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Regaining the Fundamentals

by

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TITLE: Regaining the Fundamentals

ABSTRACT: Transport policy and planning has relatively few but important fundamentals. Research has focused on marginal issues and not fundamentals. The paper reviews physical fundamentals, moves through economic and financial, then institutional arrangements, policy-making fundamentals, and finally takes a look into the future. Along the way conclusions are drawn that physical constraints narrow choice greatly; that the problem with growth as an objective is mainly in it's definition as GDP; that pricing is under-utilised; and that the use of transport as a tax base will become unacceptable. A review of decision-making fundamentals points to a need to change institutional arrangements to better reflect the trade-off between technological scale, creditworthiness and responsiveness to demand, and to counter balance the current power of supply institutions. Finally a new organisational model is proposed that meets the criteria of the framework of the fundamentals discussed in the paper. The model is called a Community Infrastructure Corporation, and works by placing control of supply primarily in the hands of those demanding service.

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Introduction

Transport policy and planning has relatively few but important fundamentals. As transport industry professionals our pursuit of greater knowledge and efficiency has moved us further and further away from these fundamentals to focus on issues at the margin. The growing gap between fundamentals and the topics in focus, has become a vacuum into which special interest groups, with little democratic support and soft discipline, have moved to assert major influence over policy and planning decisions

It is the decision making process that needs to be improved. Few object to inclusion of environmental, social and other issues, but the decision process, including who has discretion and control, and the weight given to each issue, has become distorted.

To restore some balance and democracy, we need to reengage the public and their democratically elected representatives in government, in a discussion of fundamental relationships. To get there we need to use plain language and not the transportation dialect that has developed.

This dialect refers to too many "black boxes". Some, such as the proprietary traffic distribution models, appear conceptually large. Some are as simple and powerfully evocative of good works such as calls for "traffic calming", or for "equity". This might be good marketing but probably not efficient in social or environmental terms. For example most "traffic calming" devices such as speed bumps actually increase air and noise pollution and increase operating costs. Similarly the application of "equity", permits everyone to have the same right of access to most roads anytime they seek it, resulting in congestion with everyone incurring the same high cost for inefficient transport service. That is not *equity*. Equity requires fairness not just equality, and there is little fairness in congestion for all.

I suggest that broad societal recognition of fundamentals will reduce apparent complexity and assist decision making by constraining the options for transport policy and planning to a manageable few. Equally important, the task of gaining sufficient knowledge about these options to make "better" decisions is easier and cheaper than it has ever been, particularly in tracking demand. There has been a quantum jump in our ability to access real time data, and to represent the initial and repercussive impacts of policy and planning decisions. If we were to put all that in a responsive institutional setting with decision making control in the right hands, then we will have a better chance for "getting it right" in transport.

This will be a quick tour of fundamentals, using the general context of transportation in a large urban area, although the perspective is applicable at the regional and higher geographical scales. I start with a brief observation of physical fundamentals, move through economic and financial, then institutional arrangements, policy decision making fundamentals, and finally take a look into the future.

Physical Fundamentals

Physical fundamentals in regard to the environment, network requirements, land use and accessibility, vehicle characteristics, and inter-modal co-ordination are undoubtedly all covered in

professional transport planning courses. However it is hard to find such fundamental frameworks when it comes to ministerial decisions and say some of the planning enquiries that influence them.

When physical fundamental frameworks are observed, there are only a limited number of efficient physical service options for each category of transport demand.

A. Physical Environment

The choice of corridors for locating high-level transport networks (arterial and above) is limited by physical features including topography, geotechnical conditions, hydrology, microclimates (atmospheric conditions), noise, and existing development. Map those constraints and the location of major transport corridors and links becomes limited. For example the Sydney Harbour Tunnel location surprised few.

B. Network Characteristics

With possible corridors identified, the network characteristics in terms of spacing of nodes and establishment of a reasonable grid of links again is constrained to a well defined set of travel time and distance expectations for people and freight.

C. Land use & Transport

At the interface between land-use and transport, we know it is fundamental to match the density of use with accessibility so that we get high activity around nodes in the transport network. But still there are examples of local plans that ignore this fundamental.

D. Vehicle Characteristics

The size and performance of transport vehicles ranging from heavy rail vehicles through cars to bulk tankers all dictate and constrain their usefulness and network requirements.

Consider just a few of the fundamentals such as switching limitations of rail (especially monorails), or the two phase (streamline and congested) flow characteristics of road vehicles. Yet we build monorails and accept congestion.

E. Demand and Modal Choice

If there are fundamentals driving the configuration of corridors, and various modes with networks to satisfy differentiated demand, why do we focus so much effort on competition between modes as if each mode held equal promise of satisfying any demand efficiently. Cars service low density suburban demand, busses offer greater flexibility as density increases, the various forms of guided vehicles from buses, through light rail to heavy rail service heavy corridor demand and so on. Competition within modes has more validity than competition among modes.

F. Inter-modal Transfers & Co-ordination

The dominance of one mode in satisfying one type of demand means that transfers and co-ordination among modes is a fundamental issue. Yet here in Sydney we are only just getting a rail

airport connection, the road airport connection is a mess and to date we have not solved the bus terminal problem.

G. Summary of Physical Fundamentals

- There are relatively few physical opportunities for networks that meet our needs and they are not too hard to identify;
- There is usually a particular mode that is more efficient than others in satisfying each differentiated demand for service;
- There is a need to manage these networks to ensure availability of appropriate modes for the demand and efficient streamline flow as compared to congested;
- The interface between modes needs more attention to improve co-ordination and reduce transfer costs

Economic/Financial Fundamentals

For this discussion the relevant fundamentals of economics and finance include answers to the following three big questions:

1. What motivates us to work, or undertake economic activity?
2. What is the mechanism for undertaking economic activity?
3. What determines the availability of economic resources to undertake infrastructure investment and who controls such resources?

A. Improvement & Growth

I suggest that ***growth*** is the prime motivation to work. History demonstrates that maintenance of existence is not enough. We are driven to improve society. However the idea of growth has generated some controversy recently by becoming associated with, among other things, detrimental environmental impacts.

For most of society, real growth remains a fundamental objective. The problem is in defining what constitutes ***"real growth".*** One of the dominant measures of growth is increase in the GDP. Some of the present disquiet with growth in GDP, comes from a realisation that it includes increases in many economic activities, which most of society would prefer to see reducing. Examples abound in areas such as law, medicine, road congestion, and energy use. In all these activities most of society would prefer to see reductions and yet, more criminal activity requiring police, prisons and lawyers, more sickness requiring doctors, nurses and hospitals, and more congestion increasing energy use and transport costs, would all be recorded as economic growth.

New measures that align better with society's concepts of growth as increases in the good things and reductions in the bad things are a fundamental need. A body of literature is emerging on the subject, which should return validity to the fundamental that growth is good.

B. Mechanisms of Exchange

Economic activity is undertaken by mechanisms of exchange that require enforceable property rights and clear decision control, information about available options, plus feedback if there is to be improvement. The holding of property rights infers the existence of creditworthiness, which together with clear decision control and enforceability provides a guarantee of completion of the exchange.

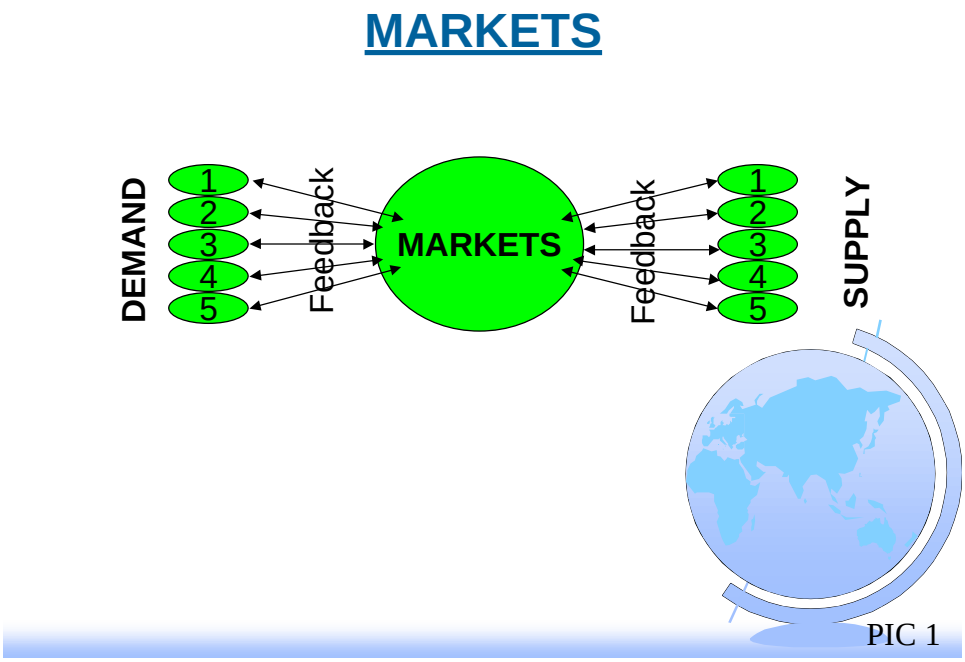
Mostly these mechanisms of exchange are called markets. Where individuals have property rights you have private markets. Alternatively, if the technical characteristics of supply suggest one supplier or a monopoly, then government, as one form of a collection of individuals with a common interest, usually steps in to provide uniform service.

1. Markets & Competition

Markets do this exchange of rights best when there is competition on both demand and supply side to provide the catalyst for improvement.

In my experience competition in the real world is not about dividing up a given cake, as the neo-classic economists would have us believe with their perfect knowledge/equilibrium model. It is about gaining sufficient information to identify an advantage, an opportunity others have not spotted to improve your lot as a supplier or consumer of services.

This is the essence of entrepreneurial activity and is a vital ingredient of a market economy. The dynamic model of the economy has been labelled the ***Austrian model*** and while it utilises many of the techniques developed by the neo-classicists, the Austrian school sees the world as an open system. In their view, to regulate entrepreneurial activity out of the economy would stifle growth and improvement. This is a fundamental problem of government controlled supply.



PIC 1

This view of markets is of fundamental importance. Markets are anything but static. There is no such thing as a market in equilibrium. The entrepreneurial urge, catalysed by competition, forces participants in a market to constantly seek knowledge of new and better suppliers or in the case of suppliers to seek out consumers who appreciate their product and are willing to pay more for it to improve their lot.

There is a cost to gaining such knowledge so in the same way that equilibrium is not a feature of markets, neither is perfect knowledge. The perfect equilibrium market does not exist, it is too costly and by definition anti-growth. However, the cost of acquiring market knowledge is being reduced, and it is this efficiency of communication of which transport is a part, that is our responsibility.

Competitive markets are the best mechanism civilisation has been able to come up with to improve the lot of all participants over time. The dispersed knowledge acquisition and decision making that constitutes market activity can not be replicated by some centralised control system run by elites. This fundamental characteristic of markets separates them from central planning (or master planning, or in it its modern guise “place planning”).

An important task of governments should be to lower the cost of knowledge acquisition or put another way increase the availability of information and let the individual participants get on with it.

A secondary task of governments is to regulate technical characteristics, and negative economic effects.

Where there are monopoly elements then we need a more collective mechanism of information gathering, decision control and feedback. This raises the issue of appropriate scale, which will be discussed in terms of institutional arrangements.

There is a spectrum of organisational structures, from individuals, through partnerships, co-operatives, common stock companies, local, regional, state and federal governments that may be the appropriate scale depending on the characteristics of the goods and services being exchanged.

The existence of this spectrum, a continuum, needs to be emphasised to overcome the limiting two part typology of public or private that is constraining the current discussion of who should supply and control or regulate transport service. As listed above there are many existing examples of organisational structures for transport service supply between the public agency and privatisation.

2. Pricing

The existence of two phases of traffic flow on roads; the high cost of congested flow when compared to streamline flow; the abundant empirical evidence that increases in price of transport reduces demand; all make further discussion of the use of pricing to manage transport demand repetitive.

I leave it to others to give the latest estimates of congestion costs, but if we do not use temporal pricing to ensure uncongested use of networks then we are wasting billions of dollars.

C. Credit & Cash

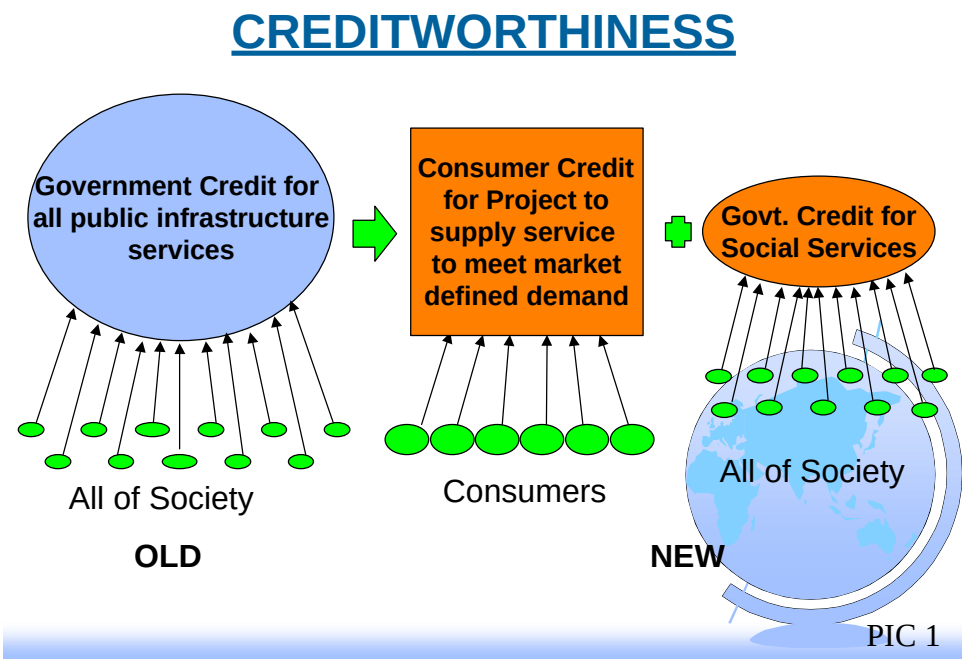
The claim on resources to provide infrastructure services comes from the creditworthiness of the investment. Creditworthiness in turn comes from ability to pay for or service the investment.

1. Creditworthiness

Individuals have creditworthiness which they can combine at every scale from partnership through, listed companies to governments - but the creditworthiness all comes from individuals ability to generate funds to pay charges, taxes or whatever.

In transport as in other public infrastructure services, the source of creditworthiness is shifting down in scale as our greater knowledge of who is seeking service and who is responsible for and willing to pay for costs, allows us to differentiate demand into smaller and smaller groups or communities.

This transition from "public goods and services" supplied by government using "*sovereign*" creditworthiness, to "*private goods and services*" with user pays creditworthiness, is one of the major influences driving change in financing of public infrastructure services. But it is not a simple shift from government to individuals. There is a full spectrum of groups with common interests and demands that should be considered as alternative scales for tackling the transport challenge.



PIC 1

2. Savings

The other major influence on change in financing public infrastructure, is the relative shift in the location of available resources. In general these resources are the savings of society and the shift is from government tax to private managed funds.

The quantum of the shift is readily apparent in the growth of superannuation funds and their impact on share markets.

The consequential point to observe is that there is a great difference in the infrastructure investment criteria of a professional funds manager as compared to a public servant responsible for a government capital works budget.

This change alone will force a level of transparency and publicity of the credit rating of communities seeking access to investment funds for public infrastructure.

3. Consumer Transport Budgets

With credit assessment moving from government or society as a whole towards lower scale units or communities of users, it is necessary to look at the fundamental availability of cash resources in consumer transport budgets.

Individuals make direct and indirect payments from their transport budgets for service that produces revenue to meet operating costs and service the investment in transport assets.

In Australia consumer (households, firms) transport budgets are more than adequate to finance a world class transport system. The latest figures suggest we still pay to governments five to six times what they reinvest in transport. We just have to remove the excise tax from fuel to free up funds to meet all needs for investment.

The current tax reform debate is the best opportunity for some time to ensure that part of the consumer transport budget is available for payment of direct charges for use. This would ensure efficient (uncongested) service on our transport networks (particularly urban road networks) and availability of investment funds for improvements in the whole transport system.

D. Summary of Economic/Financial Fundamentals

- To re-establishing the concept of growth, as a good thing requires a more detailed accounting of economic activity than we currently have in GDP. Measures with a qualitative dimension are required to give a net measure that subtracts negative economic activity from positive activity.
- The fundamental nature of economic activity is one of exchange of resources or property rights requiring information clear decision control and feedback. Real markets are ever changing using imperfect information and constant feedback through the price mechanism with growth driven by entrepreneurial activity.
- There are options in the scale of units acting in markets that use communities of interests (or demand) that range from a single individual through partnerships, and co-operatives all the way to national governments.
- To ignore the use of pricing to ensure streamline rather than congested flow is to place a major cost on the community.
- The source of all creditworthiness is individuals either alone or in various scales of community and this includes “sovereign” government.
- There has been a shift in the source and repository of savings from tax based government finance to private savings held in managed funds.

- The present use of transport as a tax base is inappropriate and yet demonstrates the availability of revenue in consumer transport budgets to finance world class service.

Institutional Fundamentals

Institutional arrangements are powerful mechanisms for ordering society. When major elements of these arrangements change, such as the increased differentiation of demand and source of creditworthiness shifting from Governments to consumers, then it follows that other elements, such as the organisational structure of supply also requires change. The challenge is that the power of institutional arrangements reflects their robustness and hence the difficulty in achieving changes.

The idea of focussing on institutional arrangements in society is not new, but is undergoing something of a renaissance. Currently it is being approached from many different directions including public administration, economics, political science, and planning to name a few. Each discipline has brought their insights and definition of what constitutes institutional arrangements. A series of new dialects is in the making. Given my opening admonition, the first task is thus to define in simple terms what I call institutional arrangements. I will then discuss one of the most important issues, which is the appropriate scale of formal organisations supporting transport institutional arrangements.

A. General

Public institutional arrangements are rules of conduct that have been distilled from experience, with control by incentives and sanctions. The rules can be internal or external to the individual. The institution can be informal such as a code of behaviour or formal with organised structures. Most democratic societies seek to minimise the number of formal organisational structures to permit the greatest freedom of action. Adhering to the rules becomes a habit to ease the effort required for routine, frequently repeated actions or procedures. This results in customary, self-sustaining, non-reflective behaviour. The process of learning or knowledge transfer of institutional arrangements is primarily by imitation. In formal terms they become part of society's cognitive framework.

By definition institutional arrangements are rarely reviewed, let alone changed. They are fundamental and in transport are present at every level from general road behaviour to our formal organisations that supply transport service.

PIC 1

B. Scale

We have many scales of transport institutions from say the rules of formal international bodies such as IATA down to say informal rules of pedestrian behaviour such as keep to the left on the footpath. Recalling the description of economic activity, adhering to many of these rules at high scale can be seen in part as a series of market like transactions by individuals and groups of individuals (communities) at different scales.

There are groups demanding service and groups supplying service. Each is seeking information and demonstrating ability to pay or demonstrating creditworthiness and ability to guarantee completion of their obligations. Each is constantly adjusting their preferences and products and enjoying growth as each exchange occurs. The overall picture is one of a responsive mechanism, with information flowing back and forth.

In transport the appropriate scale of the organisations servicing the institutional arrangements would thus seem to be dictated by the cost of acquiring information, the responsiveness of the mechanism to change, and the need for a control structure and creditworthiness to back required performance (completion) guarantees.

This in turn suggests a trade off between pushing decisions down scale as far as possible (or in Schumaker's words "small is beautiful" otherwise known as the principle of subsidiarity) to lower information costs and increase responsiveness, and the scale required for creditworthiness to support completion guarantees for the supply of the appropriate technical solutions such as a motorway network.

Examples are easiest to see on the supply side where, for example, we need large international construction contractors such as Bouygues, with their large balance sheets (creditworthiness) to provide completion guarantees to undertake projects like the Sydney airport rail link.

On the demand side in general we find government organisations acting on behalf of individuals demanding service. Applying the market framework of information seeking, exchange of resources and adjustment, to the scale and responsiveness of our present government organisations, it is hard to see them as appropriate mechanism fulfilling this role.

How responsive can a group of state level, single mode, supply organisations be to a community with a demand for a co-ordinated multi-modal package of transport services?

Consider the feedback mechanism. It relies primarily on consultant analysis with no meaningful guarantee of performance along the lines that we expect from say a construction company.

Consider the control mechanism. It relies on a Minister representing the whole state, advised by various public servants, consultants, appointed corporate boards of Directors, Commissioners of Enquiry, Independent Pricing Tribunals and the like. All doing good jobs within the existing institutional arrangements and organisations but remote from the desired dynamic process of exchange of resources that should be transport service.

In a historical sense the organisational origins of our institutional arrangements are clear. They derive from the military/colonial administrative model with its centralised decision making supported by expert groups all under one command structure, with one all encompassing balance sheet to guarantee performance, namely that of the government. This has evolved with some elements moving out of direct government control. But the model is under strain as the savings that provided tax revenues and hence sovereign credit (or balance sheet), are channelled more and more into private managed funds. As noted above the private sector managers of these pooled savings funds are much more demanding of performance backed by creditworthiness and completion guarantees than governments have been or were required to be.

C. Summary of Institutional Fundamentals

- Public institutional arrangements are rules of conduct, with control by incentives and sanctions that have been distilled from knowledge and experience. They are informal and formal, operating at many scales of activity.

- The appropriate scale of organisations that manage some of the transport institutional arrangements depends on the cost of acquiring information, the responsiveness of the mechanism to change, and the need for a control structure and creditworthiness to back required performance (completion) guarantees.

- This in turn suggests a trade off between pushing decisions down scale as far as possible and the scale required for creditworthiness to support completion guarantees for supply.

Decision Making Fundamentals

The final consideration in returning to fundamentals is to look at the decision making process itself. If analysis of institutional fundamentals is rare in transport, then analysis of the actual decision making is even rarer.

A. General

We have all been trained and operate using "scientific" analytical technique seeking all the facts to establish reality, testing hypotheses about the future if certain courses of action are taken, using reason and logic to come to defensible conclusions that can be replicated by others. In theory in transport democratically elected representatives of society then use these conclusions to make rational decisions.

However we have all experienced decisions that, in our view, are not logical but which get presented and justified as exhibiting rationality. The Sydney monorail is an example.

The reality is that many policy decisions are made by non-democratic means in highly constrained circumstances, using limited knowledge, and based on a rationality that serves existing power structures often with special interests. One has only to observe the passage of legislation in the small hours of the morning in our parliaments to realise that many important decisions are made with little obvious rationale.

In case this sounds too depressing and that democracy and rational analysis does not work, then pause and observe how far we have come in Australia from rule by administrative decree. Transparency is on the increase.

B. Power & Rationality

In contemplating our future, particularly in regard to our institutional arrangements we need to be aware of the fundamental relationships in decision making between power and rationality. I can do no better than quote from a recent study of a transport project in Aalborg, Denmark by Bent Flyvbjerg as recorded in "Rationality & Power, Democracy in Practice". The book is set to rival Machiavelli's "The Prince" as an analysis or power and suggests several propositions that are fundamental. They are:

1. Power defines reality.
2. Rationality is context dependent. The context of rationality is power, and power blurs the dividing line between rationality and rationalisation.
3. Rationalisation presented as rationality is a principal strategy of power.
4. The greater the power the less the rationality.
5. Stable power relations are more typical of politics, administration, and planning than antagonistic confrontations.
6. Power relations are constantly being refreshed and reformed.
7. The rationality of power has deeper historical roots than the power of rationality.

8. In open confrontation rationality yields to power.
9. Rationality – power relations are more characteristic of stable power relations than of confrontations.
10. The power of rationality is embedded in stable power relations rather than in confrontations.

As a comment on democracy, the study suggests we have a long way to go in developing institutional arrangements that are truly democratic. In Aalborg the elected Council representatives rarely won out over groups such as the Chamber of Commerce.

The decision-making agenda is set by a will to power not a will to knowledge. And yet few of us would back away from the democratic ideal. To paraphrase Flyvjberg, his study suggests that to make real progress to greater democratic action in public infrastructure we need to tie our actions back to precisely what democratic theory suggests we should control or remove from society, namely power, conflict, and partisanship. In some instances direct power struggle over specific issues will work, on other occasions changing the ground rules as in reform of institutional arrangements will be effective. He points out that it was Machiavelli who warned of the dangers of neglecting what is actually done for what should be done. Which points us back to fundamental relationships in what is actually done, and in that context some comments on the main models or tools of decision making may be illustrative.

C. Decision Models

The rational analysis of complex multivariate dynamic systems has generated a number of sub disciplines such as cybernetics, chaos theory, and game theory. Again another set of purportedly separate disciplines using their own dialects. However on close examination, all are using systems thinking and the concept of feedforward and feedback to describe how change in one element feeds information and influence to another over time to produce change or a steady state in a process that includes all related elements. A disciplined approach to decision making using such techniques calls for much information, clear objectives and a capacity to conceptualise the interrelationships in the system being considered.

The academic literature includes much discussion of optimising techniques. But the reality of the actual decision making as compared to the analysis is that it is constrained once it gets beyond a certain scale. There are limits to the time available to the decision maker, his or her capacity to comprehend the information, ability to understand the objective functions and to conceptualise the system with all its interconnections that produce repercussive effects.

Let me be clear that I am not criticising the worth of analysis or the techniques being used. It is the ability to use the results, weigh the importance of each, and their interconnections, that poses a problem as scale and complexity increases.

The fundamental issue is again at what scale do we establish decision making (control) of organisations managing our institutional arrangements? At what point does our ability to be rational cut out and we start to rationalise?

To date we have operated as if there are only are two types of decision making. The first is presented as deterministic and centralised as represented in transport by “Master Planning” and

"Environmental Impact Studies". The second is the self-organising dispersed type of decision making as in markets.

The reality is that as individuals we act as our own "master planners" in deciding how we participate in markets. The reality is that as individuals we often form groups or communities to represent our collective interests in market like exchanges. The problem under present arrangements is that as scale increases control (power) shifts from the community to elected representatives in wide ranging ministries advised by unelected technical elites (public servants and consultants) and special interest groups.

The desired democratic picture is of a hierarchy of community interests participating in decision making (control and responsiveness) at different scales and preserving the connectivity (feedback) between demand and supply. Such a picture as compared to our present arrangements would see a shift in power from unelected technical elites and special interest groups to the community being served.

D. Information Acquisition & Presentation

No discussion of decision making would be complete without observation of the radical change that has occurred in techniques of information acquisition and presentation.

The cost of and physical constrains on acquiring traffic data have been dramatically reduced. For relatively small sums it is now possible to wire a network to provide real time data on traffic demand and network performance.

The capacity also exists to simulate transport services and to show to decision-makers the impact of system changes be they investments or management initiatives.

The adoption of this combination of continuous data acquisition, analysis and simulation with clear imaging of the consequence of decision making has been slow. Why this has been so is hard to determine. Perhaps this is one area where the existing power structure that controls transport policy and planning needs to be confronted.

E. Summary of Decision Making Fundamentals

- Control over decision making is defined fundamentally by an unequal contest between power and rationality.
- Power will define reality and use rationalisation to modify rationality.
- Democracy as a source of power still has a long way to go as compared to historic power bases such as chambers of commerce, trading companies, banks, unions, professional associations and other guilds of like minded individuals.
- To increase democratic control over decision making will probably require direct power struggle over specific issues at times as well as changing the ground rules as in reform of institutional arrangements.

- Beyond a certain scale, our capacity as individuals to be rational and comprehensive is challenged to the point where master planning fails and we must seek more market like mechanisms of control over decision making in a hierarchy of organisations.

- Continuous data acquisition, analysis and simulation with clear imaging of the consequence of decision making is available at relatively low cost.

The Future

These fundamentals can be used as criteria to assess existing transport services and institutional arrangements and suggest some priorities for research and change. Such a broad application is beyond the scope of this paper but an example is the following brief review of models of transport supply institutional arrangements, including a model for the future. The example excludes physical fundamentals.

It has become customary to present models of supply institutions as some combination of public or private inputs. In light of the above fundamentals such public/private categorisation is of limited use. The scale issue suggests a continuum of possible organisations representing different aggregations of individuals with a community of interest. The public ownership verses privatisation framework of discussion offers little insight. The above framework suggests looking at three areas:

1. Who has decision making control of the organisation bearing in mind "real control" as represented by power and its ability to define reality and rationalise decisions?

2. How responsive is the organisation with respect to the dynamics of demand and supply, and how is the response mechanism (feedback) structured?

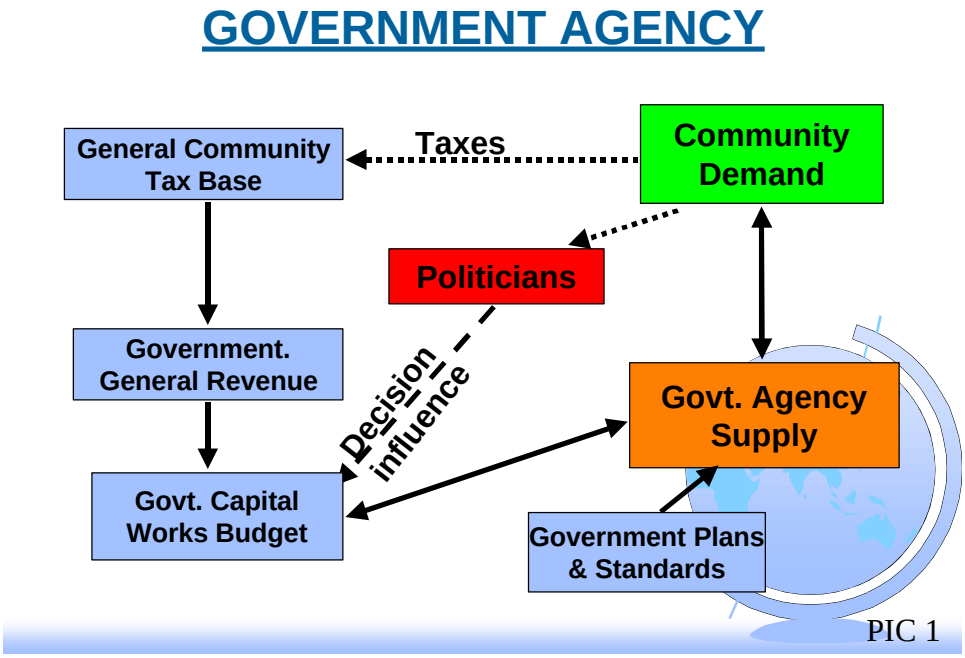
3. Where does the creditworthiness and cash for revenue to service investment come from?

The models chosen for this brief application of fundamental are:

- A Government Agency,
- The conventional Build Own Operate Transfer (BOOT), and
- A new generic model that has been titled a Community Infrastructure Corporation (CIC).

A. Government Agency

Of necessity the representation below of a government agency supply organisation is limited but it does allow assessment against the three nominated areas of concern as follows:



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1. Control

- Formal control is exercised by the Minister and his colleagues in the Capital Works Committee as advised by the agencies public servants

- Real control includes the formal control group plus informal and formal power associations operating through formal and informal community consultation processes such as in an EIS, a Planning Commissioner Enquiry and a Pricing Tribunal.

- Those demanding service have no direct discretion over decisions.

2. Responsiveness

- There is a limited flow of information between demand and supply (and among other stakeholders) to provide feedback and handle the dynamics of demand and supply.

- Data acquisition and analysis is shifting from one off master planning exercises towards continuous strategic assessment.

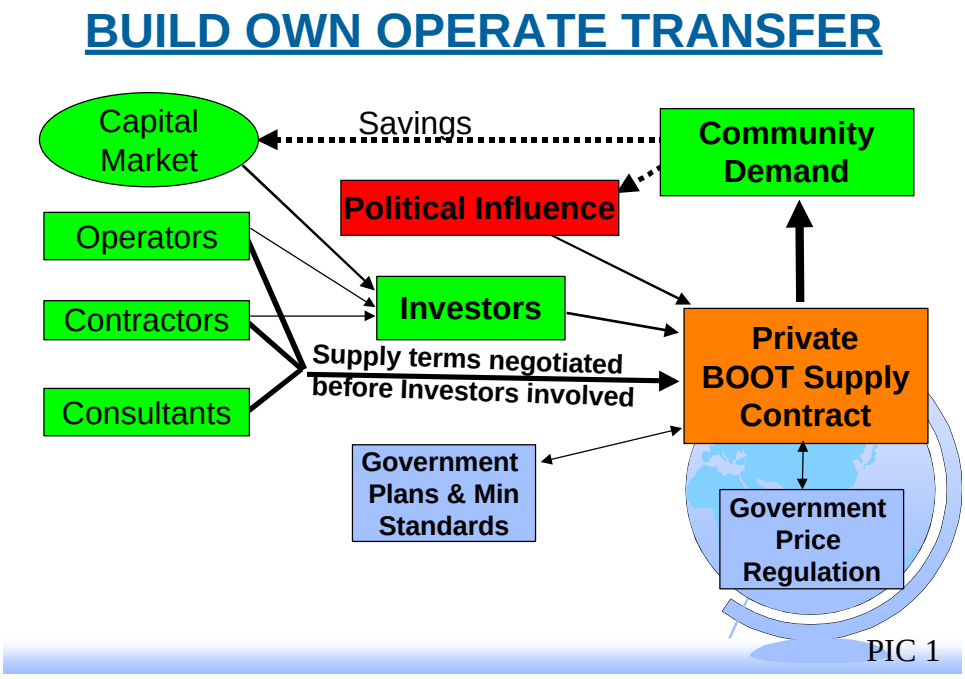
3. Credit

- The link between the demand communities creditworthiness and ability to pay is remote and blurred by pooling of both creditworthiness (sovereign government borrowings) and tax revenue with only rare hypothecation of funds.

- Procurement of inputs for design, construction, and maintenance, is increasingly by competitive tender which achieves market efficiencies

B. B.O.O.T

The supply of service through conventional BOOT schemes has come to be seen as a panacea for procuring transport facilities so it is interesting to observe the relatively small difference between the Government Agency model and the BOOT model in regard to control and responsiveness.



PIC 1

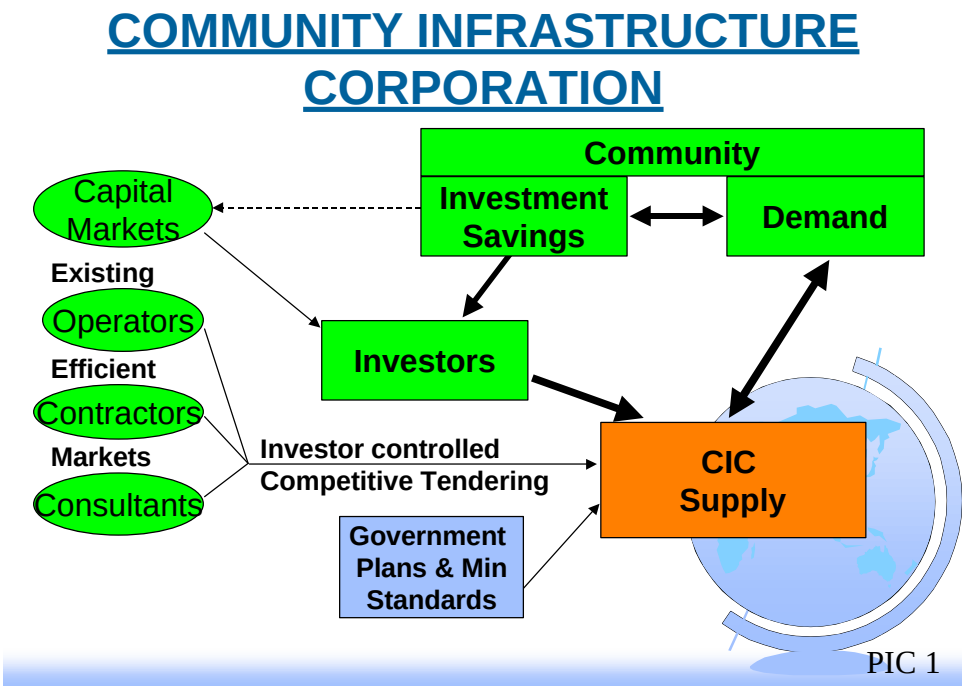
On credit, the presence of outside investors changes the origin of funds from government budgets to private capital markets but the creditworthiness remains the same.

On revenue, those demanding service have been placed in direct connection with the suppliers but feedback and control over how much they pay has been left to government agencies and pricing tribunals.

On procurement it is interesting to observe with BOOT processes, that most inputs, such as construction, are contracted on a negotiated basis prior to involvement of long term investors thereby reducing the opportunity for efficiencies from competitive tendering from establish supply markets.

C. Community Infrastructure Corporations

This model is generally applicable to public infrastructure services and has yet to be fully resolved and applied in transportation.



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1. Control

- It is envisioned that the CIC would operate under a contract (franchise) issued by Government.
- Government may wish to override the CIC Board on some decisions say for social justice purposes, in which case the contract would specify the process and compensation from Government to the CIC for any consequent costs.
- The control of the CIC is in the hands of those receiving service who will have a majority shareholding in the CIC.
- Outside investors will assert influence to ensure financial performance.
- Decisions over the level and mix of services will ultimately be exercised by the community demanding service through a Board of Directors elected in the normal way as shareholders.
- Control of resolution of conflicts, say over negative environmental impacts, will be handled at in the community where adjudication of adjustments and compensation is more easily handled.
- Power and hence the ability to create the reality of transport service for the community will be in the community's hands.

2. Responsiveness

- The CICs executive will be responsive to the community of shareholders or be subject to normal sanctions through the Board of Directors elected by the shareholders.
- As noted under control, with the CIC operating by definition at community scale the responsiveness to local issues and values will be strong.

3. Credit

- There is a short, clear connection between the origin and use of the community's credit to finance services.

- Similarly there is a short clear connection between the origin and use of the community's payments for use to service the investment.

- Most importantly there is a short feedback loop between the community as supplier of credit or investor seeking a return on capital and the community as users seeking to pay the lowest fee for service. This element of the structure provides the market like feedback and balance between demand and supply and overcomes the classicists concern about a monopoly supplier. It is self-regulating and thus does not require an independent elite group to determine the appropriate level of charges. The structure is self-governing in that it would not be rational for the community to demand service that it is not willing to pay for or alternatively to under supply service that it is willing to pay for.

Conclusion

It has long been a tenet of systems analysis that the only way to handle complexity is by returning to fundamentals. In this paper I have attempted to demonstrate that a return to fundamentals of transport systems in terms of their physical characteristics, their economic and financial attributes, and the actual process of decision making, points a way forward to an adjustment of our institutional arrangements to improve and democratise the supply of transport service in our communities.