

Time Pollution

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Although time-savings provide the principal economic justification for new road schemes, the expansion of the road network and the increase in traffic does not seem to have given people more free time. This is because pedestrian time is not evaluated, because cars are deceptively time-consuming, and because people tend to use what time savings they do gain to travel further.

Time is money, we are told; and increasing mobility is a way of saving time. But how successful are modern transport systems at saving time?

Michael Ende's novel *Momo*¹ describes the changes which took place in the daily lives of a small community when 'time thieves' persuaded the residents to save time rather than 'waste' it on idle conversation, caring for the elderly and similar social activities. The effects were dramatic: as the traditional café was converted into a fast-food outlet and other changes took place, people were too busy saving time to find any time for each other. The village barber found that:

'he was becoming increasingly restless and irritable. The odd thing was that, no matter how much time he saved, he never had any to spare; in some mysterious way, it simply vanished. Imperceptibly at first, but then quite unmistakably, his days grew shorter and shorter. Almost before he knew it, another week had gone by, another month, and another year, and another and another.'

Ende's novel compresses into a few months the process of community disintegration that has been taking place over the last few decades in Europe. The observation that 'no one has any time for each other any more' is a commonplace, particularly among older people; yet there are few attempts to examine why this should be so. How can we explain the Momo effect, the paradox that the more people try to save time, the less they seem to have? In other words, what do people do with the time they save?

More Speed, Less Access

The work of Torsten Hagerstrand over the last thirty years is an important but neglected contribution to the understanding of people's use of space and time.² He suggests that the ability to make contact with places and other people is the central organising feature of human activity and that it is ease of access to other people and facilities that determines the success of a transportation system, rather than the means or the speed of transport.

It is relatively easy to increase the speed at which people move around, much harder to introduce changes that enable us to spend less time gaining access to the facilities that we need.

On this important matter there are very few indicators which can reveal how well our transportation systems are performing in the 1990s, by comparison (for

example) with the 1920s. What is without doubt is that facilities are sited further apart and that people have to travel further than they did 70 years ago to reach them. In their home territories, they must travel further to supermarkets or leisure facilities and often must cover some distance while looking for somewhere to park. In their work, they must be prepared to commute further afield to find jobs. In their leisure time people contemplate day trips to Brussels, Paris or Stockholm when previously they would have thought the idea ridiculous.

C. Marchetti has shown that the amount of time each person devotes to travel is roughly the same regardless of how fast or how far they travel. 'When people gain speed they use it to travel further and not to make more trips. In other words most individuals treat their territory the same way whatever size it is.'³ Those who use technology to travel at greater speeds still have to make the same amount of contacts—still work, eat, sleep and play in the same proportions as always. They simply do these things further apart from each other.

Do they do so by choice or through obligation? A circular logic operates here. While the distances between hospitals, schools, shopping centres and the like have risen, nothing can be done to increase the number of hours in the day. Speed must therefore be increased, and investments are made in quicker forms of transport—families buy faster cars, governments build faster roads and railways. But the time savings promised by new motorways and high speed trains appear to release time for more travel and thus spur the consumption of distance to ever higher levels of achievement. When people save time, they use it to buy more distance.

Social Speeds

The suggestion that people spend about the same amount of time travelling, whatever their mode of transport, does not, however, explain the Momo effect: many people feel they have *less* time than they had before, despite faster means of transport.

There is another hidden time factor in the equation. Motor cars and other high speed vehicles do not save as much time as they appear to, as Ivan Illich pointed out in 1974:

'The typical American male devotes more than 1,600 hours a year to his car. He sits in it while it goes and

while it stands idling. He parks and searches for it. He earns the money to put down on it and to meet the monthly instalments. He works to pay for petrol, tolls, insurance taxes and tickets.⁴

Elaborating on Illich's observations D. Seifried⁵ has coined the term 'social speed' to signify the average speed of a vehicle, once a number of these hidden factors have been taken into account (see Table 1). According to Seifried, the social speed of a typical bicycle is 14 kilometres per hour (kph), only three kph slower than that of a small car. If other external costs (air and noise pollution, accident costs, road construction costs and so on) are taken into account as well, then the small car is one kph slower than the bicycle.

Thus the owner of a small car who spends 30 minutes per day driving 20 kilometres may feel that she is travelling faster than a bicyclist who spends the same time covering seven-and-a-half kilometres. But when the social speed is taken into account, it emerges that the car owner is likely to be spending 70 minutes per day while the bicyclist is spending only 32. *Ecce Momo!*

Space Pollution

Whereas speed consumes distance, a mode of transport occupies space—and the faster the mode of transport the more space it requires. According to a 1985 Swiss study,⁶ a car travelling at 40 kph requires over three times as much space as a car travelling at 10 kph (see Table 2). Furthermore the 'bodywork' often associated with high speed vehicles demands space even when the vehicle is travelling slowly: a single person in a car travelling at 10 kph requires six times as much space as a person riding a bicycle at the same speed.

Space therefore has to be consumed in large quantities to provide the infrastructure for high speed travel, as can be witnessed in the land requirements for new motorways, high speed rail routes and airports. Roads designed to carry traffic at speeds over 120 kph take up more land than roads designed for lower speeds, and the same is true for high speed rail—fast cars and trains cannot take tight bends. Urban motorway and 'relief' road construction is the ultimate expression of space sacrificed for speed.

When the demand for space is not met at certain points in the network, the result is congestion—the familiar situation where cars costing up to £20,000 and designed to travel at 175 kph cannot average speeds much above 20 kph. The current enthusiasm for charging motorists for their use of road space through toll roads and electronic road pricing arises out of a hope that it will ease congestion. Traffic flow on these roads can be regulated by adjusting the level of the toll. This will save time for one group (wealthy motorists) at the expense of other groups (such as poor car-owners or pedestrians) and at the expense of greater levels of space inefficiency. Table 2 shows that in terms of space efficiency, the car is extremely wasteful. Paying for that space does alter this equation.

Time Thieves

As higher speeds lead to greater distances between

facilities, people overcome this distance either by allocating more time to travel or by gaining access to modes of transport with higher speeds. The result of both has been an accentuation of social differences. While those with access to high-performance cars and regular transcontinental air flights have seen their radius of activity expand immeasurably over the last few decades, that of an unemployed black resident of London or an elderly person in Montgomery, Alabama, for instance, may be no greater than that of an urban resident 100 years ago. The poor and unemployed, whose time is valued very low, are expected to find the time to devote to travel; the rich have the money to buy travel and more likely to do so because their time is considered more valuable. The more emphasis put on time savings, the more the whole transport system becomes skewed to serve a wealthy élite.

Transport policies and policies which influence location and accessibility of basic facilities steal time from different groups in society and reallocate it to (usually) richer groups. The relocation of shops, hospitals and schools at a greater distance from the community that needs them imposes serious time penalties on other users. Those without cars (still about 35% of the UK population) those without access to them during the day must spend more time searching for other facilities, waiting for buses, waiting for friends to give them lifts, or walking. Among the groups particularly affected in a male- and car- dominated planning system are women, children, the elderly and the infirm. For women travelling alone after dark, there are potentially serious consequences arising from waiting at bus stops or for late trains or for using another device designed to maximise vehicle convenience at the expense of pedestrians: the underpass. Women are more likely to be bus users than men, more likely to be in charge of young children in dangerous pedestrian environments and more likely to be involved with escorting duties arising from the unacceptability of letting children walk unsupervised in environments rendered lethal by traffic. In Britain, women spend many thousands of hours escorting children in an environment rendered unsafe for children, mainly by men. Using Department of Transport (DOT) methods of valuation, the cost of this escorting has been estimated at over £10 billion.⁷ If this cost had been taken into account the planning process would have produced a different outcome.

The Price of Time

The provision of high quality urban roads, large car parks and (soon) in-car navigation is dependent upon a high valuation of the time of the car occupant. Road schemes in Britain are justified by assigning a monetary value to the time they will save for motorists. The author of one study⁸ describes an urban road construction and improvement scheme in Leicester where time savings made up 96.4% of the gross benefits in the DOT's cost-benefit evaluation (COBA). The average time savings over several projects was 90% of the value of the benefits. Where the proposed road might block pedestrian

movements or require an increase in the time devoted to escorting children, this was not offset against the time gained. Nor was attention given to the question of how this newly-won time might be reallocated in an economically productive way to justify the assignment of monetary values.

The Leicester study also revealed that most of these predicted time savings for motorists were very small, in the order of five minutes or less. It calculated that when the value given by COBA to each time-saving of less than three minutes was reduced by 75%, the estimated first year rate of return of the scheme fell from 20% to five per cent—a rate of return that would cast severe doubts upon the financial viability of the project. Time savings of three minutes are likely to fall within the routine variability of any journey and cannot be easily be reallocated to 'useful' time. Furthermore, in any road scheme there will be innumerable other repercussions which take up three minutes—the time taken by pedestrians to make a detour through an underpass, for example. The monetarisation of motorists' time savings is a convenient fiction that enables the evaluation process to come up with the desired answer—build the road.

If putting high values on the time of drivers, even down to very short periods, leads to more road building, putting a high value on the time of cyclists and pedestrians would restructure present transport systems. Traffic would have to give way to pedestrians so as not to delay them, purpose-built pedestrian and cycle facilities would win new investment, and proposals that encouraged pedestrians to linger and make use of space whilst slowing down traffic would gain precedence. This is encouraging a 'waste of time' and might be seen to imply that motorists' time-savings is no less ridiculous than current practices and would encourage cities and villages to develop as social, productive, enjoyable and secure places.

Maintaining Community

Jane Jacobs' account of city life in the US some thirty years ago⁹ shows how important ordinary but diverse contact is to people's well-being. Maintaining a sense of community needs an investment of time and energy in contact with neighbours and local groups. The opportunities for such contact depend on time available and thus on priorities. The decision to travel longer distances (and save time at higher speeds) means that little time is available for interaction with neighbours and so there is less chance of a genuine community developing or maintaining itself.

Motorists not only restrict their own lives in this respect, but also those of other people. Detailed studies on the effect of traffic volumes upon different street communities in San Francisco¹⁰ showed, unsurprisingly, that streets with heavy traffic have relatively little social interaction; residents of streets with light traffic had three times as many local friends and acquaintances as did residents of busy streets.

Time is central to notions of sustainability. A

sustainable city or a sustainable transport policy or a sustainable economy cannot be founded on economic principles which, through their monetarisation of time, orientate society towards higher levels of motorisation, faster speeds and greater consumption of space. The fact that these characteristics produce energy intensive societies and pollution is only part of the problem. They also distort value systems, elevate mobility above accessibility, associate higher speeds and greater distances with progress and dislocate communities and social life.

Sustainability involves significant changes in the way markets operate and the ways individuals behave. Time valuation is one area ripe for change. Current methods of valuation provide an economic rationale for more travel and more pollution and justify the poor conditions for cyclists and pedestrians. They also explain why solutions such as catalytic converters and road-pricing and even improved public transport are irrelevant. None of these agents in themselves will alter the economic trajectory that is now in place.

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