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Life in a global village

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Abstract. The view is well established that the 'earth shrinking' consequences of developments in transport and communications represent progress. This view is disputed here, not primarily on the grounds that increasing mobility is closely associated with increasing physical pollution, but on the grounds that, by increasing the scale of society, it is alienating. Some mobility growth rates are charted; the paradox that these growth rates are associated with a widening gulf in communications is examined. The growth in the scale and complexity of society's problems produces a growing dependence on esoteric techniques of control. The growth of the technology of control abets the growth of more complexity and yet more techniques for controlling it. The result is a progressive widening of the gulf that separates the controllers from the controlled.

The *Sunday Times* published a map recently (Hughes, 1972) showing the way in which Concorde is shrinking the world. It consisted of two maps of the world, one drawn at half the scale of the other, with the smaller map superimposed on the larger. Both maps were centred on Paris. "The point" of the composite map was "that it would only take a few hours longer to fly (in Concorde) from Europe to most important parts of the world than to fly the Atlantic in a Jumbo Jet".

The map was of course a misleading oversimplification. The distance transformation employed in drawing it was based on a direct comparison of the cruising speed of a Concorde with that of a Jumbo jet. It ignored the fact of Concorde's limited range, which would require time-consuming detours and fuelling stops, and assumed away the question of overland 'booming rights' which remain to be negotiated. However, it is not my intention to dwell upon this cartographic chicanery, but rather to examine the attitudes that lie behind it.

Terry Hughes, the author of the article which accompanied the map, clearly thought that the map was not only true but an extremely effective piece of pro-Concorde propaganda. That shrinking was good for the world he had no doubt. That his readers would agree that shrinking was good for the world he also did not appear to doubt. Certainly he did not feel that it was necessary to explain to them why it was a good thing. It was sufficient simply to demonstrate that Concorde would do it.

His assessment of the general reader's reaction was probably fairly accurate. Certainly market researchers, advertising copy writers, and other monitors and manipulators of the popular psyche have arrived at similar assessments. It is sufficient for BOAC to call their tickets 'Earth Shrinkers' to be confident of selling more of them. It is sufficient for British Rail to demonstrate that electrification has shrunk Britain to convince the public that it is in the vanguard of progress, and sufficient to boast of the coming wonders of the 'Advanced Passenger Train' to prove that it intends to remain there. It is sufficient to note that the new M4 motorway has brought South Wales closer to London to silence the project's detractors. And it is sufficient for the Post Office to remind people that the telephone brings them closer together to show that it is a wholly beneficial social institution.

Who then could doubt that this shrinkage really is progress? Of course the technologists of mobility agree that we must try to reduce the fumes and noise, and limit the numbers of homes destroyed and neighbourhoods disrupted, that we must fly supersonically only over the sea or 'sparsely populated areas', and that we must bury the wires and cables, and landscape motorways artistically. We must, *of course*, seek to minimize the undesirable by-products of increased mobility. But increased mobility, itself, is indisputably a benefit. Or is it?

Benefits

What precisely are the benefits of increased mobility? And is there some point at which diminishing returns set in or will increasing mobility represent progress forever? Such simple questions receive surprisingly evasive answers. "Increased mobility promotes economic growth" is one confident answer that leads nowhere; it is no longer possible simply to appeal to a growing Gross National Product as some ultimate sanction for a point of view. The very same questions are being asked of it. "It helps the balance of payments" and "it creates employment" are two more answers. Forever? If current growth rates must level off some time, will not the balance of payments and employment problems associated with the levelling off be greater the longer it is delayed? "They said the same thing about railways ... cars ... telephones ..." or "What about the Luddites?" are curious rhetorical devices adduced as argument. The economic argument for ever-increasing mobility twists and turns, but ultimately it either dissolves or ends up at the fundamental, dogmatic, and old-fashioned assertion that ever-increasing economic growth in a finite world is both possible and good.

The ground then shifts. There are psychological and social arguments to be considered. Lord Beswick (1972), a prominent Labour Party spokesman on aviation matters, puts the following case:

"It is inescapable that in any progressive industrial society there must be a pioneering spearhead technology. It is not simply a matter of establishing the facts, or of finding out what can or cannot be done. There is a psychological spin-off, a constructive feeling of pride, a stimulating sense of prestige, if one's own society can claim to lead in any given field. Concorde, the RB 211 and Harrier can reasonably be said to afford this constructive stimulation."

This argument is part chauvinism, part truism, and part whistling in the dark. It is no doubt true that pride and prestige are conducive to pleasurable and stimulating psychological states, but these states are crucially dependent upon public recognition of one's 'achievement'. There are many 'fields' whose leadership no one can take pride in. In the absence of any criteria for distinguishing technological achievements from technological follies, 'psychological spin-off' is likely to be very difficult to sustain. Such criteria cannot be found within the tautology that asserts that something is good because it makes one proud because it is good.

The search for the elusive benefits moves on to a consideration of the social consequences of ever increasing mobility. Here again, the conventional views of progress and mobility are firmly entrenched. Surely only a jaded Candide could doubt that travel brings a veritable cornucopia of benefits. It is liberating and stimulating; it spreads ideas; it gives us opportunities to meet new and interesting people and do new and interesting things; it makes us more aware of, and sensitive to, other cultures; it promotes greater national and international understanding; and so the list goes on. But can all this go on indefinitely for ever increasing numbers of people? Are the liberation, stimulation, and opportunity, that historically have been the good fortune of a mobile few, potentially available to all? I would suggest not. Certainly not even the most wildly optimistic Concorde salesman envisages the day when all

800 million Chinese and all 500 million Indians, let alone all Britons or Frenchmen, will be regular users of Concorde. What then are the limits to the benefits of ever increasing mobility and how are these benefits to be distributed? If Concorde-style mobility is to remain the prerogative of the few, what are the consequences for those who are left behind?

Mass tourism has a variety of destructive consequences for the places visited. There are the obvious physical effects of trampling feet and probing fingers to which official points of interest are subjected. But there are much more serious, if difficult to define, consequences that can best be summarized by the term 'tourist spoil'. That large numbers of visitors do spoil places there can be little doubt. But there is a deliberate conspiracy by the tourist industry to separate in the minds of its customers the effect of 'spoil' from its cause, mobility. Their advertisements do not urge people to hurry to spoil the last unspoiled parts of the world but, unless they have deluded themselves beyond belief, this is precisely what they intend their advertising to accomplish. The amount of space devoted in tourist literature to the concept of spoil makes it impossible for the tourist industry to plead that it is unaware of the consequences of its new tourist 'developments'.

The stimulation of being a pioneer and the joys of discovery are benefits of travel that are fast disappearing, to be replaced by a pervasive sense of *déjà vu*; it has all been done and written about so many times before. But this is a snobbish concern that the packaged tourist is rightly entitled to ignore. If the joys of visiting out-of-the-way places are, almost by definition, something that must be restricted to very limited numbers, why should the destruction of these benefits interfere with the ordinary tourist's enjoyment of a holiday in the sun? In the absence of any rationing scheme that can ensure him his fair share of these fragile benefits, he is unlikely to lament their loss.

However, existing packaged holidays, with their standardized entertainments and homogenized cuisine, offer only a taste of things to come. If the 'optimistic' forecasts of the Roskill Commission come true (HMSO, 1971), by the year 2006 there will be an eleven fold increase in the numbers of foreigners visiting Britain, and an incredible twenty-five fold increase in the numbers of Britons flying abroad for holidays. Already there is serious concern about the effect of existing levels of tourist traffic on life in London. It is difficult to imagine all the consequences of an eleven fold increase in this traffic, but it is impossible to believe that London could remain an interesting and enjoyable place to visit. The logistical problems posed by such numbers would demand industrialized solutions; all the benefits historically associated with travel would be consumed by the mechanical cheeriness and computerized hospitality of the tourist industry. Because the expected growth in numbers of British tourists going abroad is more than double that of the number of foreigners coming to Britain, the consequences for the places they visit are likely to be even worse. Not only the physical environment, but the social fabric of these places will be trampled and scarred by the multitudes that are encouraged to visit them.

Although the amount of leisure time available is expected, for most people in 'developed' countries, to increase, for the foreseeable future foreign travel will remain a relatively brief escape from the daily routine. It is in journeys to work, to schools, to shops, and to friends—in the comings and goings of every-day life—that the impact of increasing mobility will be most strongly felt; and here a consideration of trends in mobility patterns gives cause for even greater concern. Far from bringing people ever closer together, fostering ever more and closer human relationships, and giving people ever more freedom and control over their lives, ever increasing mobility is, in a very real sense, driving people apart, weakening social ties, and aggravating a state of mass alienation.

Alienation

Alienation is a much overworked word and carries a heavy burden of possible connotations, so I will digress briefly to explain the sense in which I use it. Alienation is a state of mind. It is perhaps an unavoidable state of mind, experienced by everyone in the contemplation of his own cosmic insignificance. Our relationship to the infinite and eternal is, by its very nature, estranged. It is not something we can do anything about so we try not to think about it. But our relations with our fellow men are more immediate and provide a context within which we have the possibility of being recognized as something more than impersonal bundles of matter in motion. In a social setting we have at least the possibility of being wanted, respected, needed, loved—of being significant. It is only this possibility that makes life bearable; and it is the denial of this possibility that I call alienation.

It is a condition experienced by Kafka's K. in his struggle against the inscrutable authority of the Castle; by Orwell's Winston in his fight to retain the few shreds of hope and dignity that the tyranny of 1984 would deny him; and by Bernard and the Savage in their contemplation of the meaninglessness of the hedonistic utopia of Huxley's Brave New World. It is experienced by millions: by the unemployed; by those who do mindless, tedious jobs; by those who commit 'mindless' acts of vandalism and violence; by those who drop out; by the poor living alongside the rich; and by all those whose lives are buffetted by an authority whose scale and complexity are beyond their understanding. It quite likely is, as Roszak (1970) insists, "the disease from which our civilization is dying".

But for some people alienation does not exist. How can one demonstrate its existence to the sceptical social engineer such as Beer (1967), who quotes Kelvin's dictum "Whatever exists, exists in some quantity and can therefore be measured"? States of mind cannot be measured. Or what evidence could convince a doubting behavioural technologist, such as Skinner (1972), who recognizes no social reality that cannot be measured as a stimulus or a response, and who dismisses speculation about the mental states that mediate between stimuli and responses as 'unscientific'?

If it is a disease, must it not at least have symptoms that can be measured? This was a line pursued with rather limited success by Durkheim (1963) in his study of suicide. 'Anomic suicide', he reasoned, was a rejection of life by those who felt rejected by life. The frequency of this 'response' could therefore be used as an index of alienation. Unfortunately there is such a diversity of possible social and economic 'stimuli' which could account for it, he was unable to produce convincing statistical support for the hypothesis. Others consider crime statistics a useful proxy for alienation. Crime, they reason, is a rejection of authority by those who feel rejected by authority. Alcoholism, drug addiction, divorce, mental illness, worker absenteeism, and industrial sabotage are other possible measures. But the difficulty is that there is an infinite variety of ways in which people can manifest a state of alienation. What is probably the most common of all, leading a life of quiet desperation, is the one most likely to pass completely undetected by a quantifying behavioural scientist.

I can think of only one symptom that is likely to be common to all cases of the disease, but it is one that will not be of much use to the social engineer: as individuals become, and come to feel, less significant in the eyes of society's planners, their behaviour, in the eyes of these planners, will become more irrational. Their behaviour will increasingly be related to alternative ideas of society that are quite alien to the planner. But this, as I have already indicated, is not much help; irrationality is as difficult to measure as alienation.

Alienation, then, cannot be measured. The case for ever-increasing mobility contributing to the ever-increasing alienation of ever-increasing numbers of people can only be judged against the simple 'unscientific' criteria of plausibility. In the face of

the confident optimism of the transport technologists, mere doubts about an unmeasurable frame of mind may not seem very much with which to counter the 'hard facts' by which they measure their 'progress'. These doubts will, I am sure, be easily dismissed by scientists who cannot even find this state of mind with their instruments. Nevertheless, I will attempt to relate changes in this state of mind to their 'hard facts', and to explain why my view of progress is so very different from theirs.

The transport and communications revolution

Figures 1 and 2 (drawn respectively from statistics produced by the Roskill Commission and the Post Office) are a very modest selection from a large collection of statistics that could be used to document the 'progress' of the revolution in transport and communications. The projections into the future have been produced by a variety of forecasting techniques but basically represent a straightforward extrapolation of the historical record into the future. To the extent that they are used unthinkingly, or even optimistically, as a basis for planning the future, they also represent an extrapolation of a state of mind. The reasoning that sustains this state of mind is quite simple: exponentially increasing mobility has always in the past been thought of by most people as progress, therefore a continuation of this increase into the future should also be seen as progress.

Let us examine the nature of this progress and begin by introducing a useful spatial concept which I shall call 'the known world'. This is that part of the world of which an individual might have intimate first hand experience. It is defined as the area within a circle described by a radius whose length is one day's strenuous journey. If we make the rather generous assumption that a vigorous man can walk at 5 miles per hour and cover fifty miles in a strenuous day, then using the above definition we could describe the 'known world' of a typical individual in a pedestrian society, before the beginning of the transport revolution, as the area contained within a circle having a radius of fifty miles. The limit of one day's strenuous journey, while admittedly rough and arbitrary, will be seen to be quite conservative for our purposes, and not unreasonable when it is recognised that it encompasses an area of about 8000 square miles, an area larger than the area assigned to many pedestrian tribal groups on ethnic maps of Africa.

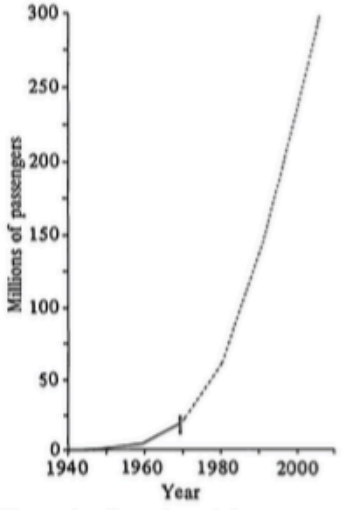

Figure 1. Growth and forecast growth of London's air traffic (from Adams, 1971).

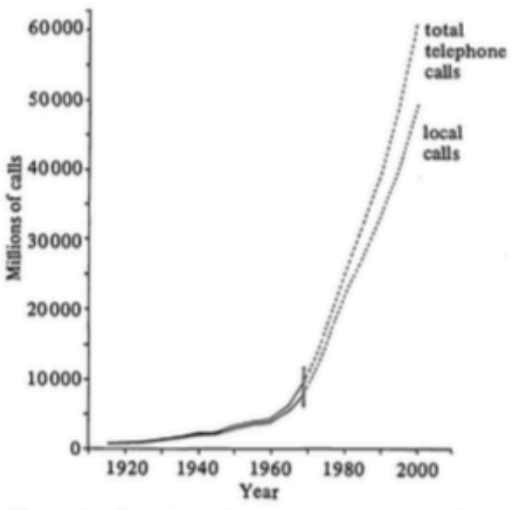

Figure 2. Growth and forecast growth of British telephone traffic (from Adams, 1971).

The bottom circle of figure 3, placing a world of this magnitude in a more familiar context, illustrates a circle with a radius of 50 miles centred on Trafalgar Square. Ascending from this circle are progressively larger 'known worlds' whose radii have been increased in the same proportion as the increase in the speed of transport available. The final circle represents the known world of the typical Concorde passenger[1]; within a day's journey—given the assumptions described at the beginning—lies the

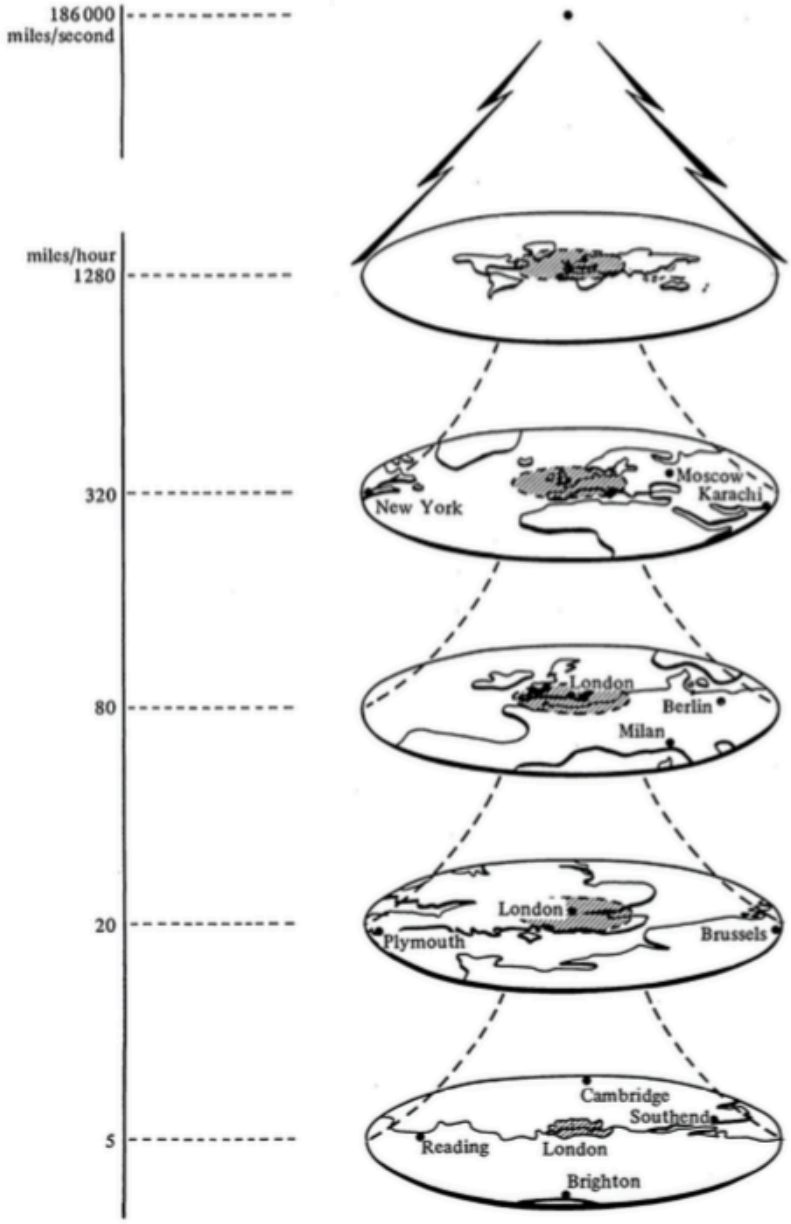

Figure 3. The shrinking world.

[1] More precisely it represents what would be his known world given the dubious assumptions which underly the map discussed at the beginning. Although these assumptions are not accepted, the purpose of this illustration is to examine the belief that it would be a good thing if the assumptions were true.

whole world. The final dot describes what might be called the 'electronic known world' of all those who are linked into the global telecommunications network.

Perceiving the known world

Although behavioural psychologists and cyberneticians have not provided any insights into states of mind, and cannot if they refuse to acknowledge their existence, they have provided some useful information about human abilities to recognize patterns, to calculate, to make choices, and generally to cope with the complexity of reality. The psychologists have discovered that in certain very important respects these abilities are extremely limited, and the cyberneticians have developed, they claim, a number of useful tools for extending them.

Let us look first at the limitations. Attempts have been made to estimate the information carrying capacity of the nerve fibres leading into the brain (Barlow, 1968) but, although the estimate is a number of impressive size, 10^7 bits/second, relative to the volume of information that is latent in the world about us, it is insignificant. The conclusion must be therefore that human information sensors and processors are highly selective. In the process of visual perception, for example, people separate, somehow, objects of principal interest from their surroundings and view them at an appropriate level of resolution. Without these selective skills people would perceive no meaningful patterns—witness the difficulties experienced by someone looking for the first time through a telescope or a microscope. The level of resolution that is selected is related to the size of the phenomenon being perceived; but whatever the level selected, a higher level is always possible. This means that people make sense out of the information impinging on their senses by ignoring, or filtering out, most of it.

Given man's limitations, and the nature of the perceptual devices employed to compensate for them, we can expect that as the size of someone's 'known world' increases, there will be a corresponding reduction in the level of resolution at which he 'knows' the world. For example, few of us, with our modern mobility, now know a world such as Thoreau (1862) knew:

"My vicinity affords many good walks; and though for so many years I have walked almost every day, and sometimes for several days together, I have not yet exhausted them. An absolutely new prospect is a great happiness, and I can still get this any afternoon. Two or three hours' walking will carry me to as strange a country as I ever expect to see. A single farmhouse which I had not seen before is sometimes as good as the dominions of the King of Dahomey."

The detailed knowledge that a hunter will have of a patch of forest or that a peasant will have of the fields he tills will be quite different from that of someone driving past on a highway. And the view from the highway will be quite different from that perceived from a high-flying airplane. The amount of detail contained in these views is held relatively constant by a progressive downward shift in the level of resolution. But what is seen is quite different. How different was vividly illustrated by an incident during a recent space flight. Although Los Angeles was completely obscured by smog, a dense choking smog that made life in Los Angeles extremely unpleasant, the view of California from the Apollo space craft was simply 'beautiful'.

Human scale detail and variety are also lost as the level of resolution is reduced. People are swallowed up by social, national, and racial stereotypes, by enumeration districts, age–sex pyramids, population densities, and many other taxonomic devices that social scientists use for coping with social complexity.

When formalized these processes of selection and shrinking produce what a cybernetician calls 'homomorphic models of reality'. The construction of such models requires the selection of only phenomena that can be measured and which are capable of

representation mathematically. Once reality has been reduced to a set of mathematical relationships, it is possible to relate models at different levels of resolution to each other in a precise and explicit way. Further, the relationships can be described in a way that permits information about them to be stored and manipulated outside the head of the individual perceiver; it is this that permits the cybernetician to deal with a level of complexity far in excess of that manageable by the unaided human intellect. The cybernetician's complexity-managing skills, as we shall see, are in increasing demand.

The widening gulf in communications

When the mobility patterns described above are disaggregated, it becomes apparent that the benefits of increased mobility are confined to a small minority. While growing numbers of people in this country may be able to afford one or even two short packaged holidays a year on Mediterranean beaches, as the numbers increase this new freedom will amount to little more than an expanded selection of synthetic 'pleasure experiences' from which to choose. The most important beneficiaries of the transport and communications revolution are those members of the small, cosmopolitan elite who travel and communicate internationally much more frequently and for more serious purposes. They are the economic and political complement to the social columnist's 'jet set'. These are the people—the executives of international corporations, the World Bankers, the United Nations diplomats, the international conferees—the inhabitants of the Global Village—who make the global scale decisions.

If we confine our view to terrestrial modes of transport, we see again that the aggregate mobility figures obscure a situation of growing disparity. While car ownership is increasing, and while car owners are becoming more mobile, that sector of the population that is dependent upon declining public transport services is becoming less mobile. Since no forecasters foresee the day when more than fifty per cent of the population will own cars, and since the young, the aged, the infirm, and the poor are likely always to be denied the privilege of driving, a perpetuation of the present trends of public and private mobility is likely to mean that a majority is destined always to be left behind. To the extent that this majority is taken for rides by their friends and relations among the car owning minority, they will enjoy a certain measure of dependent mobility, but for the most part it is reasonable to assume that the car owner will be more mobile than the non-car owner. Even though the car owner and pedestrian might live in the same neighbourhood, they will inhabit different 'known worlds'. Though neighbours, their neighbourhoods are not the same. What the consequences of this will be it is difficult to say. But one consequence that is most unlikely is that they will be more neighbourly to one another.

In the United States the population is, on average, much more mobile than in Britain and the disparities in mobility are even greater. Following the widespread and enormously destructive rioting that took place in a number of American cities in the summer of 1967, President Johnson appointed a Commission to investigate the circumstances of the riots and to explain why such large numbers of people were apparently going beserk. The Commission's unsurprising conclusion (NACCD, 1968) was that the riots were race riots and that the participants were expressing their dissatisfaction with life in their ghettoes. Among the features of ghetto life that most impressed the commissioners was the fact that "Poor families in urban areas are far less mobile than others". Further they noted that, in the country with the world's highest *per capita* levels of car, telephone, and television ownership, there was "a widening gulf in communications between local government and the residents of the erupting ghettoes".

The root cause of this 'communications gulf' is described in *Invisible Man* by Ralph Ellison, a black American, as a problem of perception (Ellison, 1952). White Americans, he insists, simply cannot see the people who live in black ghettoes.

"That invisibility to which I refer occurs because of a peculiar disposition of the eyes of those with whom I come into contact. A matter of the construction of their *inner* eyes, those eyes with which they look through their physical eyes upon reality."

Although Ellison is concerned to argue that white people view the world through a racial filter that prevents them from seeing black people, this perceptual problem can only be exacerbated by the disparity in the levels of resolution at which the fast-moving, high-flying white American and the immobile ghetto resident view the world. The consequence of this perceptual problem is alienation, an alienation which Ellison flaunts provocatively:

"I can hear you say, 'What a horrible, irresponsible bastard! And you're right. I leap to agree with you. I am one of the most irresponsible beings that ever lived. Irresponsibility is part of my invisibility; any way you face it, it is a denial. But to whom should I be responsible, and why should I be, when you refuse to see me? And wait until I reveal how truly irresponsible I am."

Psychological spin-off

Mobility brings with it power and significance. We were told in the *Sunday Times* that Concorde would permit Europeans to reach "most important parts of the world" very quickly. These 'important parts' of the world were not specified but they are easy to guess; they are the cities with busy international airports, the cosmopolitan capital cities of the world; they are the expensive, upper class neighbourhoods of the Global Village. The rest of the world becomes less important to the increasingly mobile few; the people who live there become too small to be seen individually and can enter the global decision maker's thoughts only in the form of statistical abstractions. They become subservient 'factors' in the calculation of global 'strategies'. Not surprisingly the less mobile often fail to appreciate the grand designs of the Global Villagers whose 'shrunken' world has subsumed their own. They frequently do not want the airports and motorways that speed important people about their business. But their lack of appreciation is easily derided as provincial insularity and narrowness of vision.

Being a Global Villager can be satisfying work. Taking decisions that affect the lives of large numbers of people confirms one's own significance. But having one's life arbitrarily controlled by others is alienating. In order to sustain the self-esteem of the controller, and to minimize the alienation of the controlled, it is therefore necessary to devise an appropriate disguise for large scale decision taking operations. Consider the decision taking exercise of the Roskill Commission. That some people were alienated by its decision is obvious; farmers, shop keepers, neighbours—people recognizable as individuals, real people whose pictures appeared in newspapers—were sufficiently incensed to burn an effigy of Justice Roskill. It was the job of the Roskill Commission to show that this opposition, while certainly understandable, was narrow and selfish when placed in the context of the larger good that would be served by a new airport. But who were the people whose interests out-weighed those of the airport's opponents? Where were the individuals whose desire to travel was so important? Nowhere. They were a statistical extrapolation; they were a graph of traffic rising to 300 million by the year 2006; they were an abstraction that could not be cross-examined. Who were their spokesmen? They were Global Villagers from the British Airports Authority, the airlines, and the tourist industry. They were people in the mobility business whose 'job satisfaction' depends upon public recognition of their achievements. They were, and are, the motive force behind Lord Beswick's 'spearhead technology'. The graph that they presented to the tribunal (of important and mobile men who were to decide the airport controversy) was little

more than an extrapolation of presumed public acclaim to the year 2006; the 'stimulating sense of prestige' that they accept as their due for providing the facilities to carry the existing volume of traffic, would be as nothing compared to the recognition that they presume would be their due if they could increase this volume of traffic fifteen fold.

No doubt many 'ordinary' people can be found to agree that new airports and motorways are a good thing. Although much of the recognition in which the transport technologists bask is simply their own reflected propaganda, their pride is not entirely self-induced. People do recognize an equation between mobility on the one hand and freedom and power on the other, and reason that if only they had more of the one they would have more of the others. But it is an equation that ignores the relative nature of mobility, freedom and power, and that ignores the relationship between the general level of mobility in a society, and its scale. Large scale societies have no more men at the top than small scale societies, only more at the bottom. Thoreau, who lived and wrote in the nineteenth century when the railway building booms in England and America were reaching their peaks, saw very clearly where the boundless enthusiasms of the transport technologists were leading.

"To make a railroad round the world available to all mankind is equivalent to grading the whole surface of the planet. Men have an indistinct notion that if they keep up this activity of joint stocks and spades long enough all will at length ride somewhere, in next to no time, and for nothing; but though a crowd rushes to the depot, and the conductor shouts 'All aboard!' when the smoke is blown away and the vapour condensed, it will be perceived that a few are riding, but the rest are run over." (Thoreau, 1854).

Controlling the known world

Developments in transport and communications technology have already necessitated many social controls. Speed limits, blood alcohol limits, driving tests and licences, parking restrictions, laws to regulate noise and fumes, laws permitting the compulsory purchase of land for transport developments, compulsory vaccination, and the vast apparatus of customs and immigration are only a few of the most obvious social controls made necessary by increasing mobility. But even the impressive array of existing controls is generally deemed inadequate; the carnage on the motorways, the congestion in cities, the noise around airports, and a whole range of indices of pollution and social discord are all generally considered to be above tolerable levels and in need of control.

Further, increased mobility is creating new problems of control that are unprecedented in scale and kind. As traffic across traditional political and administrative boundaries increases, the politicians and administrators progressively lose control over matters that they have traditionally controlled. The highly mobile commuter, for example, can make his money in one authority and spend it in another. Or, the efforts of local authorities to relieve the lot of their poor can be frustrated by an influx of poor migrants who are attracted by these efforts. On a larger scale, the internal accounting arrangements of large international corporations result in large international transfers of wealth; financiers move off-shore to evade the laws of nations that they find uncongenial; and international shipping companies pollute international waters with impunity.

But increasing mobility is not only creating a need for more and larger social controls, it is weakening many existing controls. The greater mobility in daily life is reflected in greater residential mobility. An extreme manifestation of this kind of mobility is cited by Toffler (1970); over half the 885000 listings in the Washington DC telephone directory in 1969 were different from the listings of the year before.

Although telephones enable people to keep in touch after they have moved apart, and improved transport facilitates family reunions, such intermittent contact at best sustains much weaker relationships than those that have been disrupted. To the extent that families and neighbourhoods act as agents of social control, such controls are weakened by greater mobility. Whether the net result of such changes is 'liberating' or not depends very greatly on the nature of the controls by which they are replaced.

Freedom and control

"Our wills ... have just so much power as God willed and foreknew that they should have; and therefore whatever power they have, they have it within most certain limits." (St. Augustine, quoted in Jones, 1969.)

Thus did Saint Augustine reconcile his belief in an omnipotent deity with free will. Although it is a rather unsatisfactory reconciliation, it provides a very good description of the nature of human freedom. A man is constrained in a great variety of ways; he is constrained both by his physiological needs and limitations and by his physical environment. He is also constrained socially by the values he holds in common with other men. When he has felt a need to live by these values, he calls them attitudes and does not generally recognize them as constraints; but when they are formally codified as laws and enforced by social institutions, their constraining nature is more readily recognized.

The two sets of constraints, physical and social, complement each other in ways that a biologist would call symbiotic. For example, where advances in medicine have succeeded in removing important physical constraints on population growth their replacement by social constraints is essential to avert catastrophic social imbalances. In societies where the impact of modern medicine has been recent and sudden, the replacement of old and well established social constraints, that is attitudes toward large families and the taking and prolonging of life, by new constraints that are 'ecologically more appropriate', is clearly a very painful process. The new constraints, perhaps because they are new, have not been assimilated as attitudes, and are resisted as callous restrictions of fundamental human rights.

It is a basic premise of this paper, and indeed of all polemical writing, including that of professed determinists such as Marx, that within the constraints that confine him, man is free to act as he will; a pure determinist can have nothing to say about normative questions. Man, in most cultures and certainly in our own, has always utilized his limited powers and freedom of manoeuvre in an attempt to push back the constraints that restrain him in order to enlarge the area of freedom within. It is a technocratic article of faith that an increasing mastery of his material circumstances will automatically give man greater freedom.

This technological faith has prevailed throughout the 'developed world'; it has been the very foundation of this world's development. Although many people have become alarmed by the evidence of the unanticipated side effects of our technological achievements, the true believer is not shaken by such evidence. He is possessed of an open-ended optimism; rather than admit that man is not perfectible by science, he argues that the problem is simply one of imbalance. For too long he says, technological ingenuity has been focussed on non-human nature; the balance, it is argued, must be, and can be, restored by shifting the focus of science to social ems. problems. Nobel prize winning physicist Denis Gabor (1971) puts it this way:

"The problem lies not in technology but in the fact that man is not prepared for it."
"What science can do is solve the extremely difficult problem of creating the right conditions for the development of culture; this should enable us to keep the maximum possible individual freedom."

"For the Apollo Moon programme about six hundred thousand people worked together as one team and made the project run with split-second accuracy. No wonder these people are very proud of their achievement and say: 'Let us now apply our methods to social problems.' I am quite convinced that by taking an equally gifted set of people—even taking the same engineers with, of course, a sprinkling of economists and social scientists and the like—and giving them social problems to solve, such as for instance the race problem in the United States, the social integration of the American cities, the building of new cities with adequate urban transport etc., that all these problems could be solved, because these engineers and scientists have evolved effective methods of integrated planning and they have an absolutely wonderful system of cooperation. Once a dream becomes a project, the engineers can deal with it!"

Although Gabor is a physicist, in these quotations he exemplifies perfectly the ethos of the social sciences. The objective of the social sciences, just as of the physical sciences, is to understand the world in order to control it. The one absolutely crucial distinction between the objectives of the physical and social sciences is that the one aspires to control the physical world and the other aspires to control the social; the one would control *it*, the other would control *us*.

Although this objective, when formulated so starkly, would be denied by many social scientists it can be shown to be implicit in their work; they perform impressive acrobatics pretending that it is not. They describe future utopias that are controlled without controllers; they speak of 'self-regulating societies', 'stable ecological systems', and states of 'social homeostatis' which are internally controlled by impersonal 'viable governors'. But this sort of language begs at least two very important questions.

First, how are we to get to one of these stable utopian states from our present state of social chaos without someone imposing direct and draconian controls? The answer would appear to be that we cannot. Edward Goldsmith (1971) the editor of the *Ecologist*, when he descends from the general and vague ecological principles of his *Blueprint for Survival* to a specific problem, readily admits the need for controls of a very direct and nasty kind. Speaking of the population problem he says "*we* must introduce the correct cultural controls to prevent *them* from wanting so many children. It is a sort of cultural engineering and I believe it could be done." (my italics). His separation of 'we' and 'them' is in the best tradition of scientific detachment; but in the absence of a precise definition the dichotomy raises very real anxieties among those who suspect that they might be allocated to the less desirable side of it.

Second, what precisely is the nature of the impersonal controls that would govern our lives?—if I am to be socially controlled in any event, I am not sure that I do not prefer a personal controller to an indifferent impersonal one. Certainly the ecological analogies that are appealed to in support of social engineering are not reassuring: "the basic device that nature uses (to maintain the stability of biological systems) is the device whereby things eat each other" (Beer, 1967).

A choice of controls

It appears that society has, within very severe limits, a choice in the constraints that give it shape and order. But we cannot choose to have no constraints at all. The most notable consequence of the success of the transport and communications revolution in diminishing the physical constraint of man's immobility, has been the development of a variety of social constraints to take its place. An imaginative extrapolation of this revolution and its consequences produces a very bleak scenario. The further the scientist pushes back man's physical constraints, the clearer and more depressing becomes man's view of infinity, the more the significance of man is

diminished, and the greater becomes his need for the psychological sustenance that can only be provided by satisfying relations with his fellow men. But the larger the scale of society grows, the less capable it becomes of recognizing the individuals of which it is comprised. The controls required to maintain the stability of a large scale society, whether they be external controls applied by an elite of cultural engineers, or whether they be some sort of systemic Malthusian social regulators, are impersonal controls. They are as impersonal as the physical controls whose removal necessitated their existence, and they are equally incapable of confirming man's significance.

This is a dilemma that was recognized but not resolved by Norbert Wiener (1950) in *The Human Use of Human Beings*:

"The real danger (of *machines à gouverner*) is that such machines, though helpless by themselves, may be used by a human being or a block of human beings to increase their control over the rest of the human race or that political leaders may attempt to control their populations by means not of machines themselves but through political techniques as narrow and indifferent to human possibility as if they had, in fact, been conceived mechanically. The great weakness of the machine—the weakness that saves us so far from being dominated by it—is that it cannot yet take into account the vast range of probability that characterizes the human situation. The dominance of the machine presupposes a society in the last stages of increasing entropy, where probability is negligible and where statistical differences among individuals are nil. Fortunately we have not yet reached such a state."

In spite of the fact that Wiener thought such a state undesirable, all the energies of the discipline that he founded are directed toward overcoming the limitations of machines to deal with the variety that characterizes the human situation in order to hasten its arrival. In the meanwhile the cybernetician copes with this human variety by denying it. The larger the scale of his problem, the more variety he must deny. The scatter about the statistical mean is ignored and the statistical differences among individuals are *made* nil.

Even the most benign and democratic of rulers could not be concerned about the individual difficulties of hundreds of millions of people without sufficient calories and vitamins, or even of one million people without jobs. His compassion, by virtue of the very scale of these problems, must become abstract. Abstract compassion, for the recipient, is unlikely to be either convincing or consoling. The impossibility of conveying compassion to large numbers of people is not a problem that can be overcome by improving the hardware of communications. Sentiments are not easily transmitted across the boundaries that separate the different known worlds of the rulers and the ruled. Governments in acquiescing in, or positively encouraging, the channelling of vast resources into projects that increase mobility are deliberately removing the single most effective constraint on the size and intractability of such social problems.

Following a speech at Central Hall Westminster (January, 1972), Paul Ehrlich was questioned about his association with the Club of Rome, an organization that receives prominent and favourable mention in the *Ecologist's Blueprint for Survival*. The questioner wanted to know the identities of this group of men who, it seemed, were volunteering to manage us[2]. Ehrlich denied that there was anything sinister about

[2] Aurelio Peccei (1972), founder of The Club of Rome, urges upon us the need for 'rationalization' and 'management' on a 'global scale'. Andrew Shonfield points out that "implicit in the Peccei system of global management is the reassertion of imperial power on a world scale". Peccei, while preferring a more euphemistic turn of phrase, does not in essence deny the charge. He says "I wouldn't use those words. I think there will simply be a rethinking among the decision-makers towards taking responsibility for the long term development of the economy or society on a global basis". This raises again the worrying question of just who these decision-makers might be. Peccei is reassuring: "Who" he asks rhetorically, "is better able to start this human venture than we Europeans".

the Club's intentions, but, when pressed further, concluded that someone had to control things and he would rather it were the Club of Rome than no one. The implicit alternative was chaos.

But there is a second alternative to social control by environmental managers and cultural engineers. It is reasoned, persuasive argument. There is a world of difference between being persuaded to restrict the size of one's family because over population is a serious threat to the welfare of society, and being 'prevented' by a cultural engineer 'from wanting so many children'. It is the difference between a human world and a Brave New World. At best, in his fantasies, the cultural engineer arrogates to himself the powers of an Augustinian deity to define the limits within which man can be free to will. At worst he would be a puppet master in control of a world that he completely determines. Argument which seeks to alter attitudes, it might be argued, is simply another method of control, no different in kind from the methods of the cultural engineer. But this can be so only for the complete determinist whom we have already excluded from our debate. Certainly we have conceded that attitudes are social constraints, but they are willed self-imposed constraints. We cannot demonstrate that they are self-imposed; it is simply that if we deny it, we deny man any meaning. He becomes a completely determined product of his environment. Argument, when compared with cultural engineering may seem a very weak method for altering human behaviour. It is a method that grows weaker as societies become more mobile and less convivial. But it is the only method that acknowledges the ›ur behaviour that it would alter as human.

References

Adams, J. G. U., 1971, "London's third airport", *Geographical Journal,* **137**, 468–504.
Barlow, H. B., 1968, "Sensory mechanisms, the reduction of redundancy, and intelligence", in *Cybernetics* Eds. C. R. Evans, A. D. J. Robertson (Key Papers, Butterworths, London).
Beer, S., 1967, *Management Science* (Aldus Books, London).
Beswick, Lord, 1972, "A policy for British aerospace", *Flight International,* 27 January, 130–131.
Durkheim, E., 1963, *Suicide* (Routledge and Keegan Paul, London).
Ellison, R., 1952, *Invisible Man* (Random House, New York).
Gabor, D., 1971, "Desirable and undesirable ends of technology", in *Can We Survive Our Future?* Ed. G. R. Urban (Bodley Head, London), pp.196–206.
Goldsmith, E., 1971, "Ecology, controls and short-term expedients", in *Can We Survive Our Future?* Ed. G. R. Urban (Bodley Head, London), pp.207–224.
HMSO, 1971, "Report of the commission on the third London airport", Chairman: The Hon. Mr. Justice Roskill (HMSO, London).
Hughes, T., 1972, "The world shrinks at supersonic speed", *Sunday Times,* 16 January.
Jones, W. T., 1969, *The Medieval Mind* (Harcourt, Brace and World, New York).
NACCD, 1968, *Report of the National Advisory Commission on Civil Disorders* (Bantum Books, New York).
Peccei, A., 1972, quoted in *The Observer,* 19 March.
Roszak, T., 1970, *The Making of a Counter Culture* (Faber and Faber, London).
Skinner, B. F., 1972, *Beyond Freedom and Dignity* (Jonathan Cape, London).
Thoreau, H. D., 1854, *Walden,* 1960 edition (Signet, New York).
Thoreau, H. D., 1862, "Walking" in *Essays and Other Writings* (Walter Scott, London).
Toffler, A., 1970, *Future Shock* (Bodley Head, New York).
Wiener, N., 1950, *The Human Use of Human Beings,* Anchor edition, 1954 (Doubleday, New York).