Comparative Analysis of Urban Planning and Gateway Development

Clarence Woudsma
School of Planning, University of Waterloo, Canada

ABSTRACT

Gateways and their associated corridors often consume valuable land within the context of our cities and metropolitan regions. The advantages of agglomeration efficiencies for firms locating in relation to the gateway or corridor are juxtaposed against the concentration of negative externalities related to their activity, which often spill over into adjoining local areas. In contrast, the advantages to the broader regional and national economy of gateway activities are dispersed through a much larger geography and society at large. The challenge for stakeholders, local and beyond is to provide an environment in which a balance is struck between these opposed elements. The goal of this paper is to explore this balance through a comparative analysis of land use planning practice and related transportation, environmental and development policies drawn from a cross section of global jurisdictions. This paper synthesizes the state of practice for gateway planning at the urban scale in order to provide understanding and insights into the manner in which the competing interests are addressed in successful gateway developments and operations. Of particular focus is the interplay between the levels of government, private firms and public and professional interest groups. Lessons drawn from the experiences are summarized and presented as set of options for urban planners.

INTRODUCTION

A kilometer long intermodal freight train rumbling through the splendor of the Rockies evokes positive thoughts of Canada “the good”, playing an integral economic role on the global stage. The same train rumbling through the city provokes homeowners to call and complain about the noise or the delays on their local arterial related to the rail line crossing. This contrasting perspective is a key aspect of this discussion paper, commissioned as part of Canada’s Asia-Pacific Gateway and Corridor Initiative (CAPGCI). Balancing the national significance of the overall initiative against the local, sometimes negative, impacts is a challenge – in fact, it’s been referred to as a “special challenge” (Parsons et al., 2007). Here it is explored as part of a theme examining Land Use/Urban Planning/Environment (Area 5). The intent is to gain an appreciation of why this challenge is special today and to explore how planners have responded to similar challenges in the past – planning for urban goods movement in particular. Where possible, we’ve brought in
examples from other parts of the globe but there is an underlying emphasis on the North American experience. We’ll examine different approaches to planning for freight in the context of gateways and corridors and conclude with a series of recommendations for the CAPGCI initiative moving forward. Our departure point is exploring the project context and fundamentals of urban freight transportation.

PROJECT CONTEXT

The CAPCGI project promises to “cement the reputation” of this gateway and corridor in terms of providing a reliable, efficient and secure connection between North America and Asia. The overview document is peppered with positive language, referring to strategic infrastructure investment in the following quote:

“...will improve traffic flows, reduce emissions from idling vehicles, and improve quality of life in those communities through which increasing trade volumes must move.” (Transport Canada, 2006 pg 12)

The ability of corridor/gateway initiatives to ameliorate negative aspects of freight activity while improving quality of life is a question that is further explored in this report. The CAPGCI project is also noteworthy for its emphasis on the important role policy plays in the success this initiative - identifying the issue of land use planning as one of potential importance, although not specifying in what manner this importance would manifest itself. (Transport Canada 2006) This provides the second emphasis in this paper – land use planning and corridor/gateway developments.

On the topic of land use, there is clear distinction between the “new businesses” aspect and the impacts of infrastructure investments on “local land use” via transportation system performance. New businesses represent the decisions of firms specifically choosing to locate in proximity to the corridor - perhaps in the broader region of Vancouver or in more dispersed locations along the network or another centre such as Calgary or Winnipeg. They make that decision to take advantage of the transport access related to the new corridor. Local land use is a reflection of the longer term changes in the spatial pattern of land uses as they adjust to a host of forces including the contentious connection between transportation system performance and land use (see Woudsma and Jensen, 2005 for a discussion and empirical exploration). This connection is at the heart of “smart growth”, transit oriented development, and related New Urbanism approaches to enhance transportation sustainability. Thinking in terms of freight sustainability, consider the impact of the corridor/gateway development on the local transportation system – improvements in some areas but also more traffic on other capacity constrained infrastructures - and how this in turn can influence, or be influenced by local land use. It is this latter description that forms the focus for the land use related discussion in this report.

1) How do the corridor/gateway initiatives relate to evolving local land use patterns and how will planning play a role?
2) What are the environmental considerations in this discussion?
Freight and the City - The Fundamentals

There is little debate academically concerning the socio-economic importance of freight movement in cities. It plays a key-supporting role in the economic activity of the city and has often-profound impacts on the social, quality of life aspects in cities as well. There are questions about the balance between these perspectives - with the reality being an accepted view of the negative impacts with little appreciation of the positive.

There are two broad classes of movement; external and internal. External movements are those in which goods either enter, leave, or pass through the city while internal movements take place within the city boundaries. Each class also includes ranges of goods, modal choices, vehicle types, and motivations for movement. These ranges include 1) small parcels to heavy machinery, 2) bike courier to air, 3) pickups to large tractor trailers and 4) city garbage collection to international/global commerce. It can be argued that this represents a more complex milieu than that associated with people movement and in part helps to explain why our understanding and research effort in this area is often lacking (Woudsma, 2001)

Reflecting on EU transportation at the turn of the last century, EU commission member Neil Kinnock refers to it as “big dirty, and unbalanced” (Kinnock, 1998, p. 122), making reference to the 30% growth in transport over the last 15 years. He also highlights the fact that while greenhouse gas emissions in the EU were projected to increase by 8% to 2010, transport’s emissions were expected to increase by 39% (Kinnock 1998). These figures have been echoed elsewhere including Canada and point to a number of current realities about modern freight transportation.

<table>
<thead>
<tr>
<th>Modal split of freight transport energy consumption in OECD countries with projected annual growth rates in parentheses</th>
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</thead>
<tbody>
<tr>
<td><strong>Trucks</strong></td>
</tr>
<tr>
<td>Trucks</td>
</tr>
<tr>
<td>Railways</td>
</tr>
<tr>
<td>Marine Shipping</td>
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</tbody>
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(Source: Lenzen et al., 2003 in Chapman 2007)

The table above provides a clear vision of the dominance of road freight transportation in modern logistics, at least in terms of energy and related emissions. Not depicted above are figures for airfreight transportation, which has exhibited among the highest modal growth rates in recent years. The emphasis of speed and reliability of timeliness in the scheduled global economy has translated into an emphasis on the two least sustainable modes of freight transportation - air and trucking. Certainly within major urban centres, trucking dominates local circulation and is a vital part of the multi modal fabric that may include ports, rail and air facilities providing externally oriented access. Globalisation has contributed to increasing volumes of freight circulating through our cities, as has the adoption...
of just-in-time delivery, distributed manufacturing processes and advanced logistics practices (Guiliano, 2004). Congestion levels in those same cities adds substantial costs to freight sector operations, which, unlike passenger movements, has little in the way of alternatives in terms of congestion avoidance or mitigation. Whitelegg (2003) offers a different perspective, suggesting that the growth in road freight is not because of increasing physical demand for goods but that our “distance intensive” economy, and manufacturing, logistics and sourcing strategies are all contributing to increased reliance on trucking. Others have recognized this development, reflected in longer average truck trip lengths (pointing to dispersal), smaller average load sizes and increasing empty kilometres of travel.

In major cities, the short and long-term sustainability of the reliance on trucking is definitely a concern. The short term focuses on technology and perhaps behavioural/organizational solutions, which may enhance sustainability. For example, it has been estimated that 15 to 30% of commercial city traffic could be eliminated through load consolidation and grouping of trips (Guiliano, 2004). European efforts, particularly in Germany, under the broad heading of “city logistics” approaches have demonstrated success in achieving significant reduction of length and frequency of truck trips in cities. The heart of the approach is the establishment of partnerships among logistics providers and the use of shared facilities and equipment (see the BESTUFS network as an example).

In the long term, there is a persistent call to recognize the importance of land use considerations as a key part of sustainability initiatives related to urban freight. Rather than dealing with the trips side of transportation, a perspective on the flows of goods between points in space emphasizes the derived demand aspect of freight transportation – dealing with the economic agent and transactions behind the movement. The central question is can we increase the efficiency of the freight distribution system through organization of the location of these agents – the major freight generators and freight providers. In particular, this represents an area where public agencies, via planning, can affect sustainability outcomes positively (Anderson et al., 2005).

Fundamentally, trucks are viewed as a nuisance on the road system for many, given their size, noise, pollution levels and contributions to decreasing system performance (vehicle road characteristics – speed and manoeuvrability). Similarly, rail operations, from switching yards, to sidings, to network elements with at grade connections with the road system, are viewed by the general public in a negative light. The recent increases in public identification with environmental issues and the related political response have probably not helped to improve public perceptions of freight activity in cities. The recent funding announcements related to public transit as part of a drive to more sustainable cities would however be welcome by the road freight sector as increasing transit market share would presumable free up road capacity and reduce congestion to some extent.

This discussion has emphasized the importance of road freight transport in cities. It is necessary to emphasize that rail, marine, air, and pipeline operations are also potentially players in the urban freight and logistics scene. This is especially true given that these gateways represent the locations where the global and local transportation systems interact. The ability of planners to provide a bridge between these often-competing modes is a potentially important role in moving the CAPGCI forward.
LAND USE PLANNING AND URBAN FREIGHT MOVEMENT

Urban planning and transportation planning have often existed as silos in the urban realm. This is evident in traditional efforts to address traditional freight “planning” issues - mostly directed at regulating the movement industry - time of day, weight and route restrictions for trucking as an example. “Freight Plans” or “Goods Movement Studies” are carried out periodically by cities and there is little methodological consistency between them (Ambrosini and Routhier, 2005). The integration with “urban planning” would be through the provisions for loading facilities as part of the design for new developments.

Our efforts to understand the connection between land use and transportation on the freight side has been mixed at best. In a review of Canadian “goods” planning studies, the role of land use in establishing trip generation rates and the development of clusters of land use activity related to freight movement was a common theme (Woudsma 2001). However, none of the studies explicitly dealt with land use planning in the context of being utilized to address freight movement issues. That is, an integrated effort to model land use and freight transportation as has been an important aspect on the passenger side. To illustrate this, the influence of land use on trip generation may be somewhat understood --- x number of square meters of x land use would result in x number of trips per day --- however, the same cannot be said for the influence of freight trip activity or system performance on land use evolution. Discussion of the global competitiveness of urban areas has emphasized transportation factors as playing an important role in city competitiveness. These factors include the overall quality of accessibility in an area, intermodal opportunities, developable land, connectivity to other regions, and supporting logistics business activity. Yet, there is little evidence to link these factors back to land use evolution or location choice within these cities (Woudsma, 2001)

Ambrosini and Routhier (2004) echo this concern over the lack of attention paid to land use considerations in their comprehensive review of planning for urban goods movement (UGM) in North America, Europe and Asia. Their framework (Figure 1) explains the relationships that explain the policies in the various industrialized countries they examined. In contrast to studies of passenger transport, they argue that the relationships between UGM and land use are not considered as a major topic. They bring in sustainable development concerns into the discussion and highlight the increasing flows and distances associated with commercial movements resulting from more dispersed development including the relocation of logistics activity centres to peripheral locations. Dablanc (2007) refers to the fact that urban core areas are now only spheres of circulation for distribution rather than being a place where distribution and logistics are a “fixed” part of the spatial domain.

ISSUES: LOGISTICS ON THE PERIPHERY

Rodrique et al., (2006) argue that planning for freight movement is still in its infancy. In large part because freight movement is largely a private sector activity, despite the fact that it takes place (in the case of road transport) in some measure on very public infrastructure. They further point to the emergence of large
Figure 1: Framework for Urban Goods Movement (Ambrosini and Routhier, 2004, pg 71)

logistics centres on the outer fringes of metropolitans’ areas, outside of the scope of public sector influence as evidence of this separation. Hesse (2004) refers to this as “freight sprawl”, with a primary connotation being that it promotes excess travel and relies on extensive consumption of greenfield sites - analogous to arguments around the more traditional urban sprawl.

Hesse (2004) describes a trend of increasing concentration of supply chain functions leading to increasing size and fewer distribution centres (DC’s). The negative aspects of this increasing size, in terms of land development, infrastructure and the environment, limits the location of these facilities in traditional gateway regions and certainly not within core urban areas (Hesse, 2004, pg 164). Firms still seek good transport conditions in their selection but they also now seek cheap land for their large facilities. Still, there are the usual locating factors at play including zoning, development incentives and the ever-important labour component. In relation to the CAPGCI, the corridor emphasis provides the desired transport conditions, while outside of the Lower Mainland, (Calgary, Regina, Winnipeg) it could be argued that large land parcels (albeit un-serviced) would be available, and the labour market conditions favourable for DC development. However, this may not be true in the case of Calgary where there is already evidence of exurban logistics operations. There are also questions related to the size of the regional market, and its ability to provide enough demand for any proposed facility in terms of DC or warehousing.
Hesse (2004) provides an exceptional analysis of the differences between two distinct logistics developments - an integrated freight centre, developed by public agencies and a privately established distribution centre. The differences between the two are summarized in the table below.

<table>
<thead>
<tr>
<th>Development</th>
<th>Integrated freight centre</th>
<th>Magna Park</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupier firms</td>
<td>Policy oriented (transport, economic development)</td>
<td>Capital oriented</td>
</tr>
<tr>
<td>Major players</td>
<td>Logistics, distribution, related services, others</td>
<td>Logistics, distribution</td>
</tr>
<tr>
<td>Contracts</td>
<td>Public agency (state-based), local municipality</td>
<td>Private developer (international)</td>
</tr>
<tr>
<td>Location</td>
<td>Lots for sale</td>
<td>Rent or lease</td>
</tr>
<tr>
<td>Traffic access</td>
<td>Partly integrated</td>
<td>Isolated</td>
</tr>
<tr>
<td></td>
<td>Multimodal (road, rail, partly water)</td>
<td>Road traffic</td>
</tr>
</tbody>
</table>

Source Hesse, 2004, pg. 171

One of the key conclusions from his work concerns the challenges of achieving public sector policy goals in the face of increasing private sector influence in the decision making around infrastructure provision. He further contends that even ambitious public agency plans may not ensure their public goals in the face of the actions of the land market which may not value alternative goals such as the promotion of intermodal transport.

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ISSUE: PUBLIC, PRIVATE, PLANNING PERSPECTIVES

“Described as a “beam me up, Scottie” attitude, “people want the goods and not the bads”. So despite its noble and usually silent role, urban goods movement can be perceived as at best an afterthought and at worst blight on the urban transportation landscape. (Moving the Economy, 2004, p.1). This opening quote sets the tone for this issue, which is about the differing perspectives on freight movement in the city. In fact, this lack of awareness and appreciation is identified as one of the key barriers to effective sustainable solutions.

Hesse (2004) contends that among the most urgent needs for the planning and policy community is to therefore become more aware of the distribution economy. Building on this perspective, Rodrigue (2007) suggests that policy makers need to recognize the flexibility of this competitively driven, largely private distribution economy and posits that our attempts to “plan” and promote various goals will be sidestepped should they be detraction to business activity. The urban freight transport operations that take place do not conform to any one system or pattern and if policy makers are to implement measures that aim to meet sustainability objectives they must take into account these variations (Anderson et al., 2005).
The traditional perspective of the planning community has been one where the focus is on regulating and restricting rather than understanding and planning for freight related needs (Gordon, 2004). Not surprisingly, private sector freight interests have traditionally not been favourably disposed towards working closing with the public agencies on a planning basis. A related concern is the cycles of planning which for industry tend to much shorter than the longer term horizons of traditional planning. This is evident in the persistence of data issues, which arise in nearly every exploration of planning and freight.

NEW PERSPECTIVES ON PLANNING FOR FREIGHT/GATEWAYS AND CORRIDORS

Planning Approaches

Meyer and Miller (2001) present in a discussion detailing the major differences between traditional transportation planning as was the norm in the 1980’s and 1990’s and a transition to a more “decision oriented” or “sustainable development” oriented approach to transportation planning. There is certainly evidence that planners are moving in that direction. One of the key points of difference is a move from the focus on “the plan” as the key outcome of the planning process - a vision of the future 20 years forward - to planning as an “ongoing process” - dynamically contributing a valuable support to decision makers.

Gifford (2003) builds on this perspective with his explanation of the “flexible” approach to transportation planning. He is critical of traditional transportation plannings' focus on analytical models and debates over public participation. Traditional analytical models are continually used despite widespread recognition of flaws and their inability to deal with policy problems like sustainability. Further, focusing on who and how the public should be engaged in the process is a misdirected effort. He contends that improved models and procedures cannot alone resolve conflicts over the right future for urban transportation (freight). This future will vary between emphasis on mobility to and emphasis on environmental preservation and community. The flexible approach is intriguing because it re-focusses our perspective on the role of planning.

“Transportation planning must be flexible because it must recognize that no single objective truth exists to guide planners and decision makers unambiguously to what is right. Rather communities households and firms must themselves choose between competing values through their behaviour in markets and participation in political processes (Gifford, 2003, pg 176)"

The characteristics of Gifford’s flexible approach are built into 4 major steps: intelligence gathering, decision support, design and implementation and monitoring. The process is meant to be ongoing, dynamic and oriented towards decision making in the shorter term. Traditional planning focus on longer-term visions tends to lead to conservative decisions and reinforcement of the status quo rather than truly being responsive to changing conditions (Gifford, 2003).

Community Impact Assessment (CIA) is a recognized planning approach that also emphasizes values and is similar in spirit to the more formal Environmental Impact Assessment process in Canada. It is an interactive process that transportation decision makers would engage in, building their understanding of potential impacts.
of proposed transportation activities on affected communities and their subpopulations (TRB, 2003). It is relevant to consider in this context since the emphasis is on quality of life issues (safety, mobility, community cohesion, displacement, property values, noise, aesthetics) that form part of the “local pain” aspect of corridor development (Hesse 2006).

Among the activities identified in support of achieving these goals include:

- Use collaborative problem solving
- Promote openness and inclusiveness in transportation decision-making
- Keep public informed throughout transportation decision-making with periodic “status” updates, especially when active involvement is at an ebb
- Build working relationships with local agency staff and the public
- Use local contacts and community leaders to help identify and verify the likely community issues and concerns; and
- Establish a commitment compliance process that tracks commitments until successfully implemented

The Alameda Corridor faced considerable hurdles in dealing with local community concerns and issues including desires to maximize local benefits (employment) while minimizing negative impacts. The tools of CIA were employed successfully, including continual community engagement through monthly newsletters, hiring locally, highlighting the roles of community leaders, and engaging the public in design considerations (NCHRP, 2003).

These ideas are also recognized in the model for corridor planning outlined in Figure 1.

Douma and Kriz (2003) posit that corridor development is one of the more interesting and complex problems in transportation planning given the scope of problems, exacerbated by multi-jurisdictional issues, and the balancing between economic development, liveable communities, and the provision of access to high quality transportation. Their model is comprised of areas of decision making with citizens at the core, the decision making group forwarded as the foundation on which the process rests.

**Addressing Land Use**

A considerable amount of discussion in the literature surrounds objectives for making land use a more critical aspect of decision making related to freight transportation systems. Typical suggestions relate to the need for better data on urban freight activity and for the development of models that more accurately reflect the freight system (contrasted with traditional approaches that often employ modified passenger models). Ambrosini and Routhier (2005) provide a more detailed listing of suggestions including

1. Broadening the definition of urban goods movement: to include construction, maintenance, garbage, and household purchasing trips
2. Coordinating data collection between nations: to establish a consistent modeling method that goes beyond short term traffic impacts to address longer term sustainability issues
3. Utilizing business premise surveys: to gather data on decisions behind movements rather than trips themselves

Figure 1: Transportation Corridor Planning and Development Model (Douma and Kriz, 2003):

4. Employing qualitative surveys and discussion groups with the transport industry: to enhance our understanding of their behaviours as they relate to a) links with broader regional and global activities b) reaction to changes in conditions and c) planned pilots and experiments

5. Compare household purchasing trips to business premise activities to provide coordinated research into long term progression of urban development

6. Benchmarking land and commercial policies across countries to better examine the interaction between activity locations and socio economic relationships.

A number of these ideas, including the focus on a broader definition of urban goods movement and the business premise basis are reflected in the ambitious modeling work underway in Calgary and Edmonton to more effectively model transportation/land use from a freight perspective (Hunt et al, 2004).

As a general solution, Gordon (2004) introduces the concept of a “freight filter” which planners should implement to addresses the impact of land use and policy decisions on the movement of goods. Each major land use decision and development should include analysis of the impacts on freight movement. Other common land use objectives include the siting of industrial lands/employment
areas to take advantage of multiple modes and the clustering of distribution centres and warehouses to address trip frequency and distance concerns.

The Importance of Communication and the 4 P’s

Recent Canadian efforts have made great strides in exploring solutions to the many challenges of urban goods movement (Moving the Economy, 2004), key among them the need to educate stakeholders, professionals, politicians and the public about freight movement issues. To this end, the establishment of “freight stakeholder partnerships” has been promoted with the goal to pool knowledge, plan for future data needs, and to develop innovative solutions that enhance operational efficiency and reduce emissions either by reducing congestion or accelerating the rate of acceptance of less polluting modes and technologies (Moving the Economy, 2004, p.24).

Another example of efforts to improve communication and the relations between private and public actors is the West London Freight Quality Partnership (FQP). The goals of this partnership are: “to promote constructive sustainable solutions which reconcile the need for access for goods and services, particularly in urban centres and at Heathrow, with local economic, environmental and social concerns” (Slinn, 2005, pg 2).

The keys to the success of these partnerships are a lack of regulatory or statutory framework and a local orientation (Zunder 2005). The gateway councils that have emerged in the Canadian context (Greater Vancouver Gateway Council, Southern Ontario Gateway Council for example) are similar in membership although the societal and environmental aspects are less emphasized in terms of their mission and goals, which are more oriented to economic development aims. Still, they represent attempts by the private sector interests to act as “good corporate neighbours” in efforts to address the balance between freight activity and community goals (NCHRP, 2003).

ISSUES AND OPPORTUNITIES MOVING FORWARD

This discussion has highlighted a number of challenges and opportunities concerning land use and environmental considerations associated with urban freight broadly. Examples from Canada and elsewhere have delved into planning practice, land use, and communications and their connection with urban freight and broader transportation issues. The central questions identified at the onset of this discussion were:

1) How do the corridor/gateway initiatives relate to land use patterns and how will planning play a role?

2) What are the environmental considerations in this discussion?

It is clear that planning has a critical role to play in addressing land use issues associated with the CAPCGI and that the environmental considerations related to long term sustainability of the system are high on the agenda. The prospects for the Vancouver gateway are on the one hand very promising. The Greater Vancouver Gateway Council has been in place for sometime and addressed the major hurdle of bringing together the dispersed private interests. Local goods movement planning studies have been recently completed and are ongoing and
connected with this broader initiative. The region has a solid reputation of innovative planning practice, community engagement and commitment to sustainable transportation options. However, a number of key challenges remain. What has not been discussed here at length is the market aspects – a detailed enumeration of the economic costs and benefits of both the infrastructure (transport) and land use developments associated with the gateway. Likely to be part of the process, it is a key aspect of communicating the future impacts of gateway developments. The challenges of effectively addressing long-term land use issues still remains and further exploration of the current planning process is warranted. In particular, it is hoped that a number of the examples explored here will provide direction in terms of dealing with the challenge of balancing the national importance of this initiative with the local impacts and concerns. The modern logistics environment is flexible and competitive, responding to short-term changes. The investments in major infrastructure elements, which have a long life, will impact the urban environments for many years to come. It is important that those implications are considered in detail as the project moves forward.

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