People can only make a journey if some form of specialised assistance is available throughout the journey	Fully dependent

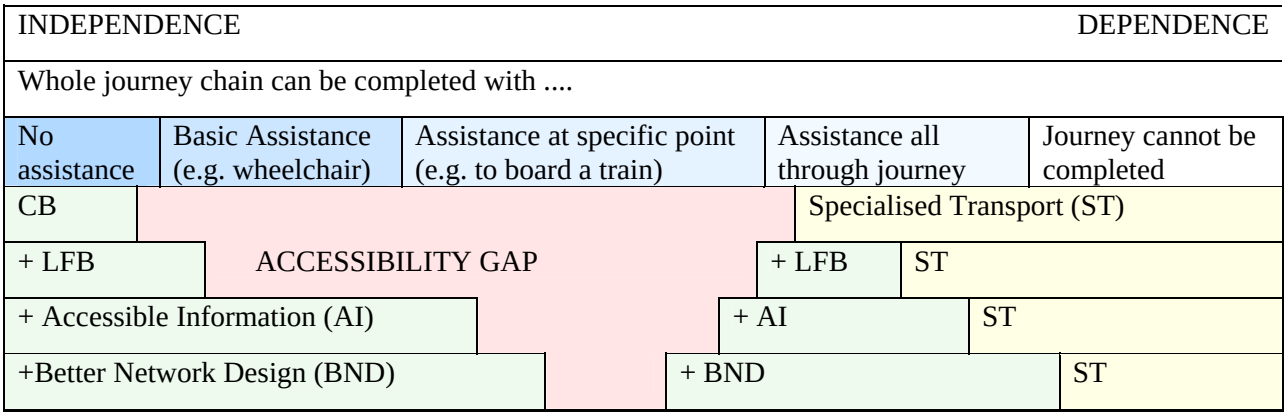
These five categories suggest differences in the need for help, ranging from complete dependence at one extreme to independence at the other. The accessibility gap is one reason why people need assistance to make a journey, so reducing the accessibility gap is one way to increase independence. For example, a wheelchair user who cannot use a conventional bus is unable to complete a bus journey. If low floor buses were introduced (together with the associated infrastructure improvements), they would be able to use the buses (as long as they could reach the bus stop). In this case, they would have increased their independence even though they would remain in the "technical assistance" category.

Some people could change category as a result of an improvement to public transport. For example, a person might need a wheelchair because the distance to the bus stop is too far for them to walk. An improved network design which brings the bus closer to their house could enable them to make the journey without the assistance of a wheelchair. This would help them change from the "technical assistance" category to the "no assistance" category and thus increase their independence. In this way, improved design of the bus system makes a fundamental difference to the choices available and the degree of independence that can be achieved.

Comparing the accessibility gap with the independence categories shows how changes in accessibility can affect independence (Figure 3). The improvements discussed earlier reduce the accessibility gap, but (a) it is not removed entirely and (b) it is reduced at each end rather than in the middle. The importance of these reservations – especially the latter – can be seen when comparing the accessibility gap with the independence categories. There is a suggestion that accessibility is most difficult to deliver to people who require momentary – but vital – assistance. Although people in this category depend on such assistance for only a short time in the journey, the assistance is crucial and its absence will render the journey impossible. It is also extremely difficult to organise such localised assistance so that it can be guaranteed to be present at the right time and the right place. A traveller cannot start their journey unless they are certain that this assistance will be at the right place at the right time. Unreliability in this respect negates whatever system has been put in place to provide assistance. The same problem arises with the reliability of technical assistance – non-functioning bus ramps have the same effect. This would move the passenger from "technical assistance" to the "personal assistance

(localised)" category if they would need someone to help them onto the bus, with the consequent loss of independence. Such failures reduce the extent to which a person can feel able to travel – and make the choice about travelling – independently.

Figure 3



(CB = Conventional Buses, LFB = Low Floor Buses
Figure 3 Accessibility and Independence. *Source Tyler (2002)*

Accessibility helps to deliver independence, but only if it can be relied on. It is therefore better to design accessibility into a system in such a way that it relies as little as possible on personal or technical assistance at particular points along the journey.

Independence can be challenged unwittingly in some circumstances. For example, consider the case where a person offers their non-car-owning neighbour a lift to the supermarket. Kind and generous though the offer may be, it can put the recipient of the offer in a position where they feel overly dependent. They are unable to refuse because they need to go to the supermarket and have no other way of going, but this reinforces their dependence on the kindness and generosity of their neighbour. The result is a reduction in the amount they travel because the lift-taker tries to reduce inconvenience to the lift-giver (and with it the sense of dependence engendered by the acceptance of the lift). We have found examples of just such a reaction in a number of our research projects. This is not to say that people should not offer others a lift – just that such an act can have unintended consequences.

4 TRANSPORT PROVISION

The discussion so far has raised some issues about accessibility, independence, the burden of responsibility within society and the concept of social justice and fairness. We now turn to the task of bringing these issues to bear on the process of setting design objectives from which we will be able to consider how best to put the concepts into practice.

No transport system is accessible to everyone – even a method of moving which seems at first sight to be costless and universal – walking – is actually impossible for some. Poor inner city neighbourhoods – which one might think would benefit from close proximity of residential and other activities (e.g. shops, work) – tend to lose out. Both outlets for public goods (e.g. health centres, education facilities) and those for private goods (e.g. supermarkets, employment opportunities) tend to move out from the inner city towards the (richer, healthier) suburbs, where the ownership of vehicles means that they do not have to be located with reference to the need to reach them on foot. In addition, fears for personal security mean that walking, particularly in run down poorer neighbourhoods, is often perceived to be a means of putting oneself at risk of attack. For this reason alone, many elderly people resist going out especially after dark. The irony is that people feel 'safer' in the suburban fringes (where the need to walk is reduced because of the higher availability of cars) than they do in the inner city areas where few alternatives exist to walking – or , put in another way, to exposing oneself to an unsatisfactory risk of personal attack. Thus the availability of walking as a mode of transport is socially determined as much as is the availability of private motorised transport such as the car. It is interesting that Government admonitions to walk are directed at people with cars – predominantly middle class house owner occupiers – on the basis of their health, rather than to the means by which lower income, generally less healthy people might be able to obtain better access to basic needs.

Transport systems which imply some level of walking need to take account of the ability of all groups in society to walk. Elderly and disabled people are particular examples of people where practicable walking distances are quite short (Barham *et al* 1994), but this also applies to other groups such as people carrying heavy shopping or supervising young children. Pedestrian areas can easily exclude some disabled people because of the excessive walking distances required from car parking or bus stops.

Access to a car is one of the greatest stimulants to travel – people with cars tend to travel much more than people without such access. However, the opportunities provided by cars come at a price. Cars require infrastructure such as roads and, as they tend to be dangerous, the infrastructure has to be constructed in a way that minimises risk to other users of the road (principally of course, other car users). This means that what are considered 'vulnerable road users' such as pedestrians and cyclists are kept away from cars; placing pedestrians behind railings, limiting crossing points to locations which impose minimum delay to traffic or avoiding such conflicts altogether by providing subways or footbridges are all examples of the prioritisation placed at the centre of transport system design. This prioritisation places those without access to a car in a particularly inferior position in relation to their access facilities. Transport planning has, for the last hundred years or so, almost certainly without conscious intent, managed to achieve a social division in the access to basic needs that would have been politically impossible to achieve by other means without major protests against such flagrant social engineering.

One approach to enable a wider range of people to reach a greater selection of basic needs has been the provision of public transport. This has usually been seen in terms of linear arcs between origins and destinations costed in terms of travel times (faster = better) and thus geared to enhancing movement. 'Faster' usually means that more infrastructure has to be built, thus the construction cost tends to reduce the amount of transport that can be provided around a city. One result of this is that there is a tendency to provide relatively good access to the rail systems in suburban areas where there is already a high car ownership rather than in the inner city areas. The distance between stations is based on an economic model which attempts to match the economic costs of access to those of travel time lost in stopping. This tends to militate against people whose journeys are shorter, thus providing another barrier to their movement.

Another form of public transport is provided by the bus system. This is usually provided in the form of a network, although it is typically thought of a series of separate routes. Bus systems are able to reach into residential areas much more easily than a rail-based system, partly because of their ability to operate without major infrastructure and partly because they use smaller vehicles. The key point about a bus system is that it provides the possibility to have a much higher density of access points than a rail-based system: London, for example, has about 270 stations on the Underground system and over 17,000 bus stops. Access to the public transport system provides people with a wide range of destination options but, unlike some other transport alternatives, normally requires defined access points (e.g. bus stops or stations). The bus system can provide a high density of access points and thus provides good accessibility to a wider range of people than a rail system. In this sense, the bus system should be the transport system designed for all to use – it would provide the best and most practicable way to make facilities available to a wider range of society.

Taking a social justice perspective for the design of a transport system changes the objective from one based on movement to one based on accessibility. This increases the emphasis on access points in comparison to the routes which join them. Thus the need for interchanges to be simple and accessible becomes more important. Journey planning becomes rather like a 'joining the dots' game, where the 'dots' are the access points and the 'lines' are the means of travelling from one dot to the next. Thus the location of the access points the 'dots' – is crucially important in the design of an accessible transport system. The private car provides an infinitely dense set of access points, which is one of the reasons it is such a good provider of accessibility. It also provides a generally quick journey (at least for middle-order distances) and thus scores well in terms of movement. As a result, the car is a strong provider – or at least a good facilitator – of mobility as discussed in Section 3.2. However, the car also imposes a serious cost on the non-car user, namely that to enable the car to provide these benefits, it is essential to impose restrictions on access to facilities (including the public transport system) for other people. Thus the car works against the principle of social justice that suggests that expectations to the better-off (i.e. the car user) should not increase beyond the point where the resulting expectation to the worse-off (e.g. the public transport user) are reduced.

The comparison just described provides a neat example for Rawls' Difference Principle discussed above. Looking again at figure 2, it is possible to see how improved provision to car users (X1) benefits everyone up to a point. Beyond this, facilitating car use reduces benefits to non-car users (X2). As the latter group is generally worse off than the former the result is unacceptably divisive in social terms.

5 CONCLUSIONS

A utopian society does not exist where everybody has instant access to everything, but every reduction from this ideal results in someone being excluded from something. So, to increase social inclusion society needs to consider how to identify and deal with these exclusions. Transport is the means by which society coheres, people meet each other and manage to carry out their daily lives. The transport system is the means by which concepts such as freedom of choice and independent living are made real. The provision of more access to all sorts of activities must therefore be available to everyone and for this reason we must ensure that there is a transport system which really is inclusive. The design of this transport system has to be directed towards eliminating barriers to access (or reducing their impact if they cannot be removed). Not all transport systems can be made completely inclusive: some people will inevitably be excluded from even the most accessible system. However, by including concepts such as justice, fairness, inclusion and accessibility in the creation of the design objectives, we can make decisions about the transport system, in which suboptimal choices are made on the basis of maximising social justice rather than on attempting to achieve some other, less socially coherent, objectives.

A public transport system is one which is available to the general public to use. For our purposes there is no concern about who owns it, operates it or who controls it. The key concern is its availability to the public and this presents considerable constraints and responsibilities to the designers of a public transport system to ensure that it is accessible. Public transport is the fundamental – default – transport system: the system that should be designed before all others and which everyone should be able to use without the need for private resources such as a car. The prime requirement of public transport design is to ensure that the accessible journey chain is maintained. Capacity (the conventional main objective) only makes sense if passengers can actually reach and use the system, so it must be secondary to accessibility as an objective. Systems must be designed so that they provide accessibility throughout the chain even where different owners and operators are responsible for different parts of the chain. Although they – and their technology – might be different from each other, this should be transparent to the user, who, after all, is simply trying to make a journey.

The socially just and fair approach to transport policy places public transport at the top of the agenda for transport investment and improvement. This is because it is the practical statement about the level of mobility all members of society require in order to be able to live in a free and independent society. The main aim should be to

maximise social justice by taking decisions on the basis of assuring the level of provision for the people experiencing the greatest difficulty in using the public transport system and thus enabling them to be involved in whatever activity they choose.

The design of the public transport system is important because it is the default transport system for everyone in society; the bus system – in its widest sense – is the default public transport system. Society should aim to encourage design of bus systems that is directed towards the achievement of a fully accessible journey chain for every journey. Where this cannot be achieved in full and suboptimal solutions are required, the key to choosing these solutions rests with maintaining and enhancing social inclusion. The attainment of other transport-related objectives (such as time savings) can only be sought after the overall aim for social inclusion has been satisfied.

One of the difficulties for designers of accessible transport systems is that over the last century or so the main influence on transport design has been the private car. This has spawned design objectives and techniques geared to ease the use of cars and in addition has raised expectations of the ease of mobility – or at least movement – for the private individual. As discussed above, accessibility is based on the need for social justice and thus may conflict with design objectives directed towards the enhancement of movement. One of the first impacts of basing transport design on accessibility objectives is that the public transport system would be truly available to everyone in society – whatever their accessibility needs. This does not prevent other people from using their private resources to obtain access to a private car, but it places the requirement on society to design first for the default system which is available to everyone, and then to design for other forms of movement. If society insists that this default system is accessible to everyone it places constraints not only on the system's design – of network, infrastructure, vehicles, operating systems, information provision – but also on what we include in this "public transport system".

Trains and buses are usually considered to be public transport, but what about taxis, specialised service, ambulances, footways and other pedestrian infrastructure? In the sense of the definition of a transport system that the public can use, each of these examples is public transport. The accessible journey chain includes phases such as the walk to and from the bus stop and the provision of information. As each of these must be accessible in order for the chain to be complete, they must be included within the public transport system. The search for a just and fair society in which people can reach and use the activities they wish has to begin by ensuring that the whole public transport system is fully accessible. Nobody should be excluded from society on the basis of not being able to travel on society's default transport system.

In response to the two questions posed at the start, (how has increase in journey length and speed affected society and has it benefited everybody), I can now come to some simple conclusions.

First, society has responded by spreading itself over space and has relied on the transport system to maintain cohesion. The transport system has responded to this challenge by dutifully increasing the feasibility of travelling further and faster, thus accelerating the extrusion of society.

Secondly, the increase in distance between the location of activities has meant that people are obliged to travel in order to be able to take any meaningful part in society. Those who are unable – for whatever reason – to travel are thus excluded from these activities. The 'right' to avail oneself of a certain activity – e.g. health care – is thus open only to those who can manage to travel.

Thirdly, the spiral of expansion-acceleration-extension serves to exclude certain elements of society unless we achieve a transport system to which all have access. Accessible transport is therefore a vital element of the construction of a just society.

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