

Footloose and Forecast-free:
Hypermobility and the Planning of Society

Tore Sager

Contact details of the author:

Tore Sager, professor at Department of Civil and Transport Engineering, Norwegian University of Science and Technology (NTNU), Trondheim, Norway, e-mail: tore.sager@ntnu.no.

Sager's research is mostly directed to the interfaces between institutional economics, decision processes in transport, and communicative planning theory. His latest book is *Democratic Planning and Social Choice Dilemmas*.

Abstract: The almost utopian state in which most people behave as if they were footloose and fancy-free has the potential to bring about a situation where transport planning no longer relies on forecasts. The type of decision-making that is prevalent in a society depends upon the kinds of information available. In modern, Western-type democracies, it is taken for granted that well-informed planning and decision-making are grounded in the reliable prediction of impacts. Therefore, if unlimited mobility undermines predictability, it poses a threat to public planning and democratic governance in the transport sector. This exploratory and somewhat speculative essay about a possible future analyzes the planning consequences of the ‘death-of-distance’ literature. It seeks to clarify just how planning might be transformed by the loss of consequential impact analysis. It is moreover suggested that the likely responses to mobility-induced unpredictability – private rule following and public planning rituals – would challenge modernist ideals.

Keywords: Planning theory, mobility, prediction, forecasting, ritual, non-consequential planning

Introduction

There has been a recent upsurge of interest in mobility, not least due to globalization, high migration, expanding common markets, and the rapid development of electronic information systems and premium high-speed infrastructure networks (Crang 2002, Cresswell 2001, Ray 2002). High mobility gives rise to phenomena that are found intriguing in a number of academic fields – in technological disciplines (Baberg 2001, Swartz 2003), social research (Urry 2000a, 2002, Kaufmann 2002), and the humanities (Kaplan 1996). It is however likely that there will be problems on a grand scale if, as predicted for 2050, the average world citizen will by then travel as many kilometres as the average West European in 1990 (Shafer and Victor 2000). Activity in circulation space – the technological space of mobility¹ – is influenced by hardware (infrastructure and vehicles) and software (institutions and human behaviour), as well as culture, values and knowledge. Urry (2000b) holds that mobilities rather than societies should be at the heart of a reconstituted sociology.

The purpose of this essay is thus to show how extreme mobility can have far-reaching consequences for the organization of society through the ways in which time-space compression and time-space convergence (Janelle and Gillespie 2004) undermine administrators' and planners' ability to predict and thus to provide a modern and knowledge-based underpinning for collective decisions. It is harder to make predictions in open social systems than in closed ones (Downward et al. 2002, Næss 2004). The cause of events may only be revealed partially because of their complex co-determination. Generally speaking, higher mobility tends to open up social systems because it increases the intricacy of the interplay between reflective human agency and structure. Habits, conventions, institutions, and shared mental models – which help to make a social system act like a semi-closed one in practice – are likely to be less stable under unlimited mobility.

The link between unlimited mobility and unpredictability could be studied by exploring mobility's capacity for creating chaotic systems (Elliott and Kiel 1997), complexity (Cilliers 1998), entropy (Baker 1993:135-41), and tipping points (Gladwell 2000). This is however not the approach chosen here. Two more specific arguments are instead presented: Unlimited mobility (1) makes travel patterns unpredictable and undermines impact assessment, and it (2) makes individual preferences disparate and thus causes democratic decisions to be potentially arbitrary. Since 2001, more attention has also been given to the argument that hypermobility makes circulation networks convenient tools for criminals, rendering society vulnerable to surprising and destructive grand-scale strikes (Arquilla and Ronfeldt 2001, Carley et al. 2001, Raab and Milward 2003).

A collapse in travel resistance would affect the uncertainty of social choice as well as individual action. Both the output of government hierarchies and private markets will therefore change. Furthermore, criminal 'dark networks' will provoke the establishment of countervailing networks for the enforcement of public order and safety. It follows that extreme mobility will give rise to reorganization of all types of governance structures (markets, hierarchies, and networks). The question is then what consequences to expect when physical space becomes networked and 'distance-less' like cyberspace, and dominated by flows rather than stationary and sedentary (Shields 1997). The zero-friction society explored here is obviously utopian. Following Hägerstrand (1987:13), I nevertheless believe that it 'is interesting to think about...how far we can move in the

direction of more and more mobility before we come across still more unacceptable side-effects than there are today’.

A summary of the basic argument clarifies the analysis that follows. The next section defines mobility as *potential* transport, the ability to travel, which underlies the widespread tendency to acclaim the maximization of mobility as a social goal. The ensuing sections examine the hypothetical situation in which this goal has been achieved. The causal relations from extremely high mobility to its social consequences work through the loss of predictability, and these relations are outlined in two sections. The first argues that the travel pattern of well-informed individuals is rendered unforeseeable by unlimited mobility. This causes problems as most transport related policies rely on traffic forecasts. The next section shifts the argument from the individual to the collective level and maintains that higher mobility tends to differentiate individual preference orderings. With ‘anarchic’ preferences, democracy becomes vulnerable to decision cycles, leaving the social outcome arbitrary and thus unpredictable. Thereafter, it is asked what might happen to transport planning when forecasts are no longer available. Is there a non-consequentialist foundation for planning, and what would such planning look like? The modern argument that forecasts spell failure is considered. It says that humans should take command of their lives through sheer acts of willpower – social plans – rather than bothering with forecasting the most likely developments. The conclusion is that there is a rather paradoxical contradiction between unlimited mobility and the Enlightenment project of self-determination through knowledge-based social decisions.

Cultivating the drive to drive: Should mobility be maximized?

This section defines mobility and argues that maximization of mobility makes more sense when mobility is seen as potential rather than realized movement.

Before pondering the social consequences of high mobility and forming a political attitude to the phenomenon, a conceptual discussion is required. If mobility can be analytically separated from the adverse effects of motorized traffic, this might call for a positive attitude towards its maximization. Mobility measures the ability of human beings to make something overcome distance in space. This ‘something’ can be people, goods, capital, energy, and messages (information), for example. Mobility is closely related to movement, actual or hypothetical, and movement must occur in some kind of space. At the abstract level, there are many forms of physical, social, and mental spaces. A plausible hypothesis might be that there is at least one kind of mobility for each type of space. Hence, an adequate definition of mobility requires that a particular type of space be specified. This essay deals with the mobility of people in physical space.

Ideas concerning the benefits of high mobility must inevitably be seen as part of a wider value system. Kaufmann (2002:37) criticizes the simplified view that ‘mobility is good, because it equals open-mindedness, discovery, and experience, and an effort must be made for individuals to maximize mobility for this reason’. The definitional question with greatest bearing on the sensibility of maximization is whether the concept of mobility should refer to revealed or potential action. Dictionaries suggest a concept of mobility that does not imply actual travelling. *Oxford Advanced Learner’s* says that something is mobile when it can move or be moved easily and quickly from place to place, and that mobility is the quality of being mobile. Conceptualizing mobility as *potential* transport, as I do here, mobility is the capacity to overcome distance in physical space. The level of mobility as the possibility of travelling cannot be determined by observing traffic or

calculating travel demand; it has to be deduced from interview statements or estimated from a set of indicators. High potential transport requires a match between human abilities on the one hand and the characteristics of the transport system on the other. The human-technology interface is at the core, with technology comprising infrastructure and terminal facilities as well as vehicles and vessels.

People might hold a preference for mobility considerably above the transport they actually demand. Kaufmann (2002:72) points out that high mobility seen as potential transport might be regarded as a sort of insurance. It gives the security of not being caught unaware and sedentary when something unanticipated happens. It is, however, unlikely that a high level of potential transport in a population can be upheld unless revealed transport is also at a high level. Transport supply is costly and will be cut back if not demonstrably appreciated. On the macro scale, the positive correlation between potential and revealed transport will therefore tend to be high. At the micro level on the other hand – that is, for an individual or a group – the difference can be substantial. The crux of the matter is that a sufficient share of the population in the catchment area of each supplied transport mode has to actually use the mode in order to maintain high mobility for everybody.²

Potential and revealed measures of mobility have very different connotations of cultural approval or disapproval. Potential transport is closely associated with freedom of choice and cherished as a social good. Revealed mobility – i.e. realized transport – is usually seen as a derived activity without intrinsic value. It is therefore treated as a cost to society, which is incurred in order to reap the benefits of other activities (Salomon and Mokhtarian 1998:130). The political response to calls for higher mobility is likely to depend heavily on whether the calls refer to a revealed or potential mobility concept. It is hard to imagine responsible politicians wanting to maximize realized transport, considering the likely levels of social and environmental degradation bound up with it. It seems more reasonable to promote maximization of the capacity to overcome distance, as long as it does not imply a clogging of the transport corridors. Mobility is then associated here with potential trips, unless something to the contrary is explicitly stated. It is moreover assumed that it is meaningful to attempt to maximize mobility as well as social welfare (Sen 1997).³

The groundwork is now done for making a situation with extremely high mobility the vantage point for further analysis. The next two sections explain why hypermobility undermines social predictions.

Hypermobility renders travelling unpredictable

This section explains why extremely high mobility undermines planners' ability to predict travel patterns and thus the consequences of interventions in the land-use and transport systems. The mechanism works through the lack of economic and physical frictions, which usually steer omniscient and utility-maximizing individuals in particular directions.

In a comment on the death of distance, Couclelis (1996:388) suggests that 'to the extent that the "glue" holding cities together had been the need to overcome the friction of distance for the purpose of efficient communication, that glue has now evaporated and the end of urban civilization is in sight'. A radical hypothesis is put forward: 'Distance is dead and there is no longer any general organizational principle governing the distribution of people and activities' (ibid.388). Were this situation to be realized, it would complicate forecasting, as causal predictive models must be based on regularities giving structure to society. The ideas pursued below are particularly relevant when location patterns are

diffuse and unstructured, but they are not founded on the (rather counterintuitive) end-of-urban-civilization hypothesis.

High mobility means victory in the struggle against distance; it is about man breaking his tether of physical friction. Imagine a mobility-maximizing society with a superior transport system and very well developed supply of activities. People are able to go wherever they like whenever they like. All kinds of activities are offered at a number of locations and at different times. All pairs of activity points are connected by several routes and transport modes. Moreover, citizens of this utopia are well informed about their own opportunities, so the individual is not subject to uncertainty as to when and where activities should be carried out in order to maximize her utility. This is labelled a 'zero-friction society', although this evokes the image of a physical impossibility if taken literally. Or even better, imagine a society of omniscient flyers of magic carpets – the fantastic means of transport which in no time takes its passenger to any desired point (Hägerstrand 1987:12). Consider now the effects of this 'death of distance' utopia for prediction, planning, and – consequently – politics.

Reflecting on individuals' utility maximization, Heiner (1983:561) asserts that:

'In the special case of no uncertainty, the behavior of perfectly informed, fully optimizing agents responding with complete flexibility to every perturbation in their environment would not produce easily recognizable patterns, but rather would be extremely difficult to predict. Thus, it is in the limits to maximizing that we will find the origin of predictable behavior.'

Extremely high mobility enables individuals to exploit their knowledge of small alterations in the supply of goods, services, and activities, as well as varying whims and tastes, and constantly change their travel patterns to maximize satisfaction of their wants. Hence, the professional activity of forecasting traffic is futile in the omniscient zero-friction society.

Predictability arises from a gap between agents' decision-making competence and the difficulty of their decision problems. Uncertainty in distinguishing preferred from less-preferred action is the *sine qua non* of predictable behaviour. Given increased uncertainty due to difficulties in deciphering the environment, the repertoire of actions will be limited. It might also be limited in conditions of modest mobility preventing people from acting on the information of where to find the best offers.

'Perfectly mobile' and 'perfectly informed' individuals are hard to imagine, and use of the terms would give the analysis an unnecessarily utopian flavour. However, these notions are rendered superfluous by the concept of 'hypermobility' outlined below, which still makes it possible to apply Heiner's reasoning. The starting point is that every society will have a certain level of individual information about transport and activity options and a given level of professional planning knowledge. (Possible causal relationships between higher mobility and higher levels of information and knowledge are ignored.) Each individual has reliable probability information about all complex contingencies in his/her environment, but this information is not shared with the planners. Hence, there is a gap between individuals' and planners' knowledge of extant transport/activity options (that is, $K_{ind} - K_{pla} > 0$). This gap is assumed to be present even in modern societies with well developed mass media and information systems.

Imagine now that mobility is gradually increased for given levels of individual and planner knowledge. Sooner or later one reaches a high mobility level with so much individual freedom of choice and so complex sets of transport/activity options that only the individuals (and not the planners) are able to figure out when and where to travel in order to maximize utility. Society has then, per definition, reached the state of 'hypermobility'. As long as individuals have intellectual capacity to handle more complex transport/activity sets in a rational manner, mobility might increase further and contribute positively to individual utility and social welfare. Mobility increase will cease when the transport/activity sets become too complex for the individuals to handle. Still higher levels of mobility would force individuals to apply simplifying rules of thumb to decide on their trip patterns, and this would not enable them to increase their utility further. Hence, there will be a range of high mobility levels from low to max hypermobility. When hypermobility is low, the planners' models for forecasting trip patterns are still useful, but deteriorating. As long as mobility and thus possibilities increase, and individuals are capable of handling the utility maximization, planners are losing ground. With maximum hypermobility, the individuals' capacity for making rational transport/activity decisions reaches its limit. Higher levels of mobility are imaginable, but they will not be realized at the given level of individual information.

Traffic forecasting models will not abruptly collapse at a certain mobility level. Instead they will produce ever more uncertain results as mobility increases, until they are considered worthless. It is assumed here that at the upper end of the hypermobility interval, the mismatch between revealed transport patterns and model results is so obvious that the forecasts are useless for all practical purposes. The level of max hypermobility is not absolute but is instead dependent upon the average level of individual information in society. As with mobility, hypermobility can also be given both a revealed and a potential interpretation. A particular amount of actual travelling and a particular level of perceived possibilities to travel will both correspond to a specified degree of hypermobility.

Furthermore, the costs and benefits of projects in the transport system are highly correlated with future traffic, so impact assessment is not meaningful when traffic is unpredictable. This questions the rationale of public planning in the transport sector, as forecasting, impact assessment, and evaluation by comparing alternatives are at the core of this endeavour – articulated in the slogan 'predict and provide' (Urry 2002:257). The close connection between forecasting and planning is also evident in Bunge's (1973:220) dictum: 'Tell me what kind of forecast you are using and I'll tell you the quality of your plans'. Plans without forecasts are similar to prayers without God; they are without foundation, having lost the core element that should provide the link to the future. The continued making of consequence-based plans in conditions of maximum hypermobility would rely on magic – or what McCloskey (1991) denotes as 'voodoo economics'.

Standard planning procedure is meant to be instrumentally rational, and it thus gives means-ends analysis a prominent place. The predominant opinion in the planning profession is that consequences must be predicted in order to judge the attractiveness of means. In fact, consequence-based evaluation (Sen 2000) is the foundation of all familiar styles of planning, as seen in the surveys of Alexander (1986) and Taylor (1998). However, this approach is useless for transport planners in the frictionless and fully informed 'flying carpet society'.

When knowledge is imperfect, there will be uncertainty about when and where to go and how to get there. Heiner (1983:561) contends that uncertainty in distinguishing preferred from less-preferred behaviour leads to behavioural rules 'that restrict the flexibility to choose potential actions, or which produce a selective alertness to information that might prompt particular actions to be chosen'. Uncertainty tends to simplify behaviour to less complex patterns that are easier for an observer to recognize and predict. It is therefore in the uncertainty posing limits to utility-maximizing movement that the origin of predictable travel behaviour is found.⁴

Everyone has a limited time budget, and when desirable activities compete for a place on it, the value of time will be positive. Uncertainty regarding the attractiveness of activity supply in some places then reduces transport, as it is time consuming and thus costly to embark on trips to check whether there are offers well worth the journey. Better net results might be obtained by growing habits and thereby developing a predictable travel pattern that generates less utility but also lower cost. Surely, numerous deviations from these constrained and smaller repertoires of behaviour might be superior in certain situations? However, they are still ignored because of uncertainty about when to deviate from the habitual regularities (Heiner 1983:585). Habits are manifestations of inertia, or mental and behavioural friction. Inertia in social systems produces highly auto-correlated time series in which random events have lasting effects. From such series it is easy to predict accurately in the short run, using variants of linear extrapolation (Pant and Starbuck 1990). Inertia in human action follows to a large extent from the use of simple behavioural rules of thumb, which are individuals' response to uncertainty. The main reason for inertia however vanishes with a level of knowledge that is always adequate, backed by the mobility required to act on all the detailed information available. An individual has less reason to simplify things by acting the same way this period as she acted in the previous period, if she has the information and the means to increase her utility by tailoring her action to the current state of the world. Reliable forecasts are due to the inertia found in the behaviour of the actors in the system in question. This reinforces the conclusion above that maximum hypermobility undermines prediction. Another uncertainty-generating mechanism supporting this conclusion is outlined in the next section.

Zero-friction democracy: A contradiction in terms?

This section suggests that maximum hypermobility causes unpredictability not only by enabling individuals to act promptly on every new incremental change in geographical space, but also by diversifying individual preferences. Preferences without elements of agreement can lead to decision cycles. As a result, it is less and less likely that collective decisions emerging from democratic preference-aggregating processes can be foreseen as society is approaching the state of maximum hypermobility.

Social choice theory and the theory of deliberative decision-making are arguably the two theories of democracy that have been most discussed by scholars in recent years (Sager 2002). Scholars working with both theories have long been aware of the 1/N-problem of collective decision processes following from the fact that each vote in a large ballot counts for little. The problem is that citizens have weak incentive to seek out the truth on public issues, and might instead choose rational ignorance and often rational non-participation (Downs 1957:238-274). In conditions of maximum hypermobility, citizens have even less motive for spending time and other resources on democratic procedures. Dedicated democratic effort is encouraged by a feeling of community, some similarity of values, and problem-solving by voice and loyalty rather than exit (Hirschman 1971). Maximum

hypermobility can undermine these conditions and make it too tempting ‘to vote with one’s feet’ rather than invest in long-lasting deliberative proceedings with uncertain outcomes. Referring to the flying carpet society, Hägerstrand (1987:12) concludes that ‘mobility beyond a certain limit is in all probability destructive for human society’.

The consequences of some of the central results of social choice theory are here examined in the light of extreme mobility or more specifically, maximum revealed hypermobility. In the previous section, the reasoning began from the vantage point of anarchic movement. Here, the reasoning builds on the assumption of anarchic preferences. In both cases, ‘anarchic’ means that there are no institutions or structures justifying an *a priori* assumption of similarity across individuals.⁵

The relationship between raising mobility level – both in the revealed and potential sense – and preference formation is uncharted terrain. It is nevertheless worthwhile pondering over this connection, as there may be implications for community and predictability. In conditions of low mobility, the individual stays put in the same local community. She communicates with the same people over extended periods of time, and experiences the impacts of events and incidents largely similar to others in her vicinity. In such a stationary high-friction society, the individual has little opportunity to ‘vote with her feet’, should she dislike local policies. However, in the urbanized Western societies of today, mobility is fairly high for large segments of the population, and people have less shared identity with their fellow citizens and less stable local communities than they once had.

The exposition proceeds from the hypothesis that low revealed mobility causes the preferences of individuals in the same local community to be more similar than they would have been in a zero-friction society. ‘If household members are regularly on the move then the distinction of home and away loses its analytical power’ (Urry 2002:257), and preferences will then be less formed by residence location. Maximum revealed hypermobility is likely to expose individuals from the same local community to very different experiences and mental inputs, and they would then be apt to interpret local affairs in widely diverging ways. High mobility makes each individual less dependent on others in the same community, so the pressure towards conformity in tastes and opinions weakens. Revealed hypermobility dissolves community, as community entails elements of homogeneity in the preference structure (Putnam 2001, Wellman 1999:6). Kaufmann (2002:6) emphasizes the link between high mobility and unstable preferences:

‘(S)peed brings about the progressive weakening of the social structure and of its categories in favour of a world organised around mobility. This society can be qualified as liquid...insofar as it takes the form of its habitat and is thus fundamentally ambivalent, heterogeneous and reversible. It is the era of ephemerality and consumerism, the throw-away society. In this context, human beings are ever-changing. One can just as easily throw out one’s material waste as one’s values, lifestyles or attachment to people and places.’

In the present context, the pertinent metaphor is the ‘trekking-through’ society or the ‘cruising along’ society rather than the throw-away society. This points to a lifestyle in which life is seen as the art of not belonging. The result is presumably that individual rankings of social states vary more in frictionless societies. It is assumed here that there are no restrictions on the sequence in which social states or planning alternatives for that matter, can be ordered by the individual. Furthermore, the public interest or ‘the will of the people’ is supposed to be determined by the amalgamation of individual preferences. As such then, a much celebrated result of social choice theory is valid. Arrow (1963) proved

that when preferences are potentially anarchic (as above), collective decisions cannot be made in a process that is both fair and democratic, as long as non-cycling and thus predictable outcomes are required.

The request for democracy is extremely weak in Arrow's proof. All that is required is the lack of a dictator whose preferences are always identical with the social outcome. Stronger democratic claims would make it impossible to define the will of the people even for less anarchic sets of individual preference profiles. Arrow's impossibility would also then make itself felt under less than maximum revealed hypermobility. In fact, following in the footsteps of Arrow, other social choice theorists proved that the breakdown of predictability under majority rule is even more serious than indicated by his theorem. A central result is the 'global cycling theorem', which implies that anything can happen under majority rule. By voting on a series of proposals, coalitions can change so that it is possible to take any alternative as the starting point for voting and ending up with any other alternative. When no alternative beats each of the others in pairwise comparisons, there are potential agendas that will lead sincere voters to any planning alternative. In other words, the final plan is arbitrary from a voting point of view, in the sense that whoever controls the agenda controls the outcome (Riker 1982:186-188).

Arrow and most other social choice theorists write in terms of transitivity – that is, cycle-free decisions – rather than predictability. However, when there is a decision cycle involving all feasible top alternatives, the outcome is arbitrary in the sense that it is unrelated to preferences, and social choice is therefore unpredictable. This also goes for planning recommendations that are not made dictatorially. Fair and democratic planning and decision procedures in a society with maximum revealed hypermobility thus lead to unforeseeable collective actions. This discloses an ambiguity to be analyzed in a subsequent section. To the extent that collective decisions in the zero-friction society become ritualistic in response to the lack of impact forecasts, they might retain predictability. On the other hand, to the extent that they emerge from democratic procedures of preference amalgamation, they turn out to be potentially unpredictable, leaving both individual and collective actions incalculable.

Sager (2002) shows that Arrow-style impossibilities are troublesome not only in respect of voting but also when social choices are made in a dialogical process (deliberative democracy). Nevertheless, collective decisions must be made in order to have a viable society. This implies that decision cycles have to be broken somehow, and thus the sequence of voting between pairs of alternatives cannot be allowed to go on forever. Numerous mechanisms can be imagined, some of which would uphold the arbitrariness of the social choice (drawing lots). But society could probably do better by resorting to an institution – that is, rule or procedure – reinstating predictability by working independently of individual preferences. One might appeal to tradition, religion, or ideology. These are all means of reaching collective decisions without starting out from individual preferences on planning alternatives.

It has now been shown that the reasoning of both Heiner and Arrow is associated with problems of prediction. Modernist ideas are behind the difficulties; in both cases the reasoning is based on individual utility maximization, and the dilemmas are aggravated by maximum hypermobility. We will later return to the question of whether non-modern medicine is called for to cure the post-modern ailment of public action without direction – which emanates from modernist ideas about mobility and individual preferences

(Friedland and Boden 1994). First, however, we will consider whether intentions can take the place of forecasts as the link to future consequences.

The 'death of distance' forces planning into non-consequential deontology

The two previous sections provided a number of explanations as to why maximum hypermobility erodes the basis for social predictability and thus motivates the search for planning approaches that are not based on forecasts of consequences. Standard transport planning treats expected consequences for the agents as the only thing relevant to the rationality of social acts and choices. In this section, and also the next, we explore the possibilities inherent in alternative approaches based on good intentions and rituals, respectively. It is argued that planning needs to be founded on moral or legal obligations, and that this deontology cannot build its logic on impacts.

Under conditions of hypermobility the ability to make social forecasts is severely weakened, and this is a threat to public, consequence-based planning and evaluation.⁶ General analyses of consequentialism are scarce in the planning literature, though Faludi (1986:Ch.11.4) provides an exception. More is written on utilitarianism, which is a welfarist version of consequentialism aiming at the maximization of overall welfare (Campbell and Marshall 2002). The fundamental philosophical positions guiding social choice in economics are (1) that the net utility (benefits over costs) from the consequences of an action determines whether that action is right or wrong, and (2) the sense that society is an aggregate of the preferences (utilities) of its individual members. Utilitarianism is the basis for much of what is termed 'applied economics', such as cost-benefit analysis, which is a type of consequentialist project evaluation pertaining to society as a whole (MacIntyre 1977, Sen 2000). The weights attributed to the aggregation of the various items are not subjective but generated by overall supply and demand in actual markets. Under maximum hypermobility however, utilitarian cost-benefit analysis is of course as useless as other approaches based on the calculation of expected future consequences.

However, consequences can be observed, anticipated, or intended. Consequences can only be observed *ex post* though, and forecasts cannot be deduced from historical observations in conditions of maximum hypermobility, so the first two cases are not relevant to planning in the zero-friction society. The question is then whether one can hold on to the consequence-based logic of planning under maximum hypermobility by regarding good intentions as the decisive criterion for assessing plans. In Western democracies, the important decisions on public plans are made by elected politicians and not by the planning bureaucracy. The reasons for supporting a plan must primarily be found in the intentions of political decision-makers. Leaders do therefore have the motive for stating false preferences. Unfortunately, the Gibbard-Satterthwaite theorem of social choice says that every institution for recommending one of at least three planning alternatives must be either dictatorial or liable to manipulation when it is based solely on individual preference rankings (Riker 1982:Ch.6B). This theorem becomes vital when those affected by the plan must trust intentions instead of computed impacts, since it implies that no democratic decision rule can eradicate the motive for falsifying intentions.

The public image of projects, plans, and programmes will be determined by the degree of trust in the politicians' statements of intention (Hardin 1999, Warren 1999). Intentions cannot be observed, so decision-makers will not have to answer for manipulating the public even after having made false statements of intention. Nor can it be checked whether

their stated intentions can realistically be fulfilled, as the links between means and ends are severed in the frictionless society where consequences are unpredictable. The empirical data most sought after is that which builds a good reputation rather than that which is used for building forecasting models. As long as trust prevails, anything can be proposed by political, religious, or technological saviours. This clears the way for political quackery, and sincerity and accountability suffer as manipulation goes unchallenged. Democracy would therefore tend to deteriorate under intention-oriented consequentialist policy-making in the zero-friction society. This is a twist on the old dictum that the road to hell is paved with good intentions.

It can thus be concluded from the above that attempts at keeping up consequence-based planning in the case of hypermobility, by founding assessment on stated intentions, is an approach which serves neither democracy nor welfare maximization. The possibilities of consequence-based planning are thereby exhausted, and a new foundation for public planning and decision-making has to be found.

In consequence-based planning guided by cost-benefit analysis, the rule might be to implement the alternative with the highest benefit/cost ratio. The planner might feel an obligation or duty to exploit opportunities for generating utility and prevent the waste of resources by recommending plans in accordance with this rule. The essential new element in planning under maximum hypermobility would therefore not be rule-following or duty-oriented behaviour. The new aspect is that the reasons for the rules and the duty to follow them do not evoke the consequences of the plan. That is, the planning of the zero-friction society requires a non-consequentialist deontology.

Standard deontological views maintain that it is sometimes wrong to do what will produce the best available outcome overall. There may be agent-centred restrictions – for instance, human rights – inhibiting a utilitarian solution. There are also notions of fairness which do not appeal to consequences, but rather to some idea of equal treatment in the planning process and equal opportunities as judged by knowledge available at the time of planning (Sen 1982).⁷

Non-consequentialist planning paves the way for rule-following decision-making by substituting the logic of the best consequences with the logic of appropriateness, defined independently from impacts. As a guidance for action, planners would ask three questions:

1. ‘The question of *recognition*: What kind of situation is this?’
2. The question of *identity*: What kind of person am I? Or what kind of organization is this?
3. The question of *rules*: What does a person such as I, or an organization such as this, do in a situation such as this?’ (March 1994:58)

Thus, the reasoning process in the non-consequential deontology is one of establishing identities and matching rules to recognized situations (ibid. 58). The next section explores how planning might develop ritual features when not guided by the quality of consequences.

Non-consequential deontology engenders ritualistic planning

The question is now whether public planning can be given a non-consequential foundation. Plans are volition-oriented statements about the future, and they might not be meaningful when effects cannot be predicted. What we want to do usually depends on the anticipated consequences of doing it. It is argued that non-consequential deontology is likely to push planning towards ritual, and that this would be unfortunate in a pluralistic democracy.

Social acts can be chosen because they are in line with tradition, religion, prevailing ideology, etc. That is, the social act might have a symbolic meaning in itself that is independent of any reference to consequences. The point of planning in these circumstances would be to strengthen symbolic meaning by deliberating which variant of the social act best matches the tradition, religion, or ideology. For instance:

- Would it be in accordance with, say, Marxist ideology to locate a new cycle path in an old working class neighbourhood or in a new suburb?
- How can the project most efficiently be implemented?
- What was said about the project in the last local election campaign? Are any political promises broken by choosing one location rather than the other?
- The number of children living in the two locations might be relevant: Should there be a rule telling bureaucrats to build cycle paths where there are more children exposed to traffic?

The consequences of the plan are not at issue here. If consideration of the above questions can nevertheless be regarded as planning, then public planning can take place even in a zero-friction society where its predictive contents have been dissolved.

Public planning usually starts by identifying a problem area, conceived as a sore spot or a tumour on the organism of society. This problem or tumour is delimited and cut away from the surrounding tissue of the body politic to be dissected and analyzed. The fragments are manipulated by policy instruments and put on public display in an impact analysis. The experts receive information from many parties while rearranging and developing the fragments to construct new tissue, a new synthesis. If this composition pleases the polity, then it is operated into the social organism – meaning that the plan is implemented and integrated into the overall policy. Success means bringing the organism to a healthier state, the improvement being measurable as increased welfare levels in the community. Compare Handelman's (1997:387) description of the way many rituals work: '(T)he internal processes of rituals often move from conditions of holism – of self, community, health, the human and the transcendent – to their shattering, in order to regenerate a healed self, a new social being, a rejuvenated community, and so forth'. Non-consequential, ritual planning can adopt this disintegration and reconstitution of holism. Under maximum hypermobility, however, impact analysis – which is the core feature – must be metamorphosed into an analysis of the *appropriateness* of the proposed policy measures. Ritual might have the potential to serve as surrogate for knowledge-based prediction and planning, as many rituals are 'instrumental action guided by men's interest in controlling and regulating the world, both the man-made and the natural one' (Gerholm 1988:198). This is evident in rituals allegedly ensuring the coming of the rain, the rich harvest, and the safe sailing of a ship.

The function of a wide range of rituals is to change one kind of being or condition into another. Rituals transform girls into women, war into peace, the profane into the sacred, similar to the way public meetings and hearings in the planning process may let outsiders become insiders (Hillier 1995:3). Planning rituals convert the private and self-serving into something public and legitimate; they change the preview of a hypothetical condition into physical realities deemed appropriate by the community. As Olsson (1991:19) says, 'planning is an ingredient of that ethical glue whereby the *is* of the past and the *ought* of the future are bound together'.

Handelman (1997:391) draws certain analogies between metalogics of ritual and bureaucracy (in traditional and modern social orders, respectively). 'These analogies relate to the significance of taxonomy, to systemic organization, and to the deliberate making of planned, directed change'. Both planning bureaucracy and ritual create realities profoundly affecting people's everyday life. Thus, whether in its utilitarian or deontological, non-consequential and ritual form, planning is a strategy for wielding power. The aspects of planning as bureaucratically extending power into the future and as the physical manifestation of values melt together in Olsson's (1991:17) rather disparaging confession:

'I believe planning to be a political and bureaucratic phallus symbol, whereby the present penetrates the future. I believe that to plan is to preserve what now is by transforming fleeting intentions into unyielding stones of physical and institutional structures. Values of the strong today are ontologically metamorphosed into the facts for the weak of tomorrow.'

Handelman (1997:398) suggests that 'if a metalogic of ritual is transformative, mobilizing uncertainty to question the validity of cultural form, this would seem a likely medium for the mobilization of opposition'. However, any hope of ritualistic planning becoming a vehicle for an open and pluralistic society does not shine through in Olsson's imagery. Maximum hypermobility would nevertheless open up the future in the sense of diversifying the preferences of our descendants. There might then be room for alternative rituals, breeding less gloomy prospects than in the quotation from Olsson.

Planning can be thought of as having three main aspects, *viz.*, integration, politics, and production (Sager 1994:39). Standard consequence-based planning accentuates the production aspect and aims mainly to improve material conditions. Non-consequential planning would place emphasis on the integration aspect and aim to strengthen community by espousing the main belief systems of society. Transport planning under maximum hypermobility would then be likely to develop into a ritual, as rituals can easily take on integrative tasks by celebrating common values and exchange relations encouraging mutual commitment. An example is Friedmann's (1973) transactive planning, which bonds experts with laypersons by the exchange of processed and local knowledge.

It is an important function of many rituals to address the problem of reliability and trust in social arrangements (Sosis and Alcorta 2003:267-68). Trust is the essential social capital of decision-makers commending specific projects, but unable to draw on knowledge-based forecasts to demonstrate their future benefits. To build this capital, planning and choice in the transport sector must take place with due regard for tradition, religion, and ideology. When maximization of mobility is *not* a central element in the social belief system, hypermobility is thus not likely to last. The reason is that projects planned and implemented under non-consequentialism would then usually not aim to satisfy new

mobility needs. Mobility would therefore be reduced in the long run. Non-consequential planning and the zero-friction society are incompatible from a dynamic perspective when high mobility is ideologically peripheral. In this situation, consequence-based planning might gradually become possible again.

It must be asked, of course, how the zero-friction society can come about in the first place, unless hypermobility is at the core of the social belief system. Certainly, such a core content is required to support and maintain the frictionless society. Proposals for mobility-improving projects would then proliferate, and the reasons for them would have to be provided (unrelated to consequences). This is where the ritual features of non-consequential planning can help to overcome the problem of trust. The problem is solved most effectively when the ritual invokes the sacred: '(T)he bonds forged through secular ritual do not appear to create the long-term trust and commitment achieved by religious ritual' (Sosis and Alcorta 2003:268). Taken to the extreme, to sanctify the message that mobility is desirable would be to certify it (Rappaport 1979:229). Sanctification increases the willingness of recipients of symbolically encoded messages about the mobility imperative to accept these messages as sufficiently authorized to act upon (ibid.). An effect of this kind can be obtained even if the imperative of mobility is not sanctified but instead becomes deeply embedded in the prevailing ideology interweaving mobility, modernity, freedom, progress, and the good life (Hajer and Kesselring 1999, Sheller and Urry 2003).

To the extent that the public and political authorities – the decision-makers – accept the mobility-applauding messages as trustworthy expressions of the popular will, their actions will tend to be non-random and therefore predictable. Strong popular support for public rituals would therefore engender a mix of individual unpredictability and public predictability in the zero-friction society. In fact, the first feature leads to the second, as decision-makers tend to follow simple rules in the face of high uncertainty. The conversion to a non-consequential deontology and ritual planning thus helps to maintain some order in society. 'That sanctity supports social order is one of anthropology's most ancient truisms.' (Rappaport 1979:232). Rituals, themselves shaped by cultural orders, shape the very orders that produce them. However, the planning compelled by maximum hypermobility may not be conducive to democracy. The reason is that ritual does not invite plurality. Ritual is formal, rigidly prescribed action, as Gerholm (1988:198) says. 'There is a compulsory air to it and a definite, correct way of performing it' (ibid.198). The hope for democracy would lie in alternative rituals – with the ambiguities this would create for the development of ritualistic public planning.

It has been argued that maximum hypermobility calls for traditional ways of structuring society and creating certainty in the absence of forecasts. The next section shows that unpredictability also brings to the surface a contradiction between aspects of modernism.

Forecasts spell failure?

In essence, the message thus far is that maximum hypermobility causes unpredictability, which can be counteracted by rule-following and rituals. However, the revived certainty does not rest on knowledge-based forecasts. It is argued in this section that the modern project of increasing mobility beyond bounds paradoxically threatens the modernist project of providing humans with the knowledge to control their own lives.

Predictability entails the possibility of control. As Friedland and Boden (1994:12) wrote while Soviet-type socialism was collapsing: ‘without knowing where people are and being able to keep them there, one-party rule disintegrates. And once goods, information, and people move freely, the system of centralized control must erode’. Planning and governance have always been a quest for control (van Gunsteren 1976), and the gap between consciousness and volition on the one hand and control and power to implement on the other has long been deeply felt: ‘Of all the sorrows that afflict mankind, the bitterest is this, that one should have consciousness of much, but control over nothing’ (Herodotus, quoted by Thiele [1990:912]). We cannot predict, nor control, the stories of which our own action is but a part or beginning, while the plot and the ending are laid out by our numerous co-authors of the social narratives.

In the zero-friction society this perennial problem threatens to take on disastrous proportions. There, neither the quality of consequences nor the will of the people can guide public plans and collective decisions, as argued in previous sections. Counter-measures that can provide a sense of certainty and invulnerability despite the lack of knowledge-based forecasts may lead to the rolling back modernity, thereby impairing the modernist ideological underpinnings of hypermobility. The reason why modernist ideas are challenged in this context is that two core notions of modernity seem to contradict each other, *viz.*, maximum hypermobility and control over the human condition. The planning of society aims to create structure, while fully realized mobility makes ‘all that is solid melt into air’ (Berman 1988).

Rule-following and rituals that can give some certainty without knowledge-based forecasts distance planning from the project of modernity. Furthermore, even if forecasts were available, they would not be sufficient for the implementation of consequence-based plans. Former Deputy Secretary in the Norwegian Ministry of Finance, Per Schreiner, used to declare that prediction means defeat. True to the spirit of modernity, he maintained that there should not be much room for forecasts in the planning of society (Schreiner 1971:25). To him, forecasting implies powerlessness and planners’ refusal to accept responsibility. ‘It conceals the fact that the life and experiences – as well as the future possibilities – of present day man are primarily determined by human actions and decisions’ (ibid.26). Modern people should simply decide what they want and go for it. The planning ideology of Schreiner’s is based on a virtually unlimited belief in the capacity of human beings to design their own living conditions. This is a truly modern idea, as noted by Friedland and Boden (1994:10):

‘As moderns we believe that we can consciously make history, and we make it “forward” into the future. Whereas peoples of previous epochs lived a present suffused with the past, moderns inhabit one bursting with the future and with the assumed rational ability to create that future.’

The dictum that ‘forecasts spell failure’ is a confession to this modern optimism, yet it also reveals a certain level of arrogance. It ignores the condition of plurality and conflicting interests giving rise to the impossibility theorem of Kenneth Arrow. The planner cannot simply substitute the willed plan for the likely and predicted development, as decisive actors are usually beyond control, while a common will that can be implemented might not exist. Moreover, Schreiner’s maxim underplays the role of knowledge-based forecasts in the formation of preferences for alternative futures.

It is then time to sum up the argument. There are mechanisms in utility-maximizing market behaviour and democratic decision-making (as well as network-based crime) that generate unpredictability as the result of maximum hypermobility. This is fatal to the modern idea of man as the master of his own destiny. However, an even more radical modern thought (Schreiner) is that reliance on forecasts is tantamount to treason against the modern belief in the autonomy of human beings. This notion is articulated in the catchphrase that the best way to predict the future is to invent it. Forecasting should therefore be substituted by planning. A dilemma surfaces, however, as people succeed in fulfilling modern ambitions for the frictionless society: consequence-based planning as well as prediction becomes impossible. We are left with the Doris Day mantra 'whatever will be will be – *que sera sera*'.

I have suggested in this essay that the predictability threatened by maximum hypermobility can be restored by public planning rituals and private rule-following in line with a non-consequential deontology. However, democracy pays a price for more certainty and non-arbitrary decisions.

- It is a democratic right to pursue the options that one finds best, that is, to protect one's own interest. Liberal democracy in the spirit of Bentham's principle of 'the greatest happiness of the greatest number' requires utility maximization rather than non-consequential deontology. However, the rule-based behaviour of habit and tradition is what seems to go best with the ritual planning likely to emerge as the reliability of prediction withers away.
- As long as individual preferences are widely divergent and uncensored, political predictability can only be guaranteed by dictatorship (Arrow 1963). There is a trade-off between the degree of democracy and the likelihood of non-arbitrary policy outcomes.⁸

Contrary to Schreiner's belief in mankind's ability to shape its own living conditions, people experience that 'life is what happens to you while you are busy planning how to live it'. What makes this theme an essential one for planning and social theory is not the obvious fact that we occasionally fail to foresee even first and second-order impacts of planned actions. It is rather the far stronger claim made by Sartre (1982:38-39), that in the dialectic inherent in the interrelations between individuals, the consequences of our actions always finally escape us. For Sartre, unintended consequences figure as an explanatory bridge between the human character of action and the alien character of history. Giddens (1984) shares the Sartrean insight that the consequences of activities chronically escape their initiators. He uses this to explain the relationships between individual agency and social structure. Under maximum hypermobility, planners cannot forecast individual travel behaviour, and then, neither can they design rules and institutions modifying the behaviour in prescribed ways. This further dissociates institutions and social structure from individual agency.

Conclusion

Sartre contends that forecasts have limited scope and validity in all conditions. Under maximum hypermobility unanticipated consequences will abound and sever the links between knowledge of the past and grounded statements about the future in matters related to transport. Hypermobility multiplies the number of connections and relationships with the potential to invalidate forecasts, and it engenders freedom of choice to an extent bringing the modelling of flows out of step with individuals' own capacity for making the

most of their transport/activity opportunities. This essay takes this point to its extreme by contemplating the potential consequences of hypermobility on planning and governance.

The hypermobile society is unlikely to be realized unless humankind is prepared to abandon the Enlightenment project of being the creator and master of its own world by acting on knowledge of consequences. Paradoxically, anti-modern rule-following and ritual with the function of reinstalling a sense of security under the aegis of prediction might follow from the realization of the modern dream of unlimited mobility. That is, maximum hypermobility carries a high price, but there is nothing to make its antipode a better alternative. On the contrary, while mobility is associated with freedom, a lack of mobility is associated with punishment. As Hägerstrand (1987:12) says, 'society without mobility is unthinkable. To be immobilized is a disaster...for the individual'. Totalitarianism implies control, and control is more difficult the higher the level of mobility. Hopefully, the conclusions below take the reader beyond the trite affirmation that consequence-based democratic governance requires an intermediate position.

- Hypermobility causes problems far beyond congestion, accidents, and environmental degradation – more generally, beyond the items on the disadvantage side of the standard cost-benefit account (Adams 2005). The focus here is on the ways in which minimal friction undermines predictability and thereby the capacity for knowledge-based planning and governance.
- Realizing the vision of hypermobility lays dead the Enlightenment project of humankind creating and governing its own world on the basis of knowledge. Instead, it opens the way for the political organization of society under which the citizenry has to trust necessarily unchecked intentions as the only bridge to the future. Statements of preference and purpose will surely be made, but their manipulation cannot be avoided under non-dictatorial rule (the Gibbard-Satterthwaite theorem, see Sager 2002).
- The re-installment of consequence-based governance would force the polity to set bounds for the unfolding of modernity. This can be done by restricting movement in order to reintroduce predictability in terms of consequences. Alternatively, the polity may prefer to plan and decide without knowledge of impacts, while nevertheless reintroducing predictability in terms of collective choice. One risky strategy is to follow the decision-maker with the ostensibly best intentions and a good reputation. However, the constituency may be less vulnerable to manipulation by strong individuals when choice is based on ritual, tradition, duty and rights (non-consequentialist values).

The trains of thought in this essay are unabashedly explorative. Two final conclusions can nevertheless be drawn with considerable confidence. The first is that the ability to predict establishes a crucial but vulnerable link between the consequences of high mobility and public planning. The second is that public planning is an important ingredient in the guidance system of a liberal democracy, and that impacts of maximum hypermobility on prediction and planning will be transmitted to the forms of governance.

Notes

1. 'The Technological Space of Mobility' is the title of a trans-disciplinary research project at the Norwegian University of Science and Technology. The project runs from 2003 to 2006 and includes analysis of ethics, sustainability, safety, immigrants, universal design, and the man/machine interface – all studied from the perspective of mobility.
2. The distinction between potential and revealed measures of mobility is a parallel to the difference between having rights and exercising them. Potential travelling is analogous to the notion of rights that do not necessarily have to be exercised (Dowding and van Hees 2003). Obviously, if rights *cannot* be exercised, then they hardly seem worth the name – just as there is no potential transport unless travelling is actually a feasible option. Mobility might even be defined as a right (Houseman 1979), though this issue is not analyzed here.
3. According to Hägerstrand (1987:12): 'Engineers, industry and the leading actors on the market...have adhered to the simple philosophy that more and more and faster and faster unquestionably made things better and better. In this situation mobility became a goal in itself.' If Hägerstrand means more and more *transport*, I am not convinced that the actors referred to hold this view today.
4. Disjointed incrementalism, which is the planning style most uncompromisingly designed for problem situations permeated with uncertainty, provides a telling example (Sager 1997). The significant discord between competence and difficulty causes the rigidity of incremental choice: always opt for cautious adjustments creating only modest resistance. The recommended 'satisficing' strategy is to choose the first incremental adjustment found to be good enough. Deviations from this simple small-step behaviour pattern might be superior in certain situations, but they are ignored because of uncertainty about when to depart from the cautious main procedure. Due to environmental contingencies and unanticipated interventions from other stakeholders, the planner is not in the position to select a straightforward goal-oriented strategy under disjointed incrementalism. The outcome of the tentative and incremental steps of the process is so hard to foresee that some well-known planning theorists are reluctant to call it planning (Alexander 1986). When maximum hypermobility causes an end to forecasting, even more of the conventional basis of planning disappears and might increase the doubt as to whether the 'planning' that remains is really planning.
5. Individual preference formation is complex, and so are the mechanisms determining the planners' knowledge of private preferences. When asked, individuals often do not state their true preferences, but instead 'dress them up' to look more socially respectable (Kuran 1995). Moreover, by moderating her stated preferences, the individual might be able to join a coalition with the power to realize an outcome closer to her true preferences than she would have accomplished alone.
6. In the present essay, consequentialism is given a broad meaning synonymous with consequence-based evaluation. Sen (1982) distinguishes the broad term 'consequence-based evaluation' from consequentialism understood as the special case of consequence-based evaluation in which the outcome morality is evaluator neutral (ibid.30). Scheffler (1994:1) explains that:
 'Such theories first specify some principle for ranking overall states of affairs from best to worst from an impersonal point of view. In other words,

the rankings generated by the designated principle are not agent-relative; they do not vary from person to person, depending on what one's particular situation is. For they do not embody judgements about which overall states of affairs are best for particular individuals, but rather judgements about which states of affairs are best, all things considered, from an impartial standpoint. After giving some principle for generating such rankings, act-consequentialists then require that each agent in all cases act in such a way as to produce the highest-ranked state of affairs that he is in a position to produce.'

7. People's rights can be violated both in the planning process and by the consequences of the plan. Focus on rights is therefore no guarantee of avoiding the problems following from maximum hypermobility and unpredictability. Planners might recommend the collective action that involves the least violation of individual rights. This would involve treating rights-violation as a consequence to be minimized by action. However, 'most rights-based theories do not see rights-fulfilment as a consequence to be maximized by action, but as an absolute constraint on action' (Elster 1992:210).
8. In addition, the countervailing government networks necessary for matching the criminals' 'dark networks' and monitoring and enforcing law and order will threaten privacy, autonomous action free from state control, liberal values, and thus democracy itself (Rorty 2004).

References

- Adams, J. (2005): 'Hypermobility: a challenge to governance', in C. Lyall and J. Tait (Eds): *New Modes of Governance: Developing an Integrated Policy Approach to Science, Technology, Risk and the Environment*. Aldershot: Ashgate.
- Alexander, E.R. (1986): *Approaches to Planning. Introducing Current Planning Theories, Concepts, and Issues*. New York: Gordon and Breach.
- Arquilla, J. and D. Ronfeldt (eds) (2001): *Networks and Netwars*. Santa Monica: National Defense Research Institute, RAND.
- Arrow, K.J. (1963): *Social Choice and Individual Values*. New York: Wiley.
- Baberg, T.W. (2001): 'Man-machine interface in modern transport systems from an aviation safety perspective', *Aerospace Science and Technology* 5(8)495-504.
- Baker, P.L. (1993) 'Chaos, order, and sociological theory', *Sociological Inquiry* 63(2)123-49.
- Berman, M. (1988): *All that is Solid Melts into Air: The Experience of Modernity*. New York: Penguin.
- Bunge, M. (1973): 'The role of forecast in planning', *Theory and Decision* 3(3)207-21.
- Campbell, H. and R. Marshall (2002) 'Utilitarianism's bad breath? A re-evaluation of the public interest justification for planning', *Planning Theory* 1(2)163-87.
- Carley, K.M., J.-S. Lee and D. Krackhardt (2001): 'Destabilizing networks', *Connections* 24(3)79-92.
- Cilliers, P. (1998): *Complexity and Postmodernism: Understanding Complex Systems*. London: Routledge.
- Couclelis, H. (1996): 'The death of distance', *Environment and Planning B: Planning and Design* 23(4)387-89.
- Crang, M. (2002): 'Commentary. Between places: producing hubs, flows, and networks', *Environment and Planning A* 34(4)569-74.
- Cresswell, T. (2001): 'The production of mobilities', *New Formations* 43,11-25.
- Dowding, K. and M. van Hees (2003) 'The construction of rights', *American Political Science Review* 97(2)281-93.
- Downs, A. (1957): *An Economic Theory of Democracy*. New York: Harper and Row.
- Downward, P., J.H. Finch and J. Ramsay (2002): 'Critical realism, empirical methods and inference: a critical discussion', *Cambridge Journal of Economics* 26(4)481-500.
- Elliott, E. and L.D. Kiel (Eds) (1997): *Chaos Theory in the Social Sciences: Foundation and Application*. Ann Arbor: University of Michigan Press.
- Elster, J. (1992): *Local Justice. How Institutions Allocate Scarce Goods and Necessary Burdens*. Cambridge: Cambridge University Press.
- Faludi, A. (1986): *Critical Rationalism and Planning Methodology*. London: Pion.
- Friedland, R. and D. Boden (1994): 'NowHere: an introduction to space, time and modernity', pp 1-60 in R. Friedland and D. Boden (Eds): *NowHere. Space, Time and Modernity*. Berkeley: University of California Press.
- Friedmann, J. (1973): *Retracking America. A Theory of Transactive Planning*. Garden City, New York: Anchor Press/Doubleday.
- Gerholm, T. (1988): 'On ritual: a postmodernist view', *Ethnos* 53(2)190-203.
- Giddens, A. (1984): *The Constitution of Society*. Cambridge: Polity Press.
- Gladwell, M. (2000): *Tipping Points*. Boston: Little, Brown and Company.
- Hajer, M. and S. Kesselring (1999): 'Democracy in the risk society? Learning from the new politics of mobility in Munich', *Environmental Politics* 8(3)1-23.

- Handelman, D. (1997): 'Rituals/spectacles', *International Social Science Journal* 49(3)387-99.
- Hägerstrand, T. (1987): 'Human interaction and spatial mobility: retrospect and prospect', pp 11-28 in P. Nijkamp and S. Reichman (Eds): *Transportation Planning in a Changing World*. Aldershot: Gower/European Science Foundation.
- Hardin, R. (1999): 'Do we want trust in government?', pp 22-41 in M.E. Warren (Ed.): *Democracy and Trust*. Cambridge: Cambridge University Press.
- Heiner, R.A. (1983): 'The origin of predictable behavior', *American Economic Review* 73(4)560-95.
- Heiner, R.A. (1985): 'Origin of predictable behavior: further modeling and applications', *American Economic Review (Papers and Proceedings)* 75(2)391-96.
- Hillier, J. (1995): 'Planning rituals: rites or wrongs?', *Paper presented at the 9th AESOP Conference*. 16-19 August 1995, Glasgow.
- Hirschman, A.O. (1971): *Exit, Voice and Loyalty*. Cambridge, Mass.: Harvard University Press.
- Houseman, G. (1979): *The Right of Mobility*. New York: Kerikat Press.
- Janelle, D.G. and A. Gillespie (2004): 'Space-time constructs for linking information and communication technologies with issues in sustainable transportation', *Transport Reviews* 24(6)665-77.
- Kaplan, C. (1996): *Questions of Travel. Postmodern Discourses of Displacement*. Durham: Duke University Press.
- Kaufmann, V. (2002): *Re-thinking Mobility*. Aldershot: Ashgate.
- Kuran, T. (1995): *Private Truths, Public Lies. The Social Consequences of Preference Falsification*. Cambridge, Mass.: Harvard University Press.
- MacIntyre, A. (1977): 'Utilitarianism and cost-benefit analysis: an essay on the relevance of moral philosophy to bureaucratic theory', pp 217-37 in K. Sayre (Ed.): *Values in the Electric Power Industry*. Notre Dame: University of Notre Dame Press.
- March, J.G. (1994): *A Primer on Decision Making. How Decision Happen*. New York: Free Press.
- McCloskey, D. (1991): 'Voodoo economics', *Poetics Today* 12(2)287-300.
- Næss, P. (2004): 'Prediction, regressions and critical realism', *Journal of Critical Realism* 3(1)133-64.
- Olsson, G. (1991): *Lines of Power, Limits of Language*. Minneapolis: University of Minnesota Press.
- Pant, P.N. and W.H. Starbuck (1990): 'Innocents in the forest: forecasting and research methods', *Journal of Management* 16(2)433-60.
- Putnam, R.D. (2001): *Bowling Alone. The Collapse and Revival of American Community*. New York: Simon and Schuster.
- Raab, J. and H.B. Milward (2003): 'Dark networks as problems', *Journal of Public Administration Research and Theory* 13(4)413-39.
- Rappaport, R.A. (1979): *Ecology, Meaning, and Religion*. Richmond, California: North Atlantic Books.
- Ray, L. (2002): 'Crossing borders? Sociology, globalization and immobility', *Sociological Research Online* 7(3). <http://www.socresonline.org.uk/7/3/ray.html>
- Riker, W.H. (1982): *Liberalism against Populism. A Confrontation between the Theory of Democracy and the Theory of Social Choice*. San Francisco: W.H. Freeman.
- Rorty, R. (2004): 'Post-democracy', *London Review of Books* 26(7)10-12.
- Sager, T. (1994): *Communicative Planning Theory*. Aldershot, UK: Avebury.
- Sager, T. (1997): 'Incremental planning for a pluralistic democracy', *Planning Theory* 18, 36-62.

- Sager, T. (2002): *Democratic Planning and Social Choice Dilemmas*. Aldershot, UK: Ashgate.
- Salomon, I. and P.L. Mokhtarian (1998): 'What happens when mobility-inclined market segments face accessibility-enhancing policies?', *Transportation Research D* 3(3)129-40.
- Sartre, J.-P. (1982) [1960]: *Critique of Dialectical Reason*. London: Verso.
- Schafer, A. and D.G. Victor (2000): 'The future mobility of the world population', *Transportation Research A* 34(3)171-205.
- Scheffler, S. (1994): *The Rejection of Consequentialism*. Oxford: Clarendon Press.
- Schreiner, P. (1971): 'Prognoser og planer for lands- og landsdelsformål' ('Forecasts and plans for national and regional purposes'), *Kursus 5 i by- og regionplanlegging*. Trondheim: NTH.
- Sen, A. (1982): 'Rights and agency', *Philosophy and Public Affairs* 11(1)3-39.
- Sen, A. (1997): 'Maximization and the act of choice', *Econometrica* 65(4)745-79.
- Sen, A. (2000): 'Consequential evaluation and practical reason', *Journal of Philosophy* 97(9)477-502.
- Sheller, M. and J. Urry (2003): 'Mobile transformations of "public" and "private" life', *Theory, Culture and Society* 20(3)107-25.
- Shields, R. (1997): 'Flow as a new paradigm', *Space and Culture* 1(1)1-7.
- Sosis, R. and C. Alcorta (2003): 'Signaling, solidarity, and the sacred: the evolution of religious behavior', *Evolutionary Anthropology* 12(6)264-74.
- Swartz, J. (2003): 'Security systems for a mobile world', *Technology in Society* 25(1)5-25.
- Taylor, N. (1998): *Urban Planning Theory since 1945*. London: Sage.
- Thiele, L.P. (1990): 'The agony of politics: the Nietzschean roots of Foucault's thought', *American Political Science Review* 84(3)907-25.
- Urry, J. (2000a): 'Mobile sociology', *British Journal of Sociology* 51(1)185-203.
- Urry, J. (2000b): *Sociology beyond Societies. Mobilities for the Twenty-first Century*. London: Routledge.
- Urry, J. (2002): 'Mobility and proximity', *Sociology* 36(2)255-74.
- Van Gunsteren, H.R. (1976): *The Quest for Control*. New York: John Wiley.
- Warren, M.E. (1999): 'Democratic theory and trust', pp 310-45 in M.E. Warren (Ed.): *Democracy and Trust*. Cambridge: Cambridge University Press.
- Wellman, B. (1999): 'The network community: an introduction', pp 1-48 in B. Wellman (Ed.): *Networks in the Global Village. Life in Contemporary Communities*. Boulder: Westview Press.