POLYTECHNIC OF THE SOUTH BANK
DEPARTMENT OF TOWN PLANNING

"RESTRUCTURING CAR OWNERSHIP"

TIM PHAROAH
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T. M. PHAROAH

1. Background

The title of this paper, whilst appropriate to the subject matter, may be less than self-explanatory. We are concerned here with a proposal for encouraging the ownership of cars on a group or community rather than on an individual basis. Since the scheme would involve present car owners giving up their individual vehicles, would alter the concept of car-owning households, and would enable non car owners to participate in car use, the term "restructuring of car ownership" seems appropriate. It is, incidentally, similar to the title adopted by Fishman and Wabe in their pioneering paper on the subject[1]. Much interest was shown in their work at the time (1968), but since then the possibilities of novel forms of car ownership and use appear to have been almost entirely forgotten.

This paper, therefore, not only puts the case for shared car ownership (SCO) but also considers the feasibility of a particular scheme devised by the author which, it is believed, overcomes most of the objections to which other related schemes have been subjected.

2. The objectives of shared car ownership

2.1 No one seriously doubts the benefits which the motor car as a mode of transport can bring. It is versatile, convenient and fast for the majority of journeys which people undertake and consequently is now used for a substantial majority of vehicular journeys even in the largest cities like London. A substantial majority of people in Britain now live in car-owning households. But society is becoming increasingly aware and less tolerant of the many problems which arise from the use of cars on a large scale.

2.2 Most problems of the car are social or community problems:
(a) danger and accidents on the roads,
(b) noise, pollution and environmental intrusion,
(c) road congestion (adversely affecting public transport and goods transport),
(d) reduced attractiveness of walking, cycling, public transport,
(e) demands on scarce land, particularly in towns and cities.

There are also, however, private disadvantages of the car:
(a) it is available only for those who can afford or are inclined to pay for it,
(b) it is available only to those who can drive or who can persuade a driver to chauffeur them,

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[1] Fishman, L and Wabe, J C, "Restructuring the Form of Car Ownership". Economics Research Paper, No 5, University of Warwick, June 1968.

(c) it has high average costs per mile,
(d) it is sometimes difficult to park and to use in heavy traffic conditions,
(e) it is sometimes burdensome to its owner in terms of maintenance, repairs and administration.

2.3 With the present system of individual or household car ownership, the private disadvantages can only partly be overcome by extending the availability of cars (e.g. to those on low incomes). The social disadvantages can mostly be reduced by often drastic restructuring of settlements or by limiting the amount of car use. The difficulties of tackling these problems by established transport policies are well known and need not concern us here.

2.4 Not all of the problems associated with the car, however, are inherent in the vehicle itself, but are the product of the way in which they are at present paid for, used and owned. With the present method of payment for car ownership and use (large lump sums, apart from petrol and oil), car owners have a direct financial incentive to undertake as many of their journeys as possible by car. Furthermore, motorists tend to underestimate the cost of car travel (largely because they ignore depreciation costs).[2] The "perceived" costs of motoring are often well below the actual average or marginal costs. The result is that much car travel is the product not of choice based on full knowledge of the costs involved, but of the manner in which cars are paid for.

2.5 The present system of car ownership (on an individual or household basis, or ICO) apart from excluding a substantial minority of the population from the benefits of the car, leads to very low utilisation of vehicles. The average family car is in use for less then /\ of its life.

2.6 Shared car ownership would need to be based on a system of payment closely related to the amount of car travel undertaken by participants (to avoid cross-subsidy between participants). It should also increase the utilisation of vehicles and thus reduce the total number of vehicles for a given volume of use.

2.7 We can now summarise the objectives of shared car ownership under four headings:

(i) To reduce the number of cars owned

- ease parking in residential areas
- ease conservation of existing urban form
- improve visual amenity
- more space for other .purposes (e.g. children‘s play)
- improve safety in residential areas.

(ii) Extend car ownership to those at present unable to afford it

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[2] C.S. Riley (l970) "A motivational Inquiry into Car Use", Traffic Engineering & Control 12. pp 192-7. It was noted that a study carried out for the Ministry of Transport produced identical findings.

(iii) Reduce problems associated with I.C.O.

- cost (particularly large lump sums)
- maintenance, cleaning and repairs
- dispense with need for individual garage or parking space for each dwelling

(iv) Encourage more sparing use of the car

- reduce accidents/danger
- improve public transport patronage
- increase attractiveness of walking and cycling
- reduce congestion
- encourage higher occupancy rates for car travel
- reduce environmental intrusion of traffic

2.8 The scheme for shared car ownership is therefore concerned with changing the relationship between car ownership and car use, in such a way as to reduce both without significantly reducing the benefits of either.

3. Description of Scheme

3.1 The basis of the scheme is for cars within a given community to be jointly owned rather than individually owned. More than two people would be sharing, and the scheme might appropriately be termed multiple shared car ownership (MSCO). Residents of a particular area (e.g. a block of flats, a street, or a housing estate) would be given the opportunity to subscribe to a "club" which provides them with keys to any of the cars which the club owns. The cars would be kept locally.

3.2 Subscription rates would be low, governed largely by the individual's insurance premium. The main-payments for use of the cars would be on the basis of mileage and fuel consumption. This is of fundamental importance because it means that the participant is paying more nearly the average cost rather than the marginal cost of his or her car journeys so that the perceived cost of each journey will approximate more closely to the average, cost than is the case with present methods of payment.

3.3 A suitable technology for the scheme was developed in connection with a scheme in Montpelier, France (see below). Members of the club are “issued with a key to the doors of all the club cars, and a cassette shaped device that can be plugged into the metres in the cars”.[3]

3.4 These individually numbered cassettes are also designed to hold plastic counters, on sale through the club, which are "eaten up" by the meter as the car proceeds according to the mileage undertaken and the fuel used. A warning light flashes when a counter is nearly used. If a driver reaches his destination with part of the counter intact, it can be withdrawn from the meter

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[3] Bendixson, T, “Instead of Cars”, Ashgate, 1974, and Pelican, 1977.

and used again. Another mechanism in the meter makes it impossible to withdraw the cassette until the handbrake is applied and the windows are closed.

3.5 Each participant would be comprehensively insured, but some check is necessary on who is responsible for any accidents or damage. Only in this way can the club members be protected from individuals who are careless or accident-prone. Cine cameras are therefore installed in the meters that "photograph the -number of any cassette inserted, the time of day the car number and the mileage at the start and finish of hiring".

3.6 Efforts are being made to find out the whereabouts of these meters (the Montpelier scheme having been abandoned in 1974).

3.7 The proposal is to have MSCO based on quite small areas. The aim of this is to keep the scale of operations small (less bureaucracy) and to allow an element of competition between clubs. Also, being locally based, cars are always returned to the correct locality and are thus conveniently available for all members. This requirement limits the size of scheme that can be operated, but not the number of schemes in any area.

3.8 Each scheme would require some permanent (full or part-time) administration. This would involve selling the plastic counters, cleaning and servicing the cars, and arranging for repairs. One person could probably administer more than one scheme.

4. Related Work

The field of shared car ownership is largely unexplored, both in theory and practice. A number of interesting schemes are, however, available for comparison with the present proposal and these are briefly reviewed below.

4.1 (i) Montpelier

Reference has already been made to the Montpelier scheme. This was, in Bendixson's words, a "kind of self-drive hire service". The Societé Procotip, as it was called, was introduced in 1971 and provided a pool of cars in the town for any driver who subscribed to the club. "By 1972 members of the co-operative had the use of thirty seven bright blue Simca 1000‘s ....” On an assumption that one car in co-operative use would replace fifteen to twenty privately owned ones, Philippe Leblond (designer of the scheme) calculated that a fleet of 600 cars would be able to sweep 12,000 cars off the streets of Montpelier and thus eliminate the acute congestion found there".

4.2 Technologically, the scheme was a success. The meters worked well and the cars were by and large well cared for. The trouble lay with the designated Procotip on street parking places, of which there were fifty-seven at seventeen points around the town. Firstly there was no guarantee that a Procotip car would be at one‘s nearest designated point (though students were employed to redistribute cars around the town). Secondly, the French

have a firm disregard for parking regulations, and it became impossible to prevent non-Procotip cars from using the designated spaces. Members thus often had to leave the cars at other places where they could not so easily be found by other members. No way round this problem could be found and the scheme was abandoned in 1974.

4.3 The present scheme avoids the problems experienced with Procotip in that it is based on local communities - i.e. small geographical areas. On the reasonable assumption that all residents return to their home, the cars will always be returned to the scheme‘s locality and thus be available for all other participants when not in use. With the trip/driver recording device already mentioned, members who abuse the system by taking cars away for extended periods (e.g. more than a day or two) can be disciplined or expelled from the scheme.

4.4 Nevertheless, the Societé Procotip used by far the most sophisticated and appropriate meters yet devised, and the present scheme will depend on obtaining these or similar meters.

4.5 (ii) Green Cars

Green cars are not necessarily green, but are distinguished from others in that they are "owned by more than one family or shared between people without intimate personal relationship”.[4]

4.6 Like the Societé Procotip scheme, the cars are installed with meters, but unlike the French scheme, the meters simply record and add up the units (of miles and petrol) used by each participant. The participant is then billed for his proportion of total fixed and running costs according to the use he makes of the cars. The number of participants is limited by the number of different keys/recording devices contained in the meter.

4.7 Several "Green Car" schemes are in operation in Britain, some using the meters described above. Although they appear to be working more or less successfully, there are at present no monitoring data to indicate how the total amount of car use has been affected. Moreover, the schemes are small (because of the limitations of the meter or logbook system).

4.8 The main advantage of "Green Cars" is that their users pay for everything on a mileage basis. Even the annual tax and capital depreciation costs are shared out according to how much use is made of the car or cars.

4.9 The main trouble with small schemes is their inflexibility. Since few cars are owned there is less flexibility for covering periods of peak demand, and booking schemes are usually employed. Moreover, there are insufficient cost savings to be able to employ permanent administration of the scheme and

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[4] Steve Cousins, "Green Cars, a brief guide to Shared Car Ownership", Open University, 1976.

consequently some agreement must be reached between participants as to how vehicles are to be garaged, repaired and maintained.

4.10 (iii) Community Transport Centre

Fishman and Wabe‘s paper, already mentioned, proposes a "Community Transport Centre designed and built as an integral part of a new town., or as part of a large council flat development". These centres would offer centralised rental of a variety of vehicles as an alternative to individual car ownership within a local community (a maximum walk to the centre of 6 or 7 minutes is envisaged).

4.11 The main problem with this scheme is that it does not employ meters and depends on booking, or chance, for the availability of the desired type of vehicle. An additional problem is that the cars are not located in every case close to people‘s homes. Thus the social advantages of the scheme (as described in Section 2) might be too heavily counter- balanced by the private disadvantages.

4.12 The present scheme, it is believed, offers greater flexibility by having an adequate pool of cars within each very local area to avoid the need for booking, and to allow participants to undertake car trips spontaneously. We now turn to the feasibility of the present scheme in the light of the related work just discussed.

5. Feasibility of Multiple Shared Car Ownership Scheme

We first consider the feasibility of MSCO in terms of the four objectives set out in paragraph 2.7.

(i) Will the scheme reduce the number of cars owned?
Two surveys (one undertaken by the author in London, SW11, March 1978>> one undertaken by John Grimshaw in Bristol) have indicated that the total number of cars owned by a community can be reduced by at least one third. This is the minimum reduction possible, assuming that the scheme leads to no reduction or rearrangement of the pattern of car use made by individual participants.

(ii) Will the scheme extend car ownership to those who cannot at present afford it? Any person with a driving licence can join a MSCO scheme. They would probably be required to pay a subscription fee which could be made monthly, quarterly or annually. It would be part of the scheme's design to reduce these lump sum payments to a minimum by including as many costs as possible in the mileage charge. The subscription amount would probably vary between individuals according to their insurance liability, but this element would not amount to more than £2 or 7 per month. Thus even people on very low incomes could afford to participate, though of course the amount of use which they make of the cars would probably be less than present car owners.

(iii) Would MSCO reduce the problems of individual car ownership? MSCO would reduce to a minimum periodic lump sum payments. Maintenance, cleaning and repairs worries would be the responsibility of the scheme's organiser (a part-time permanent job, possibly taken by one of the scheme's participants). individual garage or parking space attached to dwellings would not be required. This means that the scheme is most suited to communities which have communal parking. The scheme also has implications for the design of new housing areas, where less space for parking than the current 1:1 standard would bring considerable benefits. MSCO would appear to be more difficult to implement in low-density areas with individual off-street garaging.

(iv) Would MSCO encourage more sparing use of the car? Car use would be paid for mainly on a mileage/petrol use basis. The perceived cost per mile would therefore be considerably higher than via present methods of payment, and generally higher than public transport alternatives. Consequently MSCO in areas with good public transport is likely to reduce car use in favour of public transport. The scheme is therefore most suited to areas where people are not dependent on cars for most journey purposes. The actual amount of reduction in car use could only be ascertained following the introduction of MSCO schemes.

5.1 Feasibility - Costs

Detailed costs (based on AA statistics) indicate that participants would have their total motoring costs reduced by up to 20% assuming an annual mileage of 10,000 before and after the scheme. This order of saving could well prove to be an incentive for participating in MSCO. Moreover, costs of travel would be further reduced if participants made less journeys by car.

Approximate cost of traveling 10,000 miles by three modes of transport (1977 prices)

MSCO	Private car	London Transport (subsidised)
£1,041	£1,509	£520

N.B. Based on AA statistics and LT annual report for 1977. Assumes average car (l,000- l,500cc), capital cost of £2,500 discounted over 8 years.

5.2 Feasibility - Technology

The Societé Procotip meters already described appear to be appropriate for MSCO. Alternatively there are the Green Car meters in operation which might be adaptable for MSCO by using, for example, credit cards instead of keys. The main problem is to obtain meters which take payment whilst the car is in use. So far, only the Procotip meters do this, and efforts are being made to track them down so that trial operations and testing can commence.

5.3 Feasibility - Type of Vehicle

The simplest scheme would have a pool of identical cars. This would avoid disappointment of participants when a car of their choice is not available, and possible bad feeling arising therefrom. The type of vehicle should be chosen following consultations with the potential participants. One would expect a smallish estate car to be the ideal (e.g. Ford Escort, Morris Marina estate etc.). If it were considered essential to have a variety of vehicle types, the meters installed in larger vehicles would cost more to feed (higher petrol consumption), but could in any case be set to "eat" the plastic counters at a faster rate. The other important question is whether to purchase new or second-hand vehicles. This again would depend on participants' views, but one would expect the decision to vary between richer and poorer areas. It is worth noting that in the sun/ey area of one street in Battersea SW11, only one quarter of residents' cars were under 5 years old, suggesting that most people would be happy with, say a two-year old vehicle. A lot would depend on how the scheme was financed.

5.4 Feasibility - Availability of cars

At times of peak demand situation may arise when all the I\/ISCO cars are in use. Any other participant then wishing to use a car would be inconvenienced. One possible solution would be to have an agreement with a local taxi hire firm (minicabs) whereby they hire out to the I\/ISCO participant at the standard MSCO rate. Another problem arises from weekend or longer trips away from home. Since these journeys are usually planned in advance, the solution may be for people to use normal car-hire services, which would probably be no more expensive than using the MSCO.

6. Possible areas for implementation

The most suitable areas for implementation of MSCO schemes would be housing areas with good public transport, communal car parking a repair garage/petrol station nearby a residents' organisation. Consideration would also need to be given to socio-economic composition, levels of car ownership and current levels of car use.

7. Important aspects not covered in this paper

(i) Details of implementation, including method of initial financing of cars and equipment.
(ii) Results of monitoring existing (Green Car) schemes.
(iii) Problem of the company car.
(iv) Prospects of the scheme in relation to future oil prices.
(v) Prediction of effects of MSCO on car occupancy rates and choice of mode of travel (economic analysis).

APPENDIX
BENEFITS AND DISBENEFITS OF MULTIPLE SHARED CAR OWNERSHIP

Private benefits
1) Bringing car availability to those who cannot afford to buy a car of their own.
2) Possibly providing more modem (and reliable) vehicles than could otherwise be afforded.
5) Dispensing with the need (and therefore the cost) for a garage or parking space attached to the dwelling.
4) Easier parking near the home (in high density housing areas).
5) Less worry about breakdowns and damage to vehicles.
6) Less time and trouble involved in car maintenance, repair.
7) Smaller capital outlay or periodic payments.

Community Benefits
1) Less parked cars - less danger
    - less visual intrusion
    - more space for other purposes
2) Less car trips - reduced traffic accidents
    - reduced traffic congestion
    - reduced environmental intrusion
5) Increased ridership of public transport (and thus, other things being equal lower fares and/or better service).
4) Higher density of development possible for given environmental standards (reflected in savings in land in new developments}.
5) Possibly increased community spirit and involvement.
6) Easier conservation of existing urban form.

Private disbenefits
1) Less choice of vehicle type.
2) Less assurance about availability (although availability will be less affected by breakdowns, repairs and servicing) particularly at times of peak demand.
5) Car not available for prolonged periods of absence from home.
4) Less control over vehicle maintenance standards.
5) Inconvenience of log-book keeping (possibly).
6) Use of less convenient mode of travel from some trips.

Community Disbenefits
I) Less expenditure on cars (i.e. effects on motor industry).