Distance and Competitiveness – The Role of Gateways, Corridors, and Competition*

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INTRODUCTION

Economists are very bad at explaining why particular countries, regions, or cities perform better than other. Theories abound and policy suggestions are numerous and varied. Over the years there has been a continuing interest in the role that transport can play in the economic growth process. Interest has fluctuated between looking at the general role of transport as a stimulus – as a major causal factor – and the specifics of particular modes of transport or forms of transport initiative in economic growth.

Adam Smith (1776) certainly thought that transport had a major and positive role to play and spends considerable time explaining this, and also that government has an important responsibility in ensuring adequate infrastructure is provide:

> *THE third and last duty of the sovereign or commonwealth is that of erecting and maintaining those public institutions and those public works, which, though they may be in the highest degree advantageous to a great society, are, however, of such a nature that the profit could never repay the expense to any individual or small number of individuals, and which it therefore cannot be expected that any individual or small number of individuals should erect or maintain.*

The concern here is not so much with the generic issue of the potential links between transport and economic growth, or the spatial distribution of welfare, although both come into the discussion, but

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rather on particular concepts often related to transport supply, namely those of "gateways" and "corridors"[1].

Two broad questions are addressed here regarding gateways and corridors. First, has the concept got any real economic meaning given the nature of modern transport? Second, even if it is not possible to given an exact definition to the gateway/corridor concept whether, like terms such as "entrepreneurship" and "sustainable development", there is an underlying approach or philosophy that can be useful in helping understanding links between transport and economic growth? But first some definitions and discussion of concepts.

GATEWAYS AND CORRIDORS

As with any economic resource, transport services suffer from scarcity; they are not ubiquitous. In the past this was often neglected in trade theory and, by association, economic development theory. Classical Ricardian economics, for example, focused exclusively on the comparative advantages in production at different locations, and in spatial economics in which, von Tünen (1875), at a more local level, assumed infinite radial transport links within a concentric economic geographical space. But transport supply is constrained by its particular characteristics, as well as the normal factor costs of producing services, and this affects its role in trade, economic development, and the geographical spread of economic activities.

Transport is a network industry and it is, therefore, natural to think in terms of the role that transport may play both in stimulating economic development along links in transport networks and at various nodal points. Ex post, historians have long viewed the trade and migration passages that existed in prehistoric times as important for the spread of civilization as it emerged, and subsequent trade routes as facilitating economic progress. Those living at nodes in the networks – Hirth (1976) calls them "gateway communities" – benefited from the flows passing through their area and could exercise control over

[1] There are a number of definitions of these concepts in economic geography; e.g., Whebell (1969) talks about a corridor, "a linear system of urban places together with the linking transport media".

it; essentially extracting monopoly rent[2]. The flows along these routes allowed adjacent communities to develop their comparative advantage and also led to the creation of a trading class to manage the movement itself.

From a political and security perspective gateways and corridors offer both advantages and dangers. They facilitate controlled movement along a link and regulate what can enter and leave areas allowing those in control to regulate the system relatively efficiently and, because property rights are relatively easy to define, allow prices to be levied to cover costs. But gateways are also often the most vulnerable point in any physical system and historically, have proved difficult to defend in military terms. Their numbers were often limited and mechanisms for opening and closing them were sophisticated and thus costly. More recently, economic gateways have posed problems for controlling flows of commodities and migrants and beaching or circumventing them is common.

Gateways have tended gradually to move farther apart as it has become easier for traffic and individuals to both pass through them and, as transport systems have evolved, to transverse the distance between them. Figure 1 represents the traditional view of gateways (Burghardt, 1971). At the national level in most countries there are one or more major hub cities that are linked to their borders by corridors that end at gateway cities offering links to the international market. Parallels can be drawn at the regional level. In spatial economic terms, the main distinction between the hub city is that while it fulfils the classic role of serving a concentric hinterland, a gateway city services a cone-shaped market extending away from the border and along the corridor.

Corridors are essentially links between nodes; in some ways they are seen as “super-links” and this distinguishes then from spokes in a

[2] In terms of spatial development theory, because of the asymmetric geographical pattern of development at gateway cities, this can be seen as a sort of secondary growth-pole effect; secondary to the more symmetric effects around at hub cities.

hub-and-spoke network. A major difficulty, however, involves the level of aggregation that one is dealing with.

At the global, historic, macro-macro level corridors are defined as routes that mankind used to populated the world – e.g., the "Bering land-bridge". But in the modern, high-technology age a corridor may be an electronic channel over which a piece of information is sent. The term suffers from almost infinite vagueness. This is not very helpful when it comes to in-depth analysis or forecasting but it does have its uses in general assessments of trends and can serve as a focal piece of terminology when policy makers want to coordinate actions; as for example in the creation of trade corridors.

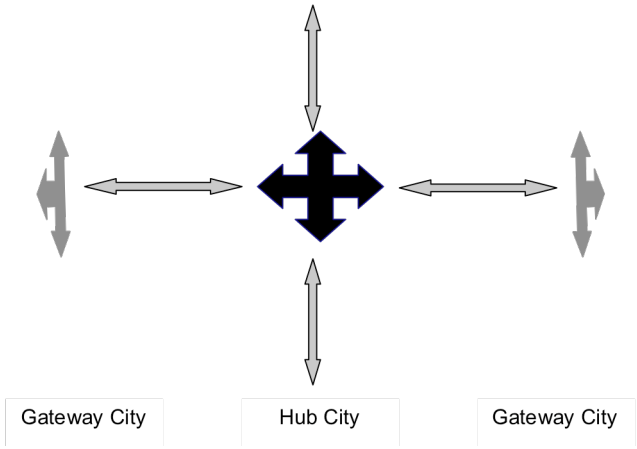


FIGURE 1. Burghardt's notion of gateways, corridors, and hubs.

It is also relatively easy to relate the picture seen in Figure 1 to specific contexts in more recent history. In the US, for example, the two gateway cities may be seen as New York on one coast and San Francisco on the other in the mid-1800s. Once into the country, goods or migrants could move into the hinterland, often dispersing more

broadly through a hub such as Chicago. Railroads largely facilitated this movement. The nature of international maritime and domestic railroad transportation at the time, as well as institutional controls, led to this pattern of behavior. The gateways proved challenging barriers to cross and, while trade and migration was extensive, it was not easy, and reverse migration and visits to family left behind proved almost impossible for the vast majority of individuals even if they did succeed in their new land.

The pattern of the Canadian railroad network (Figure 2) provides a classic representation of the form that a gateway/corridor structure looks like, and it is perhaps no accident that much of the early analytical writings on the subject came from Canada (Burghardt, 1971; Whebell, 1969). The maritime gateways on the two coasts, and the inland crossing gateways, to the US funnel goods and, more in the past, individuals to and from the major hubs cities of the country – Toronto, Montreal, etc. Similar patterns emerge for the more recent road network.

THE CHANGING WORLD

The world is changing and transport has been both a cause of this change but, mainly because of the derived nature of the demand for its services[3], has also had to react to it. These changes have implications for the demands that are placed on mobility of both people and goods.

Transportation costs have fallen considerably over the past three or four decades. This is, in part, a function of technology improvements, including those found in complementary sectors such as telecommunications, but also stem from institutional developments and especially the liberalization of many transport markets, the economies of scale that have come with the freeing of international trade more generally, and the adoption of innovative methods of supplying logistics services of all types by the private sector.

[3] For a critical assessment of the extent to which the demand for transport is derived, see Rodrigue (2006).

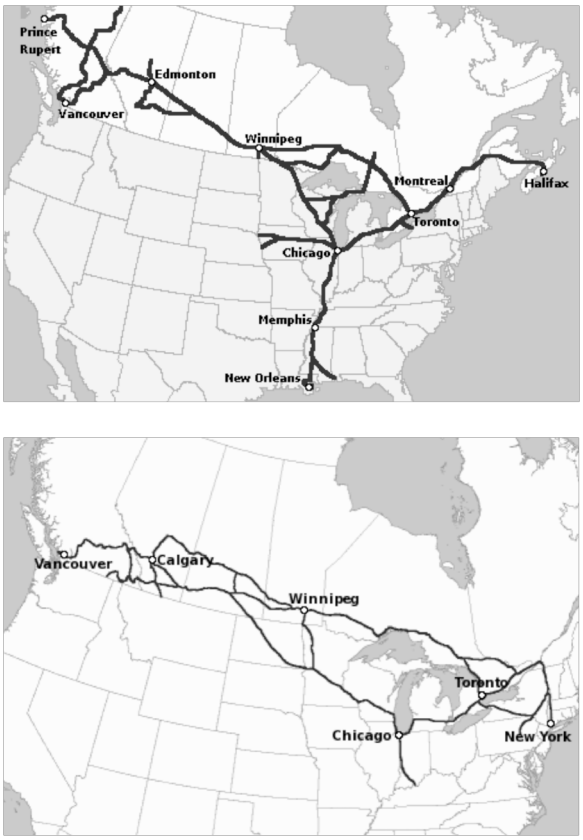
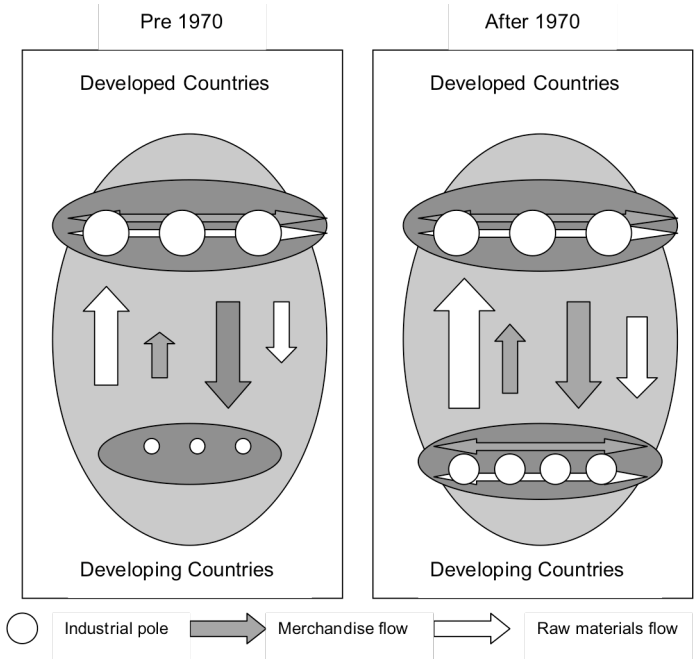


FIGURE 2. Canadian National's (upper) and Canadian Pacific's (lower) railroad network.

The full picture of what has happened is complex and is still not fully documented or agreed upon. Figure 3 is thus a simplification of the implications of changes that are taking place as a result of these developments in transport supply over the past quarter of a century or

so, and that have relevance for the gateway/corridor paradigm (see Rodrigue, 2004 for similar ideas).



Source: derived from, Rodrigue (2004)

FIGURE 3. Changing patterns of flows of goods, services, and factors of production.

In the 1970s, the primary movement of goods, and of factors of production, was within countries and largely within the wealthier nations. International trade involved a disproportionate movement of raw materials. The advent of new production methods, demands for new goods and services, and developments in transport systems has led to relatively larger flows between nations but also the

involvement of more countries, especially developing countries and former Soviet bloc nations, in trade. This has meant that the importance of the main gateways and hubs has changed, often in absolute terms, and that the roles of the various traditional corridors have also shifted, and new ones have been added.

The degree of competition and between various gateway/corridor combinations, and their important in economic development, have changed for a variety of interacting reasons:

Changes in institutional structures
Even when transport is provided in a market context, formal and informal institutional structures are important in determining such things as property rights and transactions costs (Williamson, 2000). In the past, many gateways and corridors have been established by fiat rather than being natural geographical phenomenon. The tendency was to use these gateways to regulate flows of trade to the supposed interest of the country concerned; for example they were convenient points at which to collect taxes or enforce non-tariff trade-barriers[4].

While there is still a residue of this approach, institutional changes have been large since the 1970s. The World Trade Organization and more open bilateral agreements have removed many of the legal impediments to trade, and, in so doing have reduced the role that gateways play in national fiscal policy. Regional economic blocs, and especially within the European Union, have moved away from being simply trading blocs to fully integrated markets and have removed barriers to factor mobility and constraints on who can supply transport services and in what way. The Single European Act, it has been estimated, increased intra-European transport movements by 40% after its enactment in 1992.

Linked to this move away from institutionally trying to direct trade has been the general decline in government involvement of micro-

[4] Legal efforts to funnel traffic along favored corridors and through particular gateways has also traditionally have effects on the "informal economy" as some groups sought to avoid the tariffs and constraints imposed by the formal channels.

management of economies. The decline of Communism is the clearest example but there have also been extensive programs of deregulation and privatization in many traditional quasi-market-style economies. This has not only changed the way transport operations are conducted but also in the way transport infrastructure is being supplied (Gómez-Ibanáñez, 2003).[5]

Globalization has led to significant changes in the ways things are produced, financed and moved, and in the places where key decisions are made. Globalization in particular has removed many decisions away from the local market place to corporate headquarters that are remote and where a much wider geographical view is take as to where things are made and consumed and the way that intermediate and final goods are to be transported. In particular, the infrastructure network is looked at more broadly and far more gateways are considered. This moves away from the more nationalist view of corridors that tends to dominate traditional ideas on the subject and to shape the policy arena.[6]

Changes in the product mix demands.
Bulk commodities have traditionally made up the majority of the physical amount of goods transported. In the past they also often dominated the value of goods moved as well. Today, expensive, low volume goods are more important in terms of the value of goods traded. Their transport needs are not the same as for bulk, raw materials and modal characteristics such as speed, flexibility, security, and reliability have become more important. Some 40% of world trade, for example, is moved by air transport and waste quantities travel shorter distance by road.

[5] Adam Smith, once again, provides the reality to the picture; "The greater part of such public works may easily be so managed as to afford a particular revenue sufficient for defraying their own expense, without bringing any burden upon the general revenue of the society."
[6] Changes are taking place in policy thinking as seen by the TENs initiatives in Europe that are discussed later and in initiatives that accompanied the signing of the North American free Trade Agreement in 1994.

The "last-mile problem" has become more acute as distribution and collection raise increasing problems in supply-chain management. It is often neither the gateway nor the inter-urban corridor that determines the quality of door-to-door transportation but rather the more local issues of what happens within cities. Intra-urban corridors are often clogged and the quality of the transport that can be offered is as a result variable.

An added dimension to the debate is the oft-neglected issue of factor mobility. Increasingly, it is not production of the most valuable goods that is going to site of lowest cost, but rather labor and capital moving to existing production locations. The World Bank finds labor migration to be growing and about 3% of the World's population has been living outside of their country of birth for one year. While migration is not new and rail, maritime, and foot transport have been responsible for mass movements, the advent of cheap air transport has made migration easier, particularly temporary migration, and allows emigrants to visit their homeland regularly (Button and Vega, 2007).

Developments in transport and logistics.
Supply-chain supply management has been transformed over the past thirty years as containerization has spread, new information and tracking systems have been developed, and as advanced managerial concepts have been applied to the transport element of production.

The traditional idea of corridors relies quite heavily on the need for fixed track – railroads, high wire communications, and roads. These factors are still important in supplying many transport services. Added to them, however, are the new requirements of wireless communication and air transport that are far more flexible in terms of their fixed infrastructure corridor needs. Indeed, even in terms of commercial aviation, that was dependent on the "virtual corridors" defined by air navigation systems, the advent of free flight technology is gradually removing the need for external channeling of traffic. While changes have certainly not brought about all the changes once predicted (e.g. Cairncross, 1997) they, at the very least, have changed the way transport services are delivered and broadened out the notion of the way one can think of corridors.

These virtually corridors are flexible even if there is some stability in terms of nodes, although even here costs of modifications are often small. This makes it difficult to think, as in the past, of even relative permanency. In terms of the traditional Burghardt style framework this means that the hubs and gateway concepts merge and the types of assumptions that become germane revert back to those similar to von Thünen and the other classical economic geographers.

Alliances are a common feature of the modern transport world – e.g. there are strategic alliances between airlines and maritime alliances. Their forms differ, but their effects are largely the same, better coordination of services and the ability to reap greater economies of scale, scope, and density. Added to this has been the gradual emergence of multimodal forms of transport that, by enabling the movement of unitized consignments by several possible combinations of nodes adds to the flexibility of transport systems[7]. Alliances and multimodal transport often provide more options for transport users by facilitating alternative routings between nodes; effectively by allowing more indirect as well as direct routings they create more corridors and open more gateways[8].

CORRIDORS AND ECONOMIC DEVELOPMENT

The notion of gateways/corridors has often carried with it the connotation of planned development. Even the Great Silk Road of antiquity was not a genuinely market driven structure but was heavily regulated and controlled by the nations it passed through to ensure they reaped some economic returns. Because of the benefits governments could enjoy, many corridors were thus designed and controlled by the state.

[7] In the Netherlands the importance of the multimodal nature of transport combined with an appreciation of the need bring together complementary activities in the supply-chain has led to the "Mainport" concept based around Rotterdam.

[8] While there is often discussion about alliances between gateway cities, and indeed some simple alliances do exist, most alliances involve movements along links.

An example of this is the way that corridors are being developed with the European Union. The Union's Trans European Network – Transport (TEN-T), initiated in 1990 and subsequently widened to include energy networks (TEN-E) and telecommunications (eTEN) – has been drawn-up along traditional lines of plotting corridors of "public interest" (European Commission, 2001). While lines are being drawn there is a strong reliance on the private sector to finance many of the corridors envisaged.

The reluctance of citizens to accept high tax burdens, together with the sophistication of international finance markets, has resulted in increasing amounts of private sector finance being used for infrastructure development. This inevitably affects the nature of the transport corridors that are emerging.

Corridors have traditionally been seen as being at their most effective in stimulating economic development at their nodal points[9]. Those located adjacent to a corridor often enjoyed a high level of access to the main nodes. Modern supply-chain management based largely on inventory minimization seeks speed and reliability from its transport inputs. This can produce conflicts between growth at the poles and growth along the line of a corridor. A train, for example, cannot be high-speed if it continually stops to collect and deposit en route; the same is true of all modes. It is not altogether clear how one gets a compromise between the quality of service that economic efficiency at major nodes require, whilst at the same time offering good access to those located along a corridor.[10]

There are also problems at many gateway locations in terms of the benefits actually enjoyed by their residents. Passing through a

[9] Although this only proves effective for both regions at the end of a corridor when there are no scale effects in production. If the economic base at one node benefits from economies-of-scale then linking it by a corridor to another nodes will effectively suck economic resources from the latter – the "Appalachian effect".

[10] Alain Bonnafous, the leading French transport economist, once described the impact of the French high speed rail system (TGC) as having about as much impact on the economy along the line as a low flying Airbus.

gateway with minimal restraint is seldom beneficial to residents; the removal of barriers through gateways has often reduced employment for those previously involved in physical or legal interchange activities. Interchange requirements can also offer the opportunity for local value added activities that are again lost once the gateway ceases to be an impediment to traffic and reduces the multiplicand for employment multipliers.

CONCLUSIONS

There is no doubt that the idea of gateway/corridor interactions can be useful in looking at transport and development in very broad terms but their usefulness begins to weaken as more options become available to those wishing to make use of transport. Technical changes, institutional reforms, and changes in the types and mix of people and goods that are to be moved means that, while it is not ubiquitous, transport is more available.

From a policy perspective, a good model, following Friedman's (1953) rather obvious argument, should as a necessary condition, be able to produce reasonable good forecasts. In the past, the stability of technology and of the goods transported made the gateway/corridor concept a viable modeling tool. This is less so today as transport becomes more flexible and the number of potential gateways and corridors increases. It is always easier to forecast the behavior of a monopolist where there is no gaming involved between the suppliers, than that of suppliers in imperfectly competitive markets with their numerous forms of interactions.

In the past it was not only technology, and in particular the scale economies embodied in virtually all infrastructure, that limited competition but also the institutional environment whereby government determined who was to supply transport infrastructure and services. The reduced role of government in terms of both active investment and regulation of operations means that the degree of uncertainty regarding the use, and the nature of the use, of any corridor is difficult to forecast. Again, the gateway/corridor concept has a use in terms of generalizing but as an ex ante model for

predicting successful development policies, and the detailed forms they should take, it is a rather imprecise tool.

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