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Background Paper

GOVERNANCE OF METROPOLITAN TRANSPORT IN CANADA, THE US AND A NOTE ON AUSTRALIA

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The purpose of this and four more papers is to better understand governance of metropolitan transport as an introduction to a VREF discussion on priorities of future research funding. Most academic studies on metropolitan transport discuss technologies and/or WHAT should be done; far fewer studies are concerned with HOW improvements in metropolitan transport in fact are carried out. A better understanding of governance of metropolitan transport is therefore necessary.

This paper is one of five background papers for the VREF synthesis on comparative governance of metropolitan transport and how governance is treated in the VREF portfolio. The paper is a comparative study of Canada, the US and Australia.

This draft paper is based on three Canadian and six US metropolitan areas. It also includes a comparison between Canada and Australia, which have essentially identical relations between provincial/state levels of government and local authorities (based on British legal principles) but nevertheless quite different metropolitan transport systems.

The paper has a limited scope and is primarily about the governance of public transport and in some cases also about road traffic. Freight is not treated at all and the governance of urban place only briefly. Governance is about the exercise of power and comes in political, commercial, legal and professional forms under formal rules as well as informal practice. The governance of metropolitan transport rests on the interaction between the politics of land use, property development and transport within a given constitutional framework. Geography and in particular water can also be a formative factor.

Both this paper and the paper on Western Europe are based on brief case studies that illustrate the various ways in how governance of metropolitan transport can be organized and how power is exercised. The assumption is that governance of both transit and road traffic can best be explained by how the permanent need for tax-based subsidies have been met over time depending on national constitutions and local and regional politics. Sometimes it is also possible to understand some of the interactions with land use regimes and their politics. A better understanding of how subsidy regimes and land use regimes are linked would require a deeper understanding of the relations between these two regimes and the property market and its financing. This is a too complex topic for this limited study but would deepen the understanding why some metropolitan transport systems evolve primarily along a motorway-oriented development while others evolve primarily along a transit-oriented development. In practice it is always both, but the relative role of one or the other differs substantially between metropolitan regions. One aspect is whether property values in fact reflect the quality of transit service or not, which again conceivably would differ between places and over time.

The comparison of the governance of metropolitan transport in Canada and Australia will illustrate how politics of subsidies and land use within a given constitutional framework has led to increasingly divergent paths.

This paper is based on the following sources. *Jake Schabas* quotes a study on transit mode shares in top ten metropolitan regions in Canada and the US. Of the five top ones four are Canadian (Toronto, Montreal, Ottawa and Vancouver) and one is in the US (NYC). Of the next five, two are Canadian (Calgary and Edmonton). *John Stone* compares transport in Melbourne and Vancouver. *Deborah Salon, Elliott Sclar, Richard Barone* discuss the possibility of value capture of location in Montreal, NYC, Washington DC, San Francisco, London and Paris. Five of the six governance studies of metropolitan regions in the *Eno/Transit center report* on regional transport governance discusses six metropolitan regions are included: Boston, NYC, Chicago, the San Francisco Bay area and Dallas/Fort Worth. The Los Angeles county has been added as a sixth case, based on the VREF project on political leadership.

A metropolitan region is commonly defined as a labor market region, where employers can search for employees over an entire region and people can search for jobs over the same region. As mobility evolves the metropolitan region evolves. The capacity to adapt subsidy regimes to evolving boundaries is a key challenge for governance structures.

THREE METROPOLITAN REGIONS IN CANADA

The Montreal metropolitan region

- *Governance of metropolitan transport in the Montreal region is quite innovative and based on two elements: first, a dual structure created by the provincial government in order to manage the relations between the local authorities in the suburbs and the city of Montreal; and, second, an entirely new organization aimed at developing a joint infrastructure and property project.*

The governance of metropolitan transport in the Montreal region is the most recent transition in Canada from a fragmented public transport system with multiple operators and different fare systems into an integrated public transport system. The governance is based on a dual structure created by the province: the CMM and the ARTM. The CMM (Communauté Métropolitaine de Montréal) was created by the Quebec province in 2001 as an inter-municipal organization with 82 member municipalities and responsible for among other topics land use, social housing and water. The board is appointed by the member municipalities. The ARTM (L'Autorité Regionale de Transport Metropolitain) was created in 2017 by the province basically upon the Paris model of STIF with municipally owned operators and is the regional transport authority for all the CMM municipalities and with 115 annual journeys per capita (the city of Montreal has some 200 annual journeys per capita, all according to the Canadian Transit Fact Book). ARTM has the mission to plan and coordinate the public transport system which in turn is provided by four intermunicipal operators (RTL, RTM, STL, STM). The board of the ARTM is appointed by the provincial government and the CMM. The CMM has to approve the strategic plans of the ARTM and also the general principles of the funding policy. The new transit structure is thus to be jointly governed by the provincial government and the local authorities. The ARTM is responsible for setting fares with the mandate to come up with an integrated fare system and a seamless transport system.

The CMM can, according to the provincial legislation, issue binding regulations on minimum densities of development within the provincial regulations on the protection of agricultural land. Municipalities have authority over building permits according to the density regulations.

The ARTM funding for operations and reinvestments comes from user fares to roughly 1/3 and from municipal sources (CMM) roughly 1/3, which in turn comes from local property taxes. Some 1/5 comes from the provincial government and the remaining part from various contributions from car users (fuel taxes decided on federal and provincial levels plus a local fuel surcharge in Montreal as well as a local registration fee on new cars). There is thus some cross-subsidization from private road users to transit.

The Quebec government, the ARTM and the CMM have together with the Quebec pension fund (CDPQ, la Caisse de Dépôt et Placement de Quebec)) also agreed to invest in REM (Réseau Électric Métropolitain) which is a joint infrastructure and property development company based on a light rail expansion. The initiative was taken by the pension fund, which likes to have infrastructure as one of its asset classes. The company is owned to 51 % by the pension fund and to 49% in equal parts by the province of Quebec and the federal government. The investors also include Hydro Quebec and ARTM. The ARTM will in turn collect the development charges for the real estate developments along the line according to a special and not simple legislation. These development charges (on new developments and major redevelopments) will in turn be calculated upon the projected increase in property values around the stations. Crossrail was one of the inspirations for this scheme.

The design of the Montréal metropolitan transport governance is quite innovative and built upon experiences from other metropolitan regions such as Vancouver, TfL and Paris/Il-de-France. The REM also reminds of Société Grand Paris. It is possible to see the dual structure of the CMM and the ARTM as a conscious design to manage the inevitable tensions between the suburban and the urban middle classes over the priorities between a motorway-oriented development strategy and a transit-oriented one.

It is possible to see two weak links: first the low share of fare revenues, which is much lower than e.g. Toronto Transit Commission, Stuttgart, Stockholm or London. These regions on the other hand already have integrated seamless systems and one fare structure, so maybe the time for raising Montreal fares will come. The second potentially weak link is whether the REM would survive a change of provincial government. Once the project is under way the cost of dismantling it could very well be daunting, however.

The Vancouver region

- *The Vancouver story is an innovative one with a possibly now stable mix of the specifics of geography (water, mountains, limited agricultural land), a civic culture related to the culture south of the border and the local pattern of political competition and cooperation between the provincial government of British Columbia, the city of Vancouver and other local authorities. The governance is based on a dual structure of an intermunicipal community and a provincial transport authority.*

The governance of metropolitan transport in the Vancouver region is centered around two organizations: MetroVancouver and Translink with an at times uneasy relationship.

MetroVancouver is a federation of municipalities in the region and was previously called GVRD (Greater Vancouver Regional Development) with a history going back to the 1880's. It operates under provincial legislation and has a board of elected local politicians and extensive responsibilities for water and waste water, solid waste, parks and, crucially, also regional planning. The regional planning does not formally bind the local authorities that still guard their right to issue (or not) construction permits and thus land use. The local authorities nevertheless value the land use planning and its processes. The GVRD has since the 1970's had a strong dose of the civic culture of the US Pacific Northwest.

Translink is the statutory authority for transport in the metropolitan region created by the province after extensive negotiations with the GVRD. Translink is an innovative organization and was created in 1998 as the regional transport authority responsible for roads, bridges and public transport. Translink runs the integrated public transport system served by a number of different companies and is quite successful with 100 annual journeys (or 160 boardings) per capita (translink website). The expressed view is to break down the silo walls between roads and transit and is said to have been one of the inspirations for the TfL. The original idea in the mid-1990's when Translink was conceived was also that the transit part should be financially autonomous and extensively funded through cross-subsidies from road traffic. Relations between the provincial government of British Columbia and the local authorities have historically been less adversarial than in Ontario and the BC provincial government has never resorted to the heavy-handed reorganizations of the local authorities of its Ontario equivalent. A tradition of inter-municipal cooperation around issues of common interest, which manifested itself in the GVRD, has always been there.

Translink's history is not simple, however, and reflects the ever-present tensions between urban, suburban and periurban priorities that every now and then surface as political conflicts between MetroVancouver and the province. Translink's origins lies in the BC provincial government, whose electricity corporation subsidized trams and trolley buses while the local authorities ran the bus companies. Like in all other major cities at the time, plans for major urban motorways were developed during the late 1960's. After a heated debate between the local equivalents of Jane Jacobs and Robert Moses (which was also about money) the motorway plans were scrapped. One of the major subsequent conflicts between the GVRD and the province was over investments in rail systems. The province decided during the 1970' for reasons of industrial policy and also the 1986 Expo to invest in Skytrain (a capital intensive elevated light rail system) against the GVRD's proposal of a conventional light rail system. The economic implications and conflicts over route alignment made the municipal-provincial relations more adversarial. When the GVRD in the 1980's overturned the plans of a local authority to build low-density housing, the provincial government forbid the GVRD to continue with regional planning. The GVRD fought back and when the three-time mayor of Vancouver got elected premier of the province the GVRD planning powers were largely restored.

The Translink board then consisted of elected politicians from the local authorities. The agreement was based on municipal financing through property taxes and additional financing mechanisms that would have made Translink autonomous of the provincial government.

Transit use increased rapidly and thus also the need to raise revenues through the newly authorized mechanisms. As the provincial government withdrew the key revenue mechanism before it was put in use – a levy on automobiles – Translink continued to depend on the provincial government for funding large capital projects. The assumed autonomy never materialized and the dependence on local property taxes also increased.

Adding insult to injury the province then imposed an extension of the Skytrain lines against the expressed opinion of Translink, which was concerned about the capital costs. Perhaps as a revenge, the province later also changed the procedures for appointing the Translink board. The local politicians were removed and 'independent experts' were to take their place with two ramifications. First, a clear line between politics and day-to-day operations could be drawn. Second, Translink became fully dependent on the provincial government and with no links to the region. In the meantime the GVRD has changed its name into Metro Vancouver and has taken up regional planning again.

Nevertheless Translink has added a new source of revenues: tolls from the Golden Ears bridge. The future for Translink is still reasonably bright even if the decision triangle between Translink, Metro Vancouver and the province has become distinctly lopsided. The issue to watch is the willingness of the provincial government to continue to provide the necessary subsidies for large scale projects. Population growth exacerbates the dilemma between suburban-urban transit and suburban-periurban roads. When a broad coalition of mayors, business and unions agreed on a sale tax increase to fund Translink, the provincial government countered with organizing a referendum (only the ninth since the creation of the province). Translink lost and how the subsidy-dilemma between suburban-urban transit and suburban-periurban roads will be addressed will depend on the constituencies of the provincial government at the time. And whether US inspired tax resistance will spread.

The Toronto region

- *The Toronto region illustrates the fundamental importance of constitutions in organizing transit. The British North America Act of 1867 (now called the Constitution Act) stipulates that a provincial government can reorganize local authorities and their relations with the provinces as its sees fit. The then Toronto city transit system was once the envy of the world, but once the Ontario government started to intervene problems also started to grow. Transit in the Greater Toronto area remains fragmented and is not likely to improve any time soon.*

Governance of metropolitan transport in the Greater Toronto area is divided into the usual silos of road and transit. The area has six main transit providers: the TTC (Toronto Transit Commission) responsible for the city and the GO Transit (GO for Government of Ontario) rail and bus systems outside the city both answer to the provincial government, plus four intermunicipal bus companies. TTC runs a very professional operation with some 180 annual journeys per capita, a cost recovery of some 75% and with a demonstrated capability to operate well integrated and good service also in low density suburbs. Outside the TTC area service is much more varied. The six main operators are poorly integrated and, apart from GO Transit, largely dependent on municipal subsidies from property taxes. Metrolinx is an umbrella organization created by the province and owns GO Transit. There are also smaller operators.

Integrating transit services with Metrolinx as the owner of all operators like along Ile-de-France-Mobilité or the TfL in London or as a revenue-sharing alliance of the German Verkehrsverbund type are theoretical possibilities only. Lack of trust and of mutual respect between the province, the city and the operators are not likely to disappear as successive political majorities on the provincial level have been unable to agree on a bipartisan and stable transit subsidy regime for the metropolitan area.

The then city of Toronto set up a non-profit transit agency in 1921. This was run as a centralized, integrated and non-subsidized system where profitable city core lines subsidized unprofitable suburban lines. The city ownership enabled the agency to borrow money on good terms. Tariffs were set to cover operations, maintenance and the debt service for the large-scale investments. The transit agency was for many years a highly professional and financially sound organization with good service and strong middleclass support.

Problems started to grow in the early 1950's as the labor market expanded into the growing suburban and car-dependent municipalities and the financially sound agency was reluctant to take on loss-making lines outside the city. The provincial government stepped in and used its authority to reorganize the municipal structure and created the Metro Council, a second-tier organization between Toronto and twelve surrounding municipalities. The province also forced the Toronto city owned transit company TTC to become a subsidiary of the Metro Council with the obligation to serve an area seven times as large while still remaining self-financed. Although fares were increased deficits grew as automobile use increased. The professional autonomy of the agency was in danger.

The provincial government had to give up its policy of no subsidies and the TTC gradually became dependent on the provincial government for funding first for capital costs for new subway lines and later also for operations. The provincial government then started to construct its own commuter rail lines for areas outside the Metro council area to the Toronto downtown and also started to override the TTC on where and how to expand capacity. Nevertheless, stable provincial funding plus the professionalism of the Metro transit system – 'New York run by the Swiss' – increased ridership much faster than the population growth during the 1970's and 1980's. In 1986 TTC has North America's highest ridership level of 200 trips per capita and its alliance with the suburban middle classes was maintained. The Toronto metropolitan transit system was recognized as among the very best in the world. But the end was coming.

Since the 1970's the provincial government had created new regional governments outside the Metro area with their own subsidized public transport systems not integrated with TTC. The provincial subsidies continued to grow until a new provincial government decided to change course completely and eliminate transit subsidies totally and concentrate on suburban and rural roads. In 1998 this provincial government took yet another drastic step and reorganized the Metro Council into an expanded City of Toronto. In order to reduce the risk of a strong political opposition the provincial government also kept the power of the mayor weak. Capital projects were slashed and ridership stagnated.

In 2006 the provincial government created Metrolinx, with the mandate to coordinate road and transit in the greater Toronto and Hamilton Area. The Metrolinx board originally had strong local political representation. A few years later the provincial government replaced the local politicians with what euphemistically called independent experts. Elected persons are prohibited from serving on the board, which is thus wholly controlled by the province. The Metrolinx now has a major capital expansion program, funded by the three levels of governments. The services of the six transit operators are still not integrated.

The Toronto story is a story of how political instability on the provincial level has prevented long term bipartisan support for a stable subsidy regime and also made successive provincial governments fear-full of political challenges from a metropolitan area with perhaps half of the population of the province. Toronto choosing a mayor like Rob Ford did not help either. French, London or German models for integrating the services of the various operators would certainly increase risks for political challenges and are therefore not likely.

Some common elements in the three Canadian metropolitan regions

Vancouver, Toronto and Montreal illustrate how governance is shaped by a combination of formal and informal rules. The formal rules are dominated by the role given to the provinces in the British North American Act with respect to the local authorities and the detailed rules of taxation by different levels of government. The informal rules can be summarized as political culture in the three metropolitan regions within a given set of formal rules.

The political culture of cooperation and conflict between provincial and local governments turns around the role of subsidies raised from taxes on the middle classes. The Toronto Transit commission has managed to maintain a strong alliance between urban and suburban middle classes which made the subsidies politically acceptable. Something similar appears to be true also in British Columbia and Quebec but not in other parts of the Toronto and Hamilton metropolitan region. This would explain why the more recent Ontario provincial governments appear to be the most confrontational with respect to local authorities, while the Quebec government appears to be the most cooperative. The British Columbia government presently appears to have an uneasy balance between cooperation and conflict.

Successive Ontario provincial governments also appear to view large cities more as threats than as partners. The situation in British Columbia has in general been less conflictual but at times somewhat similar to Ontario. The provincial governments in both Ontario and British Columbia also have imposed their own preferred large-scale rail projects on the respective cities and have forced cities and other municipalities to accept part of the funding. The cities of Vancouver and Toronto have struggled to and partly succeeded in integrating rail with dense land use in spite of the interventions of the provincial governments. The odds are that Montreal will be more successful in seeing eye to eye with the provincial government.

Land use is the prerogative of the local authorities but political culture again differs. The Vancouver region does appear to have a reasonably well-functioning regional planning and the Montreal region has principles for minimum densities that support transit.

Only in the Vancouver region does mobility include both road and transit. The two regions to watch closely are the Vancouver and the Montreal ones. One could spare some attention to see whether a political leadership could reinvent transit in the greater Toronto region.

Comparing Canada and Australia

Canada and Australia (and New Zealand) have the same governance structures based on British principles about relations between local authorities and the next level of government (provinces in the Canadian case, states in the Australian case and the central government in the case of New Zealand). Taxation principles are also similar, with local authority taxes limited to property taxes and transit subsidies largely dependent on state/provincial taxation

Nevertheless, Canadian and Australian metropolitan transport paths have diverged increasingly since the 1960's as John Stone's comparison between Melbourne and Vancouver demonstrates. In 1970 Melbourne had some 140 annual (unlinked) trips per capita in 1970 while Vancouver had around 100. Today relations are reversed. The explanation appears to be a combination of politics, geography and institutions.

The divergence started in the opposition to the large scale urban motorway programs proposed during the 1960's in numerous OECD cities. Urban motorways are problematic in Vancouver's topography (which includes policies for protecting agricultural land) and raised considerable opposition based upon the value of place and neighborhood, inspired by the NYC debate between Jane Jacobs and Robert Moses, and reinforced by the political culture of the US North Pacific. Opposition to the motorways were channeled through the political system in the large city of Vancouver. The motorway plans were extensively revised and down-scaled. The Vancouver region opted for transit-oriented development.

The Melbourne topography is different and has plenty of space for motorways. The plans were opposed in Melbourne as well, but they largely went ahead although in a somewhat modified form. Perhaps because there was less opposition, perhaps because the Melbourne metropolitan region consists of many smaller local authorities but no large city where opposition could be mobilized in a powerful political body. The motorway plans led to increased car use, property developments were oriented towards motorways and public transport use declined. Land use rules appear to be less restrictive in Melbourne than in Vancouver, partly because of geography and partly because of political priorities. The Melbourne region evolved along a path of a motorway-oriented development.

Melbourne and Vancouver are typical rather than unique. Metropolitan institutions differ between Canada and Australia. Australian metropolitan regions do not have dual structures like the GVRD/Translink or CMM/ARTM. Nor is there anything like the Toronto Transit Commission, based on a shared understanding between urban and suburban middle classes about the benefits of high quality public transport.

Australian metropolitan regions in fact do not – with one exception – have politically powerful cities in the Canadian (or European or US) sense. Melbourne and Sydney are names of places but nothing more – they are small local authorities among many others in large metropolitan landscapes. The Australian states have the same formal powers as the Canadian provinces but have chosen not to expose themselves to the countervailing powers of large cities within their territories. Attempts to create second order inter-municipal governments have been resisted by state governments. While Canadian provinces usually have several metropolitan areas around large and politically important cities, Australian states usually have only one metropolitan area with fragmented political structures. 'Divide and rule' rules.

With the exception of Brisbane, public transport in Australia's metropolitan regions are therefore the responsibility of the states. When the private public transport companies started to have economic problems the states rather than the local authorities took over.

For the states, these loss-making companies were a drain of resources compared to road building and since there were no strong cities capable to state their case the state governments never developed transport ministries capable of high quality thinking about both roads and transit. Over time motorway-oriented development emerged rather than transit-oriented development. Alliances between urban and suburban middle classes over transit never developed. What did emerge was a suburban-rural road alliance, reinforced by technically competent and politically strong road professions present on all three levels of government. No similarly coherent transit profession has emerged. Investments in roads are moreover financed over the budgets while transit investments have to be financed on the capital market.

Political alliances reinforced the virtuous circles of road building and the vicious circles of public transport. Suburban and rural based political parties supported road building while metropolitan based parties supported public transport. The vicious and virtuous circles have been reinforced by the Commonwealth government's emphasis on mobility-oriented cost benefit analysis of large infrastructure projects rather than city-based analysis of quality of place.

Brisbane and Sydney are the two places to watch when looking for the possibilities of an integrated metropolitan public transport system. Both have a complex topography that makes urban motorways expensive. Brisbane (2.4 million inhabitants) is the only large city in Australia. The city was created in 1924 by the Queensland state government through amalgaming 20 smaller local authorities. The city operates bus-services and is building its own metro, while the Queensland state runs the commuter rail service. An integrated transit system would require political leadership and an understanding between the city and the province. Possible but less likely, given Australian politics.

The Sydney region - with some 5 million inhabitants and over 600 suburbs and 40 local government areas - could conceivably see an integrated metropolitan public transport system evolve. Services are mainly run by the state government (some 130 annual journeys/cap). As in Los Angeles, 'sprawl has hit the wall'. The road-based transport system is running out of space, congestion is increasing and housing prices are escalating to levels where middle-class families can only afford housing far away from where jobs are and therefore have to accept long commuting trips. An integrated rail and bus based public transport system could conceivably make a difference but would also require investments during many years plus large-scale subsidies that would have to be paid for by the same middle classes. The state has not yet managed to introduce an integrated ticketing system, even if the Opal card can be used on all services. The NSW government has appointed a layman/expert commission, the Sydney Commission, to come up with an infrastructure plan. Local politicians are absent and the NSW government is in full control.

SIX METROPOLITAN REGIONS IN THE US

When looking at transit in Canadian and US metropolitan regions one could perhaps be forgiven for paraphrasing Leo Tolstoy's remark in *Anna Karenina* about happy and unhappy families: the Canadian cases have strong similarities and every US case is unique. While there are similarities between Canadian metropolitan regions in how to organize the metropolitan transport systems, every American region appears to reinvent the wheel. The main reason is politics and the forces that shape it.

The US has politically powerful cities as Canada and a metropolitan land use density on the same level as Australia (Kenworthy). All three countries were shaped by the British, who first created the original thirteen colonies that became the US, and then the provinces and the states in Canada and Australia. Like those two countries, the US constitution nowhere mentions local authorities, so the US states have considerable formal authority over local authorities and therefore over the organization and subsidies of metropolitan transport. Since the Federal Highway Act of 1956 motorway-oriented development is the almost universal norm, rooted in the local power play between the property industry (and its financing) and local politics. Urban-suburban middle-class alliances over taxes for transit subsidies are more difficult to establish in the US than in Canada, given the differences in political culture. Canada never had slavery and was ethnically much more homogenous. The two political fault lines in the US of ethnicity – in particular race – and tax resistance do not (yet?) have Canadian equivalents.

Nevertheless, the US federal government and congress have at times tried to compensate for the local difficulties of organizing metropolitan transport and in particular transit. Two periods should be noted.

The federal government created in 1962 the MPO (Metropolitan planning organization) as a condition to channel transit investments out of the federal highway program. Nixon introduced a gas tax for transit investments (but not for operations). Money for transit started to flow during the Nixon and Carter administrations and contributed, among other projects, to BART in the Bay Area and the subway in Washington DC.

The next step was taken in 1991 when MPO funding was doubled and the MPO's were given additional responsibilities to achieve the goals of the Clean Air Act through integration of different transport modes. The Criteria for federal funding for the introduction of rail and other metropolitan transport modes were established.

Practice varies considerably, however, since it is up to the individual states and/or local governments to live up to the criteria and apply for funding. Tax resistance explains a lot and therefore also political color. This is likely to continue until the present anti-tax mood weakens.

These MPO's have key roles in three of the six cases in the Eno/transit Center study. Both the state of California and the state of Minnesota have created institutions that are both MPOs and state organizations, which in turn give these institutions leverage over other local and state organizations. In the Dallas-Fort Worth metropolitan region, the institution of an MPO is primarily focused on highways but as nevertheless has made it possible for the cities to create a transit system that otherwise would not have gotten off the ground in the state of Texas. The MPO of the six counties in the greater Los Angeles area did not play any role in the LA county transit investment program, since the other five counties did not share the same priorities.

In all these six cases the subsidy regime depends on the relations between the cities and the local authorities in the suburbs on the one hand and the states on the other. In two cases the state in question has a largely positive role (New York, Massachusetts), in one case (Texas) the state's role is downright negative, in two cases the role is passively positive (California), in one just passively negligent (Illinois).

The large variety of metropolitan transport governance principles in the US is striking and begs for its own explanation. Sheer size and political and geographic heterogeneity would be a partial explanation. But perhaps the Anna Karenina paraphrase is the answer: the variety is best explained by the fact that connecting cities and suburbs through metropolitan transit is not a very happy story. After all, if a rich country cannot even organize a socially inclusive health care system for all its citizens: why should one expect urban and suburban communities to organize an inclusive transit system?

Each of the seven cases below has its own path dependency and its own inertia. The political relations within each subsidy regime are what they are and with the notable exception of Los Angeles none is particularly dynamic. Nevertheless political agency can make a difference and some cities – not perhaps the states – are more innovative than others. The three places to watch are San Francisco, the Los Angeles county and possibly also New York City where the pressures for reinvention are among the greatest.

Boston and the Massachusetts Bay Area

- *The governance of metropolitan transport in the Massachusetts Bay area is a shared responsibility of the state's Department of transportation and the local authorities.*

The DoT has actively supported the transformation of the Boston city-scape through the Big Dig. The DoT also owns and funds the MBTA, a not-too-bad transit system with a limited contribution from the metropolitan area. The local authorities including the city of Boston have control over land use but very little direct influence over the MBTA.

The Department ("Mass DOT") operates MBTA and the state road system as two separate silos. The Governor of Massachusetts appoints the boards of the MBTA and MassDOT, and the two boards have some informal links between them. At the same time the MassDOT has been directly involved in making the Boston center a better place through the Big Dig, easily one the most complex city renovation project ever undertaken from a technical, financial, operational, legal and political perspective. Legislation was necessary at all three levels of government. Serendipity also mattered: the then speaker of the US House of Representatives was from a Boston suburb and critical for the project. The Congress in fact overruled President Reagan's veto over federal funding of the Big Dig.

Given the present governance structure of the Boston metropolitan region, the MBTA is likely to muddle through but not much more. Although the roots of the MBTA are older, the agency was created in the mid 1960s as a separate state agency in order to take over unprofitable suburban railway lines.

The MBTA runs a relatively seamless system with a unified fare system even if some suburban commuter trains still operate separately and with their own (paper!) ticketing systems. The Boston metropolitan area is by far the largest in the state in terms of population and even larger in terms of economic weight. There appears to be a broad political consensus that the economic development in the Boston area is of interest to the state as a whole and that a functioning MBTA is one of the conditions for this. The urban and the suburban middle classes appear to be willing to support the MBTA with some rather limited taxes.

The MBTA operations are funded by the fare box (36%), a regional sales tax (49%), local contributions based on a per capita formula (9%) and the state budget. Capital expenses are funded by the state and by federal contributions. All funding including fares is under the authority of the Commonwealth. There is a moderate backlog of maintenance and reinvestments and funds for minor expansions but no plans for major improvements or expansions of the type common in many Canadian and European cities. Since the MBTA is an agency under Mass DOT, income from the state's toll roads could conceivably contribute to the MBTA funding, but this does not appear to be practical politics for now. The present governor, a republican, is a strong opponent of new taxes for the MBTA. There are no discussions about making real estate developments participate in system expansion. The governance structure is stably un innovative.

Major improvements of the MBTA would require a more inclusive governance system with deeper local commitment together with higher contribution of state-approved taxes, perhaps additional local funding plus higher fares. So far the local authorities prefer to keep their contributions low and the MBTA ticking over, but barely. No Toronto TTC in sight.

The New York City metropolitan transport system

- *The governance of the New York City metropolitan transport system is usually described as unusually complex, but this does not prevent some rather innovative components. The transit system run by the MTA is in need of major improvements but is the hostage of the rural-suburban-urban politics of the state and the traditionally dysfunctional relations between the governor and the mayor. Major improvements for all the boroughs will require larger contributions from the non-user beneficiaries of the transit system on Manhattan. Time will tell.*

Governance designs are (almost) never about the logical implementation of optimized decision-making systems but rather second best (at most) compromises between a variety of different interests. Seen in this light the governance of the New York City metropolitan transport system is not that bad and some elements were actually quite innovative at their time of introduction. The problems arise not from the institutions or the formal rules of authority but from informal practices and politics (not the least traditionally bad relations between the state governor and the city mayor) . The state of New York has the usual tensions between the metropolitan and the rural areas and between the urban and the suburban within the metropolitan area. There is also a homegrown problem: the dividing line between politics and professional competence is not so much a line as a grey area. This grey area is certainly larger than in the Toronto TTC or London's TfL or in any German Verkehrsverbund.

The New York City metropolitan region has a population of some 20 million (depending on statistical definitions) and three large transport authorities: the NYC MTA (Metropolitan Transport Authority) has more (unlinked) transit trips than the next 16 US transit authorities/agencies combined and lately with a dramatic increase in ridership; the PANYNJ (the Port Authority of New York and New Jersey); and the NJT (New Jersey Transit).

Governance of metropolitan transport in the NYC region is the legacy of three persons:

- Al Smith, the onetime NYC mayor and later governor of NY state, was instrumental in creating the Port Authority of New York and New Jersey with the mandate to construct and operate road and railway connections between the two states;

- Robert Moses, a disciple of Al Smith, built more or less singlehandedly an entity for constructing and operating toll-financed bridges and motorways in NYC;

- Nelson Rockefeller who in the mid 1960's as the governor of NY state created the present MTA as an agency owned by the NY state by amalgamating the previous NYC transit systems with the bankrupt commuter railways which serve the suburbs beyond the NYC city limits and the toll-financed bridges and motorways of Robert Moses in order to bring funding to the MTA.

The usual silos of roads and transit are somewhat less solid and toll revenues from the users of several roads, tunnels and bridges make up some 25% of the revenues from transit riders.

The MTA board is tilted towards the surrounding local authorities, but that is not unique in the world and has not prevented urban-suburban cooperation elsewhere. There appears to be an understanding between urban and suburban middle classes that there is no alternative to transit. The MTA is nevertheless stuck between the city and the state on the politics of subsidies for operations and reinvestments as well as for financing capital programs.

As a result the MTA, and in particular the subway network, serves Manhattan well, while job growth also takes place in the other boroughs. The MTA serves the mid 1900´s population and job patterns better than today's. Boroughs outside Manhattan have distinctly lower service quality.

The MTA is large in the US but it is not uniquely large in the world. Ile-de-France-Mobilité (formerly STIF) serves a similar size population, has different political majorities between the city and the suburbs and a non-trivial governance structure with local authorities, regional authorities and the central state – and nevertheless has a huge capital expansion project. London and the TfL may be somewhat smaller but is also functioning considerably better. Transit agencies in other countries have long ago also managed to integrate once-private suburban railway lines, which the MTA has not been able to do.

The governance problems of the NYC metropolitan transport are usually explained by the politics between state governors, between the two different political parties (one with primarily an urban base and one with primarily a rural base within the NY state). But then the governance problems between New York and New Jersey – including the Port Authority – are what they are for the foreseeable future. The same is true for the relations between the MTA, New York City and New York state. The rural-metropolitan divide is not going to go away and neither the resistance to taxes.

Seen from the outside, the problems seem to lie with the relations between the city and the state, even if the state has the formal powers over the MTA. The state has in fact introduced a number of funding mechanisms for MTA, including a highly controversial employment tax – an equivalent to the French *Versement transport.*

Fare revenues cover some 40% of the MTA budget for operations, which is higher than for STIF in the Paris region but lower compared to German, Canadian or London contributions. Tolls on cars cover some 13% and some 10% come from the employment tax (the tax is .34% on large payrolls, compared to some 2.6% in Paris). The rest comes from an ad hoc mix of various taxes, some state- and some city-based. Given the present anti-tax mode in the state a possible way forward would be to make the non-user beneficiaries of transit on Manhattan contribute to expanding transit capacity and quality also in the other boroughs. The new state fee on Uber and Lyft, which will bring an additional USD 500 Million is one step in this direction.

There is no lack of examples around the world. San Francisco on parking fees; London and Stockholm on when congestion charges could work; France on *versement transport.* MTA could, like the TfL, evolve into an agency systematically developing links between real estate and transit. The city is already financing the extension of 7th subway train line through a Tax Increment Finance scheme on property developers with, like the TfL, broad business support. The governor has proposed congestion charges and the mayor has said no, so far. 'A necessary debate', said the new director for NYC subways and buses who also has proposed a USD 20 billion investment package.

MTA and the New York City metropolitan transport in general is caught between the city and the state. Only the New York City mayor and the state governor can together build the necessary alliances for MTA improvements between New Yorkers as tax payers, riders and other beneficiaries, between business and the city, and not the least between the boroughs. Time for a new Al Smith!

The Chicago metropolitan region

- *The Chicago region transit system is the third largest in the US and growing. Underfunding is chronic since the main actors refuse to agree on the funding. The governance system has a logic to it but founders on dysfunctional relations between the city and the suburbs, between the region and the state and between the mayor and the governor. If the MTA can be characterized as serious but not hopeless the Chicago equivalent must be characterized as hopeless but not serious. No light in the tunnel.*

The Chicago metropolitan region has some 9.4 million inhabitants of which 8 million are in eight Illinois counties and the rest in Indiana and Wisconsin. The region has two thirds of the population of the state of Illinois and an even higher share of the economy. The state of Illinois has a two-silo approach to metropolitan transport: the highways and transit. The state did take a powerful role in organizing the Chicago region transit but has now abdicated.

Chicago is growing and so are the suburbs. Car traffic is increasing, the ridership on the Chicago rail system has increased some 50% over the last decade and the Chicago bus ridership with some 8%. Underfunding is chronic since the main actors have been unable to agree on adequate funding. These actors are organized in four entities:

- The RTA, the Regional Transportation Authority, was created by the state of Illinois (after a referendum in all the concerned counties) with the purpose to distribute funding for operations between the three operating agencies CTA, Metra and Pace. The RTA board is appointed by the counties. The RTA can issue bonds.

- The CTA, the Chicago Transit Authority, is a government agency created by the state of Illinois. In the region, the CTA has by far the largest volumes of riders and also of operating costs. The mayor essentially controls the board. The CTA is also one of the oldest in the country. The backlog of maintenance and a state of good repairs is enormous. The CTA is the only operating agency with the authority to issue bonds.

- The Metra is a large commuter rail service and has also seen a rising ridership. It is the primary alternative for getting cars from the suburban counties into Chicago off the roads. Metra was created by the state of Illinois when private train operators went bankrupt.

- Pace is the suburban bus company owned by the RTA and operates in several but not all the surrounding counties. The bus traffic is sparse and has lost 15% of its riders the last decade. It is a service for the poor and have-nots.

Parochial power dominates transit in the Chicago region. The RTA is a funding redistribution organization for both operations and capital expenditure and its board is appointed by the counties in rough proportion to the population. The RTA has the statutory rights from the state of Illinois to raise regional sales taxes for funding the region's transit. The capital budget is funded to some 50% from federal money and some one third from a TIF (tax incremental financing) on new property in Chicago. Chicago also has a real estate transfer tax on all properties sold in the city. The three operating agencies have not been able to agree on a common ticketing system.

The RTA distributes funding for operations among the operating agencies according to statutes issued by the state of Illinois. 80 % is predetermined by these formulas and only 20% at the discretion of the RTA board. In practice this share has mainly gone to the CTA. What was intended to be a regional agency is not. The state of Illinois has in practice abdicated, in spite of the fact that the Chicago metro region has 65% of the population and 70% of the economy. The state contributes to the funding in proportion to the taxes raised on sales in the region and the real estate transfer tax in Chicago. When sales dip and/or real estate prices dip the state funding decreases. The counties in Chicago are free to raise the sales taxes – or develop other sources of funding – but since they refuse to do so the distribution of inadequate funds has turned acrimonious.

The governing structure certainly is complex but not more so than what can be found in other countries. It is the shared unwillingness to make the governance work that makes the Chicago region stand out. Why the politics between the city and the surrounding counties and between the region and the state are like they are is beyond this text. In one sense the state and the city are both too strong and not strong enough. Either one is strong enough to block the other and but not strong enough to overrule the other, so when the city and the state disagrees the result is stalemate. The Chicago region transit system is caught in the perfect logjam of several political fault-lines: race, urban-suburban, city-state and anti-tax politics. It is usually said that the suburbs are the captives of the city but in this case it may be the other way around. One wonders what the state and the suburbs would say if the city of Chicago were to propose congestion charges?

One might be forgiven for being reminded of a statement said to have been made about the Austrian-Hungarian empire just before the first world war: if the situation of the NYC transit system is serious but not hopeless, the situation of the Chicago transit system appears to be hopeless but not serious.

The San Francisco Bay Area

- *The Bay area is a poly-centric area with a fragmented transit system with seven big operators and another twenty smaller ones. Geography has made it possible for the state of California to establish a handful of institutions that have managed to create some order by strengthening the federally-designated MPO. The San Francisco city has created an integrated silo-free structure for the city's roads, highways and transit. The state government could conceivably impose a more coherent structure, but with a strong participatory tradition one can understand the reluctance. Perhaps Uber and Lyft is seen as the magic wand that would make transit problems go away.*

Fragmentation rules the Bay area transit with 26 different operators (although the "big 7" have 96% of the ridership), each with its own budget and board. For better or worse, local participatory democracy is strong. The Bay area is a region with many centers and no dominant core city.

The Bay area is not the only polycentric region in the world. The Ruhr area is equally polycentric, of roughly equal population size (but roughly half the area) with one integrated ticketing system, a large number of operators and agreed principles for sharing revenues. Moreover, Switzerland is at least as keen as the Bay area on participatory democracy and has nevertheless managed to create successful integrated metropolitan transit systems. It is not the geography of the Bay area that stands out but the lack of interest in transit.

The Bay area has a much lower overall ridership but is nevertheless better run than the Chicago or NYC metropolitan transit systems. The level of conflicts appears to be lower and the state of good repairs is better. The fragmentation may help in this, since the Bay area operators are more easily accountable than the CTA and the MTA. Each operating agency has its own board, responsible to the voters in the service area, which creates its own network, schedules and fares.

The one coordinating node in the multitude of power triangles is the Bay area MTC, the Metropolitan Transport (NOT transit!) Commission. The MTC is also the federal MPO and was created by state legislation. MTC collects a sales tax and a fuel tax - under the authority of state legislation - for redistribution to the counties according to rather strict guidelines. Compared to the MPOs in the other 49 states, MTC has significant powers and funding thanks to specific state legislation in California, not emulated by other states. The MTC board consists of members appointed by elected officials in the nine Bay area counties. MTC also operates the toll collections from highways and bridges and has a share of these revenues. This gives considerable levers over capital improvements by the different operators. Through this power over additional funding the MTC has also managed to create a regional fare card which is no small achievement in such a fragmented system.

The MTC collects tolls from seven state-owned bridges and uses excess tolls for transit. Together with federal funds (since it is also a federal MPO) it distributes more than $ 1 billion annually to the various transit operators including fund for capital investments. According to the state laws, the tolls are decided in referendums and the next one will be in 2018. Several counties also have referendums for increasing local taxes on transit.

BART, the Bay Area Rapid Transit, is an independent agency established by the California state and is governed by elected representatives in nine districts in three counties (originally five of the nine counties). The original funding from local taxes had to be approved by referendum. The investments were financed through bonds that were underwritten by the bridge tolls. Again, the fact that BART is an independent agency increases its accountability and thus also transparency for the voters who have to approve additional funding of local property and sales taxes.

The Bay area governance structure is a unique mix of bottom-up (the local accountability of the transit agencies) and of top-down (through state legislation) which to no small degree is explained by water and the political culture of California. Water requires bridges and tunnels which are financed through bonds which in turn are underwritten by toll revenues. The tolls surplus finances transit, which in turn amounts to a cross subsidy between cars and transit.

The state of California has taken a limited role, once the funding arrangements have been set. Given the bottom-up tradition of funding the multitude of operators via referendums this reticence is understandable. At the same time, poor counties have low sales taxes and low property taxes. So those with poor transit also have poor public education and will remain poor. Again California political culture.

Given the fragmented structure and its equally fragmented politics only the California state could make a difference. All the pieces are there – they just have to be made to fit together. But this does not appear likely – the type of integration and revenue-sharing entirely possible in the Ruhr area appears totally alien to the Bay area. Two developments are to be watched, however.

The first is the city of San Francisco where the SFMTA is a striking innovation. It is the city of San Francisco Municipal Transportation Agency with responsibilities for roads, streets and transit in the city in all their aspects: cars and their parking, buses, metro, walking, biking etc. The SFMTA was approved in a referendum and is quite an innovation and resembles the Transport for London. SMFTA raises some 25% of its budget from location value mechanisms and apparently some 25% of the transit operating costs from parking fees.

The other development to watch is how the evolution of how Uber and Lyft and similar forms of shared mobility will impact on transit in the Bay area. One could well see powerful actors in the region hoping that these transport forms would do away with subsidized transit in the less densely populated parts of the Bay area. Technology as the magic wand.

Los Angeles city and county

- *Los Angeles city and county are embarking on a decades-long heroic journey in metropolitan transport – shifting from a MoD (Motorway oriented development) model that has dominated since the 1950's back to an earlier ToD (Tramways oriented Development) model that characterized Los Angeles 100 years ago. Perhaps this is possible.*

It is too early to say whether this Shift will be possible, but the political support appears strong. Two referendums passed with more than 2/3 majority (required by California state law about tax increases), approving a massive investment program in rail, metros and buses as well as some highway improvements and financed through increases in the county sales tax.

The story of these two referendums is a story of governance structure – legislation and organization on different levels of governments – and politics.
The central organization is Metro – the Los Angeles County Metropolitan Transportation authority – which is responsible for transit and partially also for freeways in the county. Metro runs the transit system for rails, subways and buses and partly subsidizes some of the municipal bus companies. Metro was created by the state of California in 1993 and was for some time seen as a not very well-run organization. Its board consists of four persons from Los Angeles (including the mayor), four persons from other cities in the county plus the five directly elected 'county supervisors'. Metro is now generally accepted as a well-run organization underpinning the political legitimacy of the Shift. It has some 50 unlinked trips per capita in the Metro area – a low figure internationally.

Los Angeles county has some 10 million inhabitants, which is roughly half of the greater Los Angeles area that makes up the commuting region. The city of Los Angeles has some 4 million inhabitants and dominates the county politically. Other counties are staying with Motorway oriented Development.
A proposal for a referendum must be approved by the county supervisors, the state legislature and finally signed by the governor. California has a history of referendums also on funding investments in transit and highways.

Submitting a proposal for a referendum on transit investments is therefore a high stakes game. In order to achieve the necessary 2/3 backing a proposal must i) give many different population groups a positive stake; ii) have the backing of powerful and representative interest groups; iii) have the approval of recognized elite persons; iv) have the backing of most of the media; v) be placed on the ballot on an election day that promises a high voter turnout. Further, it should preferably have a weak and divided opposition and must be authorized by the California state legislature. A leadership skilful in both campaign politics and in designing an investment package that maximizes public support is essential.

Measure R met these criteria. It consisted of a program financed by half a cent increase in the county sales tax and estimated to provide USD 35-40 billion additional investments in transit and highways during thirty years. It was on the ballot in November 2008 – right when the banking crisis increased the fear of a recession - which assured a high turnout not the least among non-white voters; it had the backing of labour unions, business leaders and environmental groups; it provided investments in rail, subways and buses for the central parts of the county as well as for freeway projects for peripheral parts of the county.

Support was particularly strong among low income voters – since this was a presidential election - and among more liberal white voters and received a majority support in 87 of the 88 local authorities.

Measure R was followed up in 2012 with a new referendum on Measure J, which proposed extending the time horizon of the R package. Measure J got not quite the 2/3 of the vote and failed. In 2016 a new measure M proposed an indefinite time horizon and an additional half cent sales tax. M won with 71% of the vote. Some 35% of the funding from M will go to operations, which is sorely needed. The result is an additional investment program of USD 42 billion for transit improvements over several decades. Some of these investments required federal co-financing which in turn required that the whole California congressional delegation approved the investments. This was also achieved.

Measures R and M were successful for three reasons. First, 'sprawl had hit the wall' as population continued to grow. The Metro area population density is in fact higher than in the NY MTA but there is no space for walking. Congestion is increasing as is air pollution. Resistance to new freeways/expressways is strong. Motorway-oriented development has run its course.

Second, the political culture differs compared to the east coast. The political fault-line of taxes may be similar, but the community politics is both more diverse and less adversarial. Third, if New York City sees itself as the global city of the North Atlantic, Los Angeles would like to see itself as the global city of the Pacific rim, with a vibrant economy and a place with parks, libraries, art museums, where one can walk and bike. Not a place of congestion and the worst air pollution in the US. Measures R and M fit into this place-making.

Nevertheless, the jury is still out. Bus ridership, which primarily serves lower income households, and makes up 75% of Metro's unlinked trips, is declining, while rail and subway ridership is increasing. The 'global city' stimulates gentrification and transit-oriented development for the middle classes which in turn force low income households out of the city into areas with less good transit service. It is doubtful whether the ingrained auto culture could change without more direct interventions against car use such as stronger parking restrictions (including stronger enforcement), congestion charges etc. Martin Wachs, the senior academic statesman of urban planning and metropolitan transport, suggested in the run-up to the referendum on Measure R that only extensive road pricing would work. He was not listened to, but he is nevertheless right. The vision of a socially inclusive and environmentally sustainable global city may not possible within the present governance framework. The share of operating costs covered by revenues from fares is low compared to many European cities with a much higher share of unlinked trips per capita. More measures will be needed and the political skills needed for a continued support of low-income households should not be underestimated.

But if any city or county in the US could square this circle it would probably be Los Angeles.

Dallas and Fort Worth

• The governance of metropolitan transport in the Dallas-Fort Worth area is an outlier since the state of Texas is also an outlier with no interest in transit. The area has over 6 million inhabitants and is growing fast outside the area that under Texas laws can be efficiently served by transit.

The governance of metropolitan transport in the Dallas-Fort Worth area illustrates the crucial importance of state legislation and thus politics on the state level. The state of Texas has showed no interest in transit. Texas laws gives land owners extensive rights and thus prevents land use planning. The state laws also constrain the amount of funding that can be used for transit. Transit is in practice prevented from serving the fast growing suburbs which in turn drive the increasing car traffic. Texas politics is highly partisan: the cities on the one hand and the suburbs and the rural areas on the other are run by different political parties with vastly different views of how an urban region should be organized and whom it should serve.

The Dallas-Fort Worth region has three operators (DART around Dallas, the T around Fort Worth and DCTA around Denton. The overall operating budget for transit amounts to some 530 M US$, which is trivial in comparison with other metropolitan regions of similar size. The boards are appointed by the member jurisdictions (cities and/or counties). All started to build light rail through federal grants.

North Central Texas Council of Governments (NCTCOG) is the federal MPO with 12 counties. Under the NCTCOG the RTC (Regional Transit Council) is responsible for distributing federal funds and regional planning. It is a powerful body, but only within Texas' restrictive legislation, and responsible for both roads and transit. It has managed to introduce a single fare system.

The region has a notably lower ridership than similar size metropolitan regions in the US which primarily explained by the restrictive Texas laws on planning and sales taxes.

Transit is funded through sales taxes in the participating cities, but Texas legislation limits jurisdictional taxation. The state has no role in funding or planning. Laws prohibit most municipalities/council to raise funds for transit. State legislation, the federal funding for capital projects and the governance structure of the NCTCOG has driven the three operators to focus on expanding light rail – to every county a rail station – rather than promoting mobility and thus a higher ridership.

Texas has a state wide 6.25% sales tax. Cities have an additional 1% for city services and an optional 1% addition for transit and other services. Texas law thus has an 8.25% cap on sales taxes, even if local citizens would accept higher sales taxes. Local property taxes are accordingly high. Fuel taxes (by state law) can only be used for roads. Cities in the DART service area dedicate their 1% solely to transit but cities in the other two service areas only 0.5%. Suburban communities are actively negative to transit (one assumes they prefer that the big city transit users stay out of their suburbs). The city Arlington, located between Dallas and Fort Worth and with almost 400 000 people, is the largest US city without transit.