

## TRANSPORT, ECONOMY, SOCIETY AND STATE: PERSPECTIVE ON THE CONTEXT OF TRANSPORT

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*The need for better transport services has stimulated interdisciplinary teaching and research aimed at understanding the web of transport relations in society, economy and state. Using these categories, an effort is made to present a broader account of transport relations than has been written thus far. Some consideration is also given to the different relations of transport identified by adopting scientific, humanist and political-economic perspectives.*

Transport studies - teaching and research - have not been at all tardy in following and reinforcing the prevalent trend of academic specialisation. This tendency has occasioned rapid and even spectacular technical and organisational progress in transportation. Notwithstanding, there remains some degree of frustration with inadequate transport services, with ineffective policy, and with the unanticipated consequences of policy. This frustration underlines sharply the gaps in managing and comprehending the ramifications of transport. Responding to the presence of such gaps, transport studies increasingly have become multidisciplinary. Respectively, specialist courses and texts in transportation devote more time and more space to putting transport into a wider *context* before proceeding to detailed *content*. For example, the transport engineer is encouraged to see transportation in other than simply engineering terms - to regard 'the transport problem' as more than just derivative of poor vehicle and road-designs, and to see it as something not entirely soluble by technological innovation. The transport economist is urged to bear in mind the social necessity of certain uneconomic services and to look closely at the kinds of people for whom 'the transport problem' really is a problem. These sketches may be multiplied several times, and may be made to include interdisciplinary researchers themselves. For instance, behavioural modellers are cautioned about the political feasibility of implementing schemes tested only in the safe world of the laboratory.

Perhaps the first clear call for developing perspective in transport studies was made almost a century ago by Cooley in his lengthy 1894 submission to the American Economic Association (Eliot Hurst, 1973, 1974). Notwithstanding the rapid growth of transport studies in the intervening period, it is still more common to encounter vague statements about the wider context of transport than to see pertinent research and teaching. Indeed, it is much easier to comment blandly and wisely that transport does not exist in a socio-political vacuum than it is to weave the threads of intricate interdependencies. Doubtless, the diversity and complexity of the relations of transport are transparent to the initiated. For the newcomer to transport studies this is not the case though, and it is regrettable that the context of transport is so little written about. Where it does not form the preface or introductory chapter of a specialised text, consideration of context is confined to the recruiting drive, the welcoming address or the inaugural lecture. Otherwise the newcomer

is left to osmose the context of transportation by prolonged exposure to the varying, sometimes confusing, and often muted perspectives of engineering, economics, management, history, geography and the like. Researching and teaching about the context of transport is easily overlooked under pressure of limited time and manpower ("we don't even have time to teach the basics" - a curiously misdirected remark!) and because of the irresoluteness and boundlessness of the subject. Paradoxically though, these characteristics are as much reason as there ever could be for further research and clarification. An overwhelmingly common perception of technological history as the predominant context of transport is in need of quite deliberate counterbalancing. Besides, recognition of the broad web of transport relations might serve to prompt new imaginative research in the transport field.

The eclectic and wide-ranging presentation here sets out to offer in one place a succinct but broader perspective on the context of transportation than appears to have been penned thus far (for comparison, see Eliot Hurst, 1973; Webber, 1973; Morlok, 1978). It is also sought to amplify some abbreviated remarks made elsewhere (Pirie, 1981) on the wholistic nature of transport. In aiming at an essay-length outline statement, penalties are inevitably incurred. Sacrificing depth for breadth, and empirical reporting for more suggestive generalisation, it has not been possible to verify, instance and document all the relations suggested. The paper is not intended as a grand survey of all work that bears on the context of transport - an impossible task. Examples and references are few and selective. What follows should not be read as any sort of comprehensive directory of transport relations. It should not be inferred that all transport projects and services exhibit all the relations discussed, nor that the relevant relations are all of the same intensity. In some instances, certain relations may turn out to be non-existent or unimportant; an important point made in this paper is that such must always be proved and never left assumed by default. For ease of writing and reading, the text is split into sections which view the economic, social and political contexts of transport in turn. The design of this segmentation itself is reviewed towards the close of the paper.

## TRANSPORT IN THE ECONOMY

The economics of transportation is considerably better researched and rehearsed than is the place of transport in the economy; the two ought not to be confused. Transport economics is a notable field of specialisation, and there are many corporate organisations which employ transport economists. The field of transport economics has long been, and remains, firmly in the grip of neoclassical analysis. A recent rush to econometrics is also evident. The geometry of demand and supply in less-than-perfect markets is fundamental. User-charging, subsidies and the elasticity of supply and demand have been studied at great length, particularly in the public-versus-private, and regulated-versus-unregulated debates. Underlying these kinds of concern is a more or less conscious appraisal of the place of transport in the economy as a whole. The verdict is most often favourable and rests on such popular, and accurate, claims as these: transport enables the movement of people and commodities from places where they have little or no value, to places where they command a higher value. Transport makes it possible for production firms, and for an economy at large, to benefit from economies of scale in operations and to benefit from the economies of locational agglomeration. Transport enables trade, and following the classic gains-from-trade thesis, therefore enables specialisation and makes possible increased productivity and wealth. In addition to identifying these favourable spin-offs, inferences about transport benefits may be drawn from the association between the degree of economic development within a region, (as indexed by GNP, for example) and the level of transportation services there.

Broadly speaking, these aspects of the relationship between transport and the economy are the ones upon which academic texts in transportation concentrate. Other relations, such as the costs to society of hospitalisation, vehicle insurance, traffic patrol and environmental damage are also pointed out on occasion. Introductory texts on transport economics which present the subject as touchstone of the distribution of limited resources, also carry implicitly the message that a fundamental economic relation of transport is its competing with other economic activities for scarce funds. Such competition has intensified in light of transport's being a profligate user of increasingly expensive energy supplies.

The transport-relations identified are not however the only ones, nor are they those which always receive emphasis in the popular press. That the set of relations identified are of interest to academics does not make them superior in any way. Particularly in the past few years, the substantial employment taken up in the transport sector of the economy has come under repeated scrutiny in the wake of labour unrest and recession there. Among those employed directly in transport are motor assemblers, dockers, gangers, mechanics, service station attendants, spares agents, drivers and clerks. In addition a host of others have their livelihoods affected by the fortunes of the transport industry. Such is the case of those employed in the paint, rubber, glass and iron-and-steel industries, not to mention those working in advertising, tourism, farming, government, commerce and real estate. Transportation is clearly intimately linked with the remainder of the economy. As Jones (1979, p. 65) has noted for the United States, and this is but one example, "modern federal highway policy was conceived in the context of the depression and World War II. During this period, transportation investments were used as an instrument of economic stimulus, employment stabilization and work relief".

The importance of transport as a final consumer of manufactured products, as a source of technological innovation and as a provider of jobs is clear. Regarding its employment function, it might be noted though that in all its diversity, transport is an avenue of employment of quite different kinds and does not merely provide the homogeneous unit jobs reflected in employment statistics. Jobs may be distinguished according to the skills involved or the levels of remuneration or conditions of service. Jobs may also be classified in terms of the relation they bear to the means of production. The perspective here is that of social class, and the point is that by providing jobs in certain proportion as between owners, managers and labourers, the transport industry either helps sustain or erode class relationships and social organisation in the host society. Illustrative here is the way in which White railway workers in South Africa have long resisted the admission of Blacks into certain categories of employment, in the interest of maintaining master-servant relations. In quite another setting, the strategy of enforced incorporation and modernisation of informally organised paratransit in some South East Asian cities (Rimmer and Dick, 1981) is a splendid illustration of smashing of a class of small scale entrepreneurs. Similar consequences attended the carefully engineered dissolution of the horse-drawn cab trade in Johannesburg, South Africa, in the early twentieth century (van Onselen, 1982).

Consideration of the detailed structure of employment in transportation, and of labour's unstable and sometimes turbulent course, is suggestive also of the role of the transport industry as nexus of labour protest. This feature attracts considerable attention in the media. Mass transit worker strikes in North American cities in 1980, and production line disturbances in British and South African motor plants in 1981 are cases in point. Strike action by stevedores and railway workers are significant moments in the labour history of many a country, initiating as they did, on occasion, even more widespread industrial unrest.

An outstanding example of over a century ago is the transport-based Great Upheaval of 1877 in the United States (Brecher, 1972). Plainly, transport and economy do not meet only in the market place or in the board-rooms of regulating agencies; there are also significant points of contact on the shop-floor and in the dispatch office. These contact points have been written about variously from the perspective of management (e.g. Clegg, 1950), labour (e.g. Widick, 1976) and researcher (e.g. Lieb, 1974). Arising out of these latent and actual conflict points it would be interesting to know whether the transport sector anywhere has ever been an innovator in labour management technique and/or in labour legislation.

Another of the ways in which transport interfaces with the economy is through its being an agent of income redistribution. The mechanics of income redistribution contingent upon particular structures of transport supply involve real income transfers across space, across generations and classes, and across modes. Spatially speaking, transfers may take place between zones close to major trip generators and those far from them. For example, tapered fare structures result in short distance travellers subsidising long distance travellers. Also on a spatial plane, transport investments confer differential accessibility on locations, and, at least in a capitalist economy, therefore differentially affect the convenience and commercial rent and exchange value of sites. Locations either benefit from or are disadvantaged by, transport decisions taken in the public sector. Transport advantage gained coincidentally represents unearned income and is an effective transfer of income from those holding title to property which does not enjoy transport advantages from the same transport project or service. Naturally, the negative externalities of transport, such as noise and pollution, may offset positive externalities. The exact balances may be expected to vary socially and spatially.

Transfers of income between generations arise out of the differential user-charging schemes for peak hour commuters and off-peak services for the elderly and for scholars, for instance. Zero fares for uniformed public service personnel apply in some urban areas and constitute effective income transfer on an occupational basis, albeit small. Modally speaking, income transfers are reflected in the fuel and license taxes paid by private car operators; these payments support road construction and traffic policing from which public transport users benefit at no cost. Similarly, cross-subsidised transportation obliges the users of some services to bail out the users of other less viable services. For instance, suburban rail commuter services operating at low fares and subsidised by high-rated long-haul freight traffic represents income transfer from shippers to commuters. Whether and how any or all of these income transfer effects exhibit systematic historical or global variation is as yet uncharted.

Mention has already been made of transport in relation to the economic development of a country. The association between high levels of infrastructural provision and successful marketing and trade is obvious. Transport services also offer modernising capacity, helping as they do to provide employment in the wage economy, to speed health care delivery, general construction and postal communication, and to promote travel. Appreciation of these connections underpins the activities of many consultative and transport funding agencies in underdeveloped countries. In the general climate of approval of any and every transport project submitted for 'development', it is not inappropriate to draw attention to the selectivity of people and interests benefitting from transport projects. The point is that although transport improvements may raise gross domestic product, they may simultaneously depress the well being of groups of people in one or more districts. This depression may be only relative to increases in gross domestic product elsewhere; transport investments are typically expensive and spatially discrete; and installations in one place mean no installations in others.

Other than the familiar course of underdevelopment through tied-aid schemes, the avenues through which transport may actively and absolutely underdevelop sections of a country and its people are complex and not always transparent. Work on the subject is not nearly as plentiful as work which extolls the virtues of transport in development, but some isolated contributions have been made. Reporting on the experience in colonial Tanzania, for example, Slater (1975, p. 153) has remarked that "railways played the most essential role in facilitating the operation of German capitalist enterprise, and of opening up areas of peasant production which could be brought under the financial aegis of the colonial state". Further south in Africa, the onset of rail transportation contributed to underdevelopment by inducing indebtedness and economic dependency, enabling migratory labour and the persistence of reserves for cheap labour, and by extending wage labour and proletarianisation (Pirie, 1982a).

An important issue related to this brief discussion of transport and underdevelopment is that transport is not only an employer of labour, it is also a conveyor of labour. It is in this capacity that transport comes to assume a still more important part in the workings of an economy. From the days of Atlantic slave shipping, to present industrial and agricultural migratory labour, transport has performed an essential service for the preservation of certain economic elements by widening sources of labour supply and ensuring a steady flow of inexpensive labour. At an urban scale, transport services to economic systems include daily commuter transport. In late nineteenth century London, Detroit and Boston, cheap working men's railway fares were introduced to support the suburbanisation-process, itself a contradiction under industrial capitalism between the need for railway land near workplaces and the importance of having a decentralised workforce appear timeously at the workplace.

One other important point to emerge from the foregoing is that transport developments which do benefit particular sectors of society may be construed as benefitting particular economic formations. For instance, in southern Africa transport development benefitted capitalism enormously. This took place largely, but not without resistance, at the expense of peasant commodity production and small-scale entrepreneurial transport-riding and coaching. To speak of the role of transport in 'the economy' is to speak in far too abstract terms, as if, 'the economy' anywhere, now and in history, was homogeneous and unchanging. Prior to generalisation about the economic advantages of transport improvements, extreme care should be taken to admit the presence of different forms of economic organisation. In contemporary capitalist society which appears so uniform, economic impacts may be quite diverse and conflicting. Mindful of this complexity, one might urge, for example, that the impacts of otherwise grand urban transport projects on the survival of casual workers in the informal sector warrants more consideration than is custom.

## TRANSPORT IN SOCIETY

Reference to the impact of transportation on livelihoods takes one from purely economic context to the social context of transportation. Naturally there is some difficulty in distinguishing the two contexts. Morlok (1978, p.44) admits the problem and writes that "when we speak of the social role of transportation we refer to the organisation of society, the style of life in the sense and range of activities, both economic and uneconomic, that people engage in". Proceeding on this rather indeterminate course, Morlok isolated the way in which transport affected the size and spacing of settlements and the levels of accessibility and mobility between and among them. One might go further to mention the way in which transport technology, especially horse transportation, was once used to peg

out the size of farms. At an inter-urban level, Christaller's K4 system represents an effort to trace theoretically the effect of transportation on settlement geometries and hierarchies. The process of expansion and infilling within urban settlements contingent on successive transport technologies has been well documented empirically.

Transportation availability and quality also affects society in ways less tangible than those just mentioned. For example, transport is an agent of community in society. The point was made nicely by Webber (1963) who, in a transport rich society, wrote of "community without propinquity". Contrariwise it would be unfair to disregard the way events in transportation have contributed to the shattering of communities. A notable element of what Schaeffer and Sclar (1975) dubbed the social crisis of transport is the debilitating effect of rural public transport service withdrawal in developed countries. On a global scale, there are the disruptive effects of limited-access freeway construction; these effects echo earlier experiences with railways. According to Dyos (1955), in the period 1853-1901 metropolitan railway extension in Victorian London displaced some eighty thousand poor persons and remoulded the geography of social class there. In the United States, highway construction in an eighteen month period in the mid-1960s took about fifty thousand properties (Colcord, 1979). The consequences of such rail and freeway construction include the physical and social division of neighbourhoods, the demolition of homes and removal of security, and the initiation of divisive group political conflict in response. If there is a positive social side to freeway construction it is that opposition to a project can forge local *esprit de corps* in the form of citizen action groups (e.g. Gakenheimer, 1978; Pill, 1979). In exceptional cases of participatory planning, it may also bring State and citizens together.

The manner in which transportation helps shape a community may be explored usefully in terms of the constructs of time-space analysis. As time-geographic research has made plain, transportation defines both the spatial coordinates of activity spaces and the content of activity programmes. Accordingly, transportation has a key role to play in the awareness/unawareness citizens have of their immediate community. Signs are that in western cities transport improvements have contributed to the shrinking of awareness spaces rather than to the expansion of horizons. Paradoxically, it is almost easier now for people to know less of conditions on their own doorsteps than of conditions in remoter places. Massive suburbanisation of work, shopping and entertainment in the modern western city has substantially expanded neighbourhood travel and has proportionately reduced city-wide trips. In addition, commuter journeys across elevated and submerged tracks and roads limits a person's exposure to many sections of a city and ensures the isolation of suburbia and ghetto, and screening of their respective lifestyles and moralities. Whereas in earlier times transport made it possible for the wealthy to escape constant exposure to unpleasant facets of urbanism (see Schaeffer and Sclar, (1975) on the alienation and stratification of society, resulting from transport), nowadays it takes effort to get acquainted with disparities in wealth and standards and modes of living inside the city, and to see parts of the city that are so easily and so often bypassed.

The place of transport in society is also reflected in the way transport articulates social policy. Conceding the difficulty of distinguishing social, economic and political policies, it is nevertheless reasonable to suggest that the policy of racial segregation on public transport in South Africa is perhaps the singular most obvious instance of transportation being used to reinforce social policy. The attempt to redistribute real income by differential user subsidies and taxation (e.g. free rides for pensioners and benefit-taxation on company-owned cars) is another example of transport-directed social policy. There are cases also of uneconomic public transport services being maintained on grounds of their being "socially

necessary". Route maintenance on these grounds is quite common. Projects to provide and/or ease transport for the physically handicapped are another clear expression of social policy at work in transportation. Even non-transport projects of transport organisations speak to the social ties of transport: for instance, provision of railway worker housing may go beyond merely ensuring the staffing of remote junctions and termini. In South Africa, substantial provision of White railway worker housing even in large urban centres was a clear extension of social policy for the assistance of poor White labouring classes (Pirie, 1982b).

Under the catch-all title of "transport in society" it is not uncommon to remark on the importance of the motor car as symbol of wealth and status in the car culture. Less often mentioned is the symbolism of independence and public-transport deprivation that car ownership in the ghetto represents. In general, the matter of symbolism has been well grasped and exploited by the marketing profession. Writing of the burgeoning number of 'extrinsic'/'serve-passenger' trips in western cities, Schaeffer and Sclar (1975, p. 118) comment on one advertisement: "the chauffeuring mother is today so truly a symbol of the affluent society that the Ford Motor Company could run a television ad in the late sixties in which a young bride proclaimed: 'I promise to love, honour, obey and spend half my life in a station wagon' ". A mere handful of contributions have investigated seriously what may be termed the iconography and historiography of transportation, though there are numerous decorous picture books which speak to this theme.

In some respects it is precisely this iconography and historiography that is the most undeveloped field of transportation research. Presumably this is a direct outcome of the enduring emphasis which has been placed in transportation studies on 'hard' empirical research as the path to wisdom. One quarrel against that standpoint is that it is not the sole way of understanding transportation.

There is indeed room for humanist approaches in addition to the strictly scientific, and these may be most illuminating as concerns the social relations of transport. Perhaps the furthest that transportation research has gone toward humanist studies has been in the investigation of user attitudes to transport. Such research may be humanist in spirit, but it is hardly that in practice, relying as it does on objective, clinical procedures. More truly humanist research might focus, for instance, on developing material which conveys the *meaning* of transportation. Is the tedium and anxiety of long-distance public travel adequately captured in regression equations with time-delay parameters? Is automobile purchase a rational, unemotive experience made out by pairwise comparisons across price, comfort and fuel-efficiency vehicle attributes? What does it mean to experience stigma originating in public transport use? Is the degree and condition of immobility reducible to a binary code in a computer file? For how much longer do we go on assuming either that we know the dimensions of *sensible* travel behaviour or that they are unimportant? Answering these or similar questions would appear to call for new research into the categories and concepts invoked to explain, predict and comprehend transportation.

Another possibility for humanist transportation research is to formulate perspectives on the way in which transport gives character to place and conveys a sense of, for example, either tradition or progress, caring or anarchy, competence or bungling, opportunity or constriction. The point has not escaped all attention, but systematic exploration has been slight. Nearly sixty years ago, Rishbeth (1924, pp. 91-92) submitted that railway systems "sum up the human meaning of a region....symbolise the human significance of a region and the life of the society which occupies it..." Indeed, major rail projects, of which Cecil Rhodes' Cape-to-Cairo scheme was a remarkable example, come to be seen as expressing the spirit of an entire era - in the case mentioned, the benevolence, adventure, courage, and

foresight often cited as hallmarks of the late Victorian colonial period. The image that transport gives to place has been appreciated by the tourist business which often types a place by the transport modes unique to a district, city, town or village. Evocative photographs abound of London's red buses, Manhattan's graffiti subway cars, Venice's gondolas and the quaintly named paratransit vehicles of South East Asian cities. Hidden beneath the picturesqueness of vehicles and their exotic names may be a tale not otherwise evident in society. How does the character of primitive forms of carriage inform even a casual observer of conditions in rural peasant economies and in burgeoning squatter camps on the fringes of Third World Cities?

In much the same way that research into the theme of urbanism in literature has revealed some fascinating insights, so too research into 'transportation in literature' may yield some fresh perspectives. It might be rewarding, for example, to see whether and how the conventional scholarly view of transport as a service industry faced by derived demand is echoed in contemporary literature. Obviously, period-literature may also function as a source of historical information on impressions of such matters as the demise of coaching and the onslaught of motorisation. Dickens, for example, has left us one person's impressions of the diverse impact of steam railways in Victorian cities. There, the railway legacy included railway passenger service businesses galore, destruction of neighbourhoods, conditions of slum living under railway arches, suburban decentralisation and, not least, an atmosphere of hurry tailored to the new regimen of railway time (e.g. Nelson, 1974).

## POLITICS AND TRANSPORT

As is the case with the economic and social relations of transportation, political relations are multifarious, complex, and often difficult to label as purely political. At the international scale - where systematic studies of transport and politics are scarce (but see Wolfe, 1963) - transport plays a political role in the patrol and defense of national borders, waters and airspace. And, as research on Romanian railway history has shown, fluctuating political boundaries and attendant changes in regional interest may affect the pace and course of transport infrastructure construction (Turnock, 1979). In times of war or imperialist expansion, transportation advantages assume critical importance, both in the attainment of supremacy and in the assertion of sustained military, economic, legal and ideological rule. Just as the Roman Empire was articulated by its fine roads, so the British Empire was firmly anchored to awesome naval and merchant marine power and to expansive railway building. Presently, the numerous capitalist and socialist backed aid-projects for transport infrastructure, fleet- and control-modernisation and expansion in undeveloped countries serve as outstanding examples of the ideological persuasion expected of transportation. China's extravagant low-interest, long-period loan for the Tanzania-Zambia railroad is often cited as an example of transport politicking par excellence. It should be borne in mind though that this single instance of aid is at least matched by the sum of many smaller capitalist sponsored projects around the world.

At an international scale also, transportation has been, and continues to be used as a pawn in political rivalry. In this context transport services between territorial neighbours and trade partners have been willfully severed, particularly in an attempt to force one party's hand over an issue which may be quite unrelated to transport. Examples of such issues are debt default, violation of international agreements, alleged maltreatment of nationals and, as in Southern Africa, harbouring of terrorists. Transport may be manipulated to serve the ends of political rivalry in other ways too. The strategic routing of railways so as to bypass, include or cordon off territory was a notable ingredient of railway politics practised especially during the bygone era of territorial imperial expansion and, not



least, by landlocked states.

Political conflict is also related to transportation through the labour process. Worker protest originates not only in economic affairs; it is also rooted in agitation for worker representation on corporate decision-making bodies, an aim which is clearly political albeit with economic overtones. In addition, the strategic nature, labour strength and sheer visibility of transport services make them exceptionally well suited as targets for general political protest by workers, users and other groups. In recent years protest against wage freezes, lay-offs or limited wage increases consistent with austere governmental budget programmes has been prominent in forcing closure of manufacturing works in Britain, South Africa and the United States.

Boycotts of transportation against unacceptable levels of service form another of the interfaces between politics and transport. Although boycott is not a frequently adopted strategy, it is not altogether unusual in some places. For South Africa, Lodge (1980) records that twenty three bus boycotts were reported in the press between 1948 and 1961 among Black township residents. On the theme of protest it is pertinent also to note that as a tangible symbol of disliked bureaucracy in general, public transport facilities suffer vandalism during periods of social unrest.

Turning from these larger scale instances of transport-politics relations it is important also to point to the degree to which transport decision making is related to politics. Not only is the history of transport full of the profiteering of entrepreneurs, it is also coloured by the exercise of their personal self-interest and ambition. As Eliot Hurst (1976, p. 185) has remarked of North America, "the impact of transportation on the ... landscape is the product of hard-nosed attitudes by entrepreneurs and others in the context of a burgeoning and profitable capitalist economy". Apart from being a means to status and power, transport is bound to politics in as much as public transport projects must usually pass scrutiny by some politically constituted body prior to approval, voting of funds and implementation. The relevant bodies may range from parliament itself down to provincial authority, local council and neighbourhood ratepayers association. In the United States, consideration of electoral support has been found to be paramount in establishing the bounds of political feasibility. To the extent that the real politics of decision-making may be revealed in the nature of extant transport policies and projects, the gathering and maintenance of political support by promise of improved transport service or transport jobs in a constituency, and by evidence or promise of minimal interference with lifestyles and property, appear as major beacons in transport decision making (Altshuler, 1980). As in other aspects of political life too, agreements among political representatives for mutual support in voting on marginal issues may be brought to bear on transport matters. Investigation of more sinister allegations of vote-trading and vote-buying so as to approve or turn-down contentious transport plans and policies might be said to constitute the nadir of muck-raking transport research.

Transport and politics slot together also as regards the delimitation of public transport operating jurisdictions. For example, the decision whether to extend a large municipal bus service into adjacent dormitory townships which cannot support a public service out of their own limited tax base is an eminently political one. In this connection, transport is passive onlooker to decisions regarding areas which it will serve. In addition it may also be an active agent of jurisdictional reform. Arguably, there is no evidence for metropolitan reform that is so compelling as a transparent mismatch between formal political boundaries and a functional region defined by dense traffic movements.

As a final remark on the transport-politics relationship it is perhaps appropriate to draw attention to the matter of values and ideology in transport practice and transport studies.

Regarding first the matter of ideology, Colcord has remarked only recently on the absence of work in this area. On an urban level conflicts have been addressed mostly in terms of technology, environment, finance, organisation and community, whereas "transportation decisions are in fact ideological in character... they represent different notions of the proper role of government and the proper distribution of the costs and benefits of government programs among social groups" (Colcord, 1976, p.3). Regarding values, it seems true to say that the closest transportation researchers have come to examining the values incorporated in their work is the acknowledgement of imperative of professional ethics (e.g. Manheim, 1979). In this connection transportation research shares with other intellectual activities a concern for professional objectivity, neutrality, maintenance of client confidences and such like. Supposedly the development of a code of ethical transport research would also provide guidelines on whether and how to research, for example, illegal taxi operations. One dilemma here is how to proceed without exposing the activity in a degree sufficient to prompt repressive moves by authorities, or how to proceed without giving tacit approval to violation of the law. Just this single example gives lie to any claim of research being value-free.

Although concern for ethics is admirable and might usefully be extended into transport practice, the list of concerns is manifestly not on agenda for priority-rated investigation of issues that are commonly overlooked by researchers and planners who adhere to particular sets of values and see the world about them accordingly. For planners, the consequences of these biases extend deep into transport planning data collection designs and modelling procedures. In addition, policy decisions themselves are affected: "it is beyond dispute that the most important decisions affecting urban transport are made by people whose personal viewpoint of the problem is largely behind the wheel of a car" (Thomson, 1978, p. 15). For researchers, value-bias leads to uncritical acceptance of prevailing values and screens the problematic nature of research topics. Does not research (however scientific) into improving racial busing and upgrading high-speed transport between ghetto, *barriada* Black 'location' and the advantaged city, speak implicitly of the acceptance (if not the approval) of racial divisions in city and society? To take the transport implications of racial segregation as somehow 'natural', as the 'givens' of a research problem, is surely more conducive to the maintenance of discrimination than to its removal? The point is not that ideologically-attuned research can be avoided. It cannot. There really is no possibility of even developing 'rational' (as opposed to learned, dogmatic) value systems philosophically from first principles. Deciding on first principles is after all no incontestable matter. Besides, there is no self-evident foundation for a philosophy of transport in the same way that a concept of property may form the basis for a philosophy of housing. Questions about transport needs are shrouded in difficulty (e.g. see Rosenbloom and Altshuler, 1979) and questions of rights no less. Only a little work has been reported on the political-philosophical dimensions of transportation (e.g. Houseman, 1979).

## THE RESEARCH CONTEXT OF TRANSPORT

At various junctures in this paper it may have seemed that some transport relations have been misclassified. Those which might seem political may have been treated as social, those which have been termed social might seem better reviewed as economic. Additionally, relations which were classified in just one category may seem more pluralistic. This matter of misclassification or simplistic classification points most importantly to the subjective and arbitrary fragmentation of transport studies and transport relations into economic, social and political domains. Difficulty with the arrangement of material in this paper speaks unambiguously of the inadequacy of this tri-partite heritage as a means of analysing, comprehending and planning transportation in its entirety.

Two approaches to transport research have emerged in response to the need for developing a comprehensive view of transport and related issues. One of these is the so-called 'systems approach' which aims to cast transport and its relations in a complex network of cause and effect (e.g. Eliot Hurst, 1973). The approach enjoys enormous popularity in general as a way of specifying with considerable precision mutual impacts and sensitivities of variables in a system in which relations are known. At best the systems approach involves sophisticated mathematical modelling and the solving of sets of recursive equations in iterative manner. At worst it is no more than boastful scientific jargon for verbal descriptions of relations, such as those mentioned in this paper. The question arises as to whether all the diverse relations of transport can be represented mathematically in a way that commends systems analysis? Moreover, does refined quantitative information on transport relations have any major benefits over well-informed estimates deriving from experience and more casual observation? And, it must be clear, the systems approach is no procedure of discovery in itself. As a research tool it is limited by being merely expository of relationships established by preceding research. The outcome of systems analysis can only be better information, not broader ideas or deeper insight. It is these latter elements which form the foundations of systems analysis in the first place and which need continual sharpening. It should be recalled, above all, that what we term 'transport relations' are nothing more than the relations we know about or can hypothesise. The research context establishes in a fundamental way what we allow ourselves to learn about transport and its context.

A second approach which potentially allows a comprehensive view of transport is called 'political-economy'. As with the systems perspective, a sketch must suffice. In broad terms a political-economic approach to transport derives from Marxist analysis of the economic foundations of social organisation. The focus turns from behaviourism to massive economic structures which are held to underpin behaviour. The view is emphatically historical and critical. The transport problem comes to be seen as a secondary problem only, with lasting solutions lying outside transport itself. A political-economic perspective on transport is critical of the predominant view of transport as a service industry and of the attendant emphases on transport provision as demand-led and on transport decision-making as disinterested and grounded in psychology.

Unlike the systems approach, that of political-economy is not technique-based and has the distinct advantage of offering an integrated *theory* of the interdependence of what have been called here, economic, political and social forces. The approach has yet to be fully developed and applied, though several starts have been made. Writing in 1973, Sweezy was among the first to broach the question of the political economy of the motor car, one which he noted had "never been subject to serious analysis in the Marxist literature" (Sweezy, 1973, p.3). Subsequently, Taebel and Cornehlis (1977) addressed the political economy of urban transport in a presentation not dissimilar to Snell's well-known evidence to a United States Senate Subcommittee. That evidence pointed to the conspiratorial engineering of the demise of electric mass transit by corporate motor bus and motor car interests. Research on that particular subject continues (e.g. St. Clair, 1981), amply fuelled by disdain for the aphorism that "what is good for General Motors is good for America". In an infant area of endeavour it is useful to note other political-economic contributions. Castells (1977) and Scott (1978) have presented the view that urban transport should be regarded as one element of the circulation and distribution of economic surplus under capitalism. Scott (1978, p. 359) finds that insights from political economy mean that "if we want really politically relevant transport research, then that research must emerge from its traditionally myopic frame of reference. It must come to terms with the fact that the urban transport process raises fundamental social and political questions

and that at the core of these questions is the role that urban transport plays in the distribution of the economic surplus. "More recently it has been shown how a political-economic perspective can illuminate the way in which "the whole suburban socio-economic form created by the interlocking of finance capital, housing industry, automobile complex and the State, becomes also the most profitable structure for the sale and distribution of commodities ... the car comes to orchestrate the whole suburban regiment" (Eliot Hurst, 1981, pp. 81-82).

## CONCLUSION

This outline paper has ranged widely over the many relations that form the context of transportation. Doubtless it has neither probed sufficiently deeply nor sufficiently widely. Mindful of the state of writing and research on the context of transport, a short paper which collects several perspectives together is however a prelude to the large task.

Among the important points made in this presentation is that there is a great variety of ways in which transport interfaces with the social, economic and political organisation of which it is part. The study of these relations is largely the work of specialists and rarely are their individual contributions joined so as to sketch a picture as complete as possible in the present state of knowledge. The presentation here suggests also that there are transport-relations about which it is only possible to speculate and press for research. Finally, this essay introduced a vital, but much neglected context of transport namely, the research context. Put simply, different research styles (e.g.: positivist, humanist, political-economic), different ways of asking questions, different ways of regarding transport or differences in what is taken as admissible evidence in research, reveal different aspects of the relations of transport. Failing to recognise this fugitive context of transport, we are in danger of objectifying context itself and taking as absolute the context in which transport is planned, provided and used. From an academic point of view, one of the greatest challenges ahead is to broaden rather than narrow the relations of transport we admit in teaching and in research.

Not all of the relations of transport that have been presented here will be obvious to all people, although many such relations are probably taken for granted since they are everyday. Hopefully, the juxtaposition in one place will have reminded about the profound ramifications of transport and will have served to reiterate the difficulty of the task facing those whose job it is to design transport policy and anticipate even its major consequences. Hopefully too, the juxtaposition will have stimulated ideas for research in the large, untapped wilderness of transport studies. As Wachs (1977, p. 117) put it in an article on transportation policy in the 1980's, "entirely too little attention has been given to the economic, social, fiscal and institutional dimensions".

Having recounted the complex context of transport, it is tempting to end with the timeless and hackneyed assertion that transport is the lifeblood of society, touching our lives from cradle to grave. The generalisation stands, but like all dogma, is both true and untrue. There are other features of existence that may lay just claim to the physiological metaphor, and in bidding for recognition of the centrality of their subject, students of transportation would do well to see it also in the context of these other claims.

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