

Logistics hubs: between fixity and flow

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Logistics hubs : between fixity and flow

The expression *logistics hubs* is applied to a variety of sites and projects. It can refer to a straightforward warehouse, a piece of logistical property, a zone where several logistics firms are grouped together or a major piece of infrastructure such as a port or an airport. Sometimes local and regional authorities even use the term to describe their area. This unrestricted use of the term *logistics hubs* is responsible for much confusion which interferes with the definition of public policies with regard to regional planning for transport and logistics, and frequently gives rise to unjustified expectations among elected officials. Conversely, residents fear logistical hubs as they are usually accompanied by negative externalities such as pollution and landscape degradation.

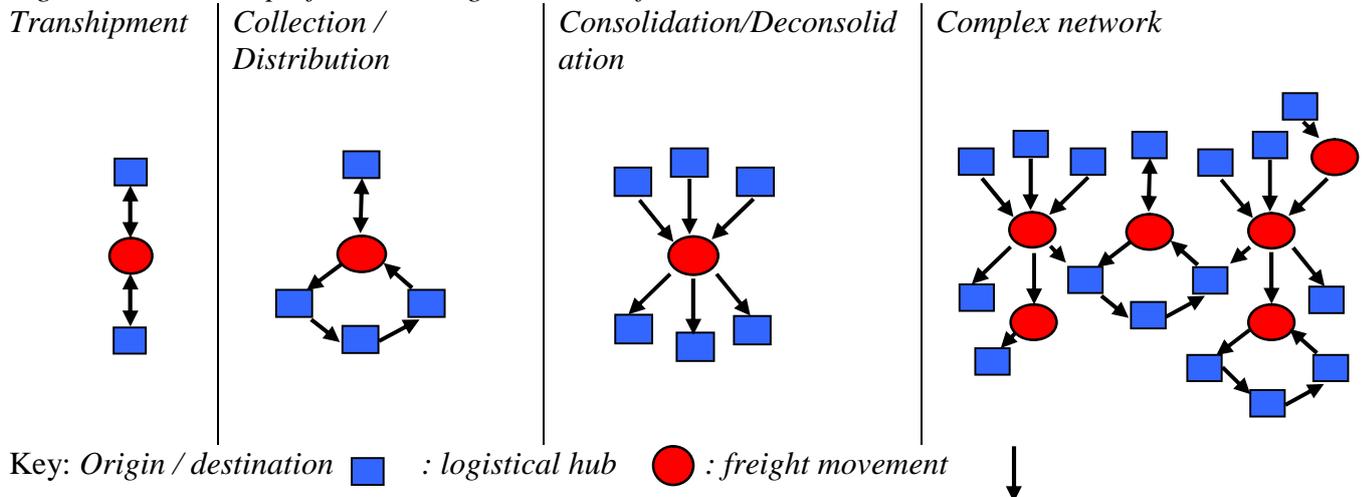
This paper sets out to shed light on the concept of *logistics hubs*, whose value lies in its multiple meanings. For example, as a unit owned by a carrier or a logistics provider, we can see the hub as performing a function within a logistical network, ensuring that freight flows smoothly. As an activity zone or an area, we must also see it as a geographic location which provides a fixed site for the operations which ensure that freight flows freely. This paper explores this dual identity, within a network and within an area based on the concepts of fixity and flow (Clark, Hall, 2010).

Hubs assisting flow

Logistics consists of managing the flows of freight in the framework of production and distribution systems. Hubs are intermediate points between the origin and the end destination which make it possible to adjust flows both temporally and spatially. They are the locations which determine the free flow of freight.

Physically, the simplest hub consists of a warehouse. Four basic operations can be performed in this warehouse. The first is to gather together the freight produced by a factory, for example to distribute it to various consignees. The second consists of consolidation and deconsolidation operations. The third function is transfer from one transport mode to another. The last basic function consists of storing the freight awaiting the client's decision to distribute it.

Figure 1: The tasks performed in logistical hubs for networks



With regard to this intermediacy, logistics hubs coordinate the actors and help to define the way work is divided between them. They thus fit into transport networks of variable

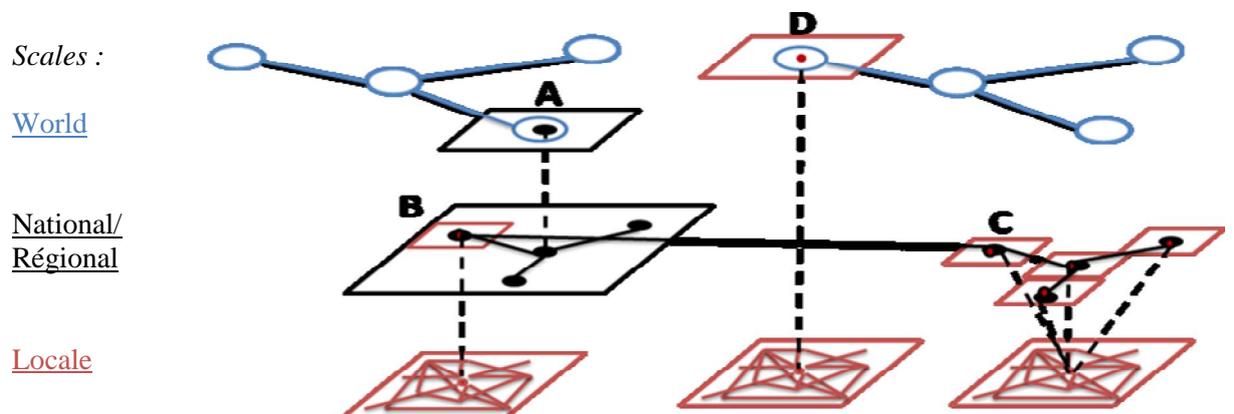
complexity. As fixed sites they ensure that freight flows freely and take on the role of a centre or node in the network. The table below summarizes the characteristics of nodes and centres by combining the concepts developed by Fleming and Hayuth (1994), Debrie et al. (2005), Gouvernal et al. (2010) and Rodrigue et al. (2010).

Table 1: Characteristics of nodes and centres

Role	Position	Purpose	Organizational goal	Scales involved
Node: point of connection between arcs	Intermediacy in a network. Centrality with regard to other points in the network	Exogenous logistical transit	Efficiency of transport	Scale determined by network
Centre: supplies an area with goods	Centrality within a given area (transporting goods into and out of an area)	Endogenous logistical supply or collection	Response to market	Scalar leap: transition from rank i to rank j

Fleming and Hayuth (1994) make no dichotomy between centrality and intermediacy. The two situations can co-exist and complement one another from the outset. In addition a hub that starts as a centre or a node can evolve naturally to combine the two roles.

Figure 2: Diagram showing how logistical hubs can act together in a network



Type of logistics	Endogenous	Represented by	Exogenous	Represented by
Role	Pole		Node	
Position	Centrality		Intermediacy	

Spatial dynamics are set up which lead from an isolated warehouse, whether a centre or a node, to much more complex logistical set ups which perform the function of “switches”. Four levels can be identified. The basic sorting and warehousing tasks are performed in one unit. A logistical site is an activity zone which is specialized in logistics, either intentionally or *de facto*. A logistical centre contains a number of logistical sites within a small zone. A logistical area brings together several logistical sites at a metropolitan, regional or even larger level. As a result of the combined activity of all the hubs they contain, these areas acquire the function of a “general switching hub” for larger areas. The creation of logistical zones and

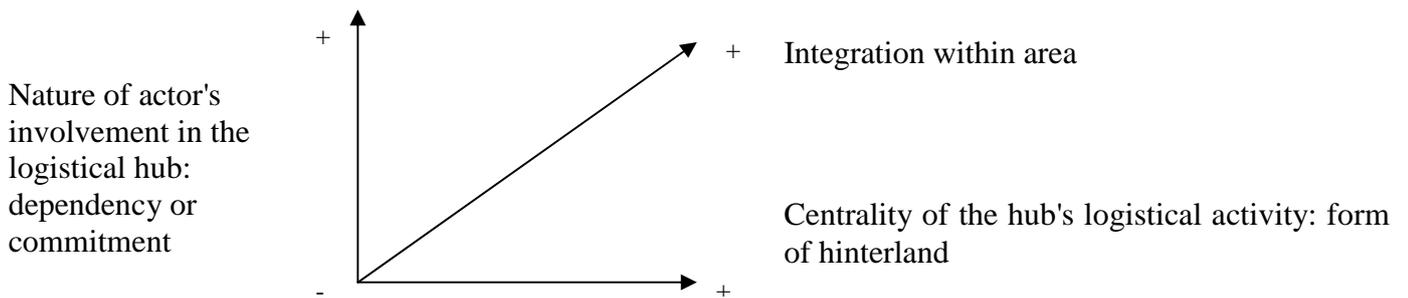
centres that are larger than the hubs that perform basic functions seems to be driven not only by the desire for synergy and the pooling and sharing of sites that provide access to markets but also dynamics that result from the variety of the constraints imposed by “fixity”.

Hubs for fixing logistical activities

When responding to logistical friction, *logistics hubs* generate negative externalities which often create tensions with local interests in the area. These tensions exist between the actors involved in the hub and those involved in the areas in which they are located, i.e. between the actors that generate fixity and flow. The interactions between them are responsible for the geographical organization of hubs.

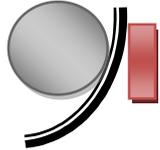
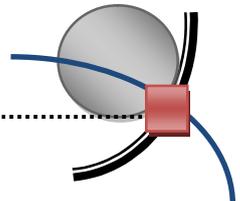
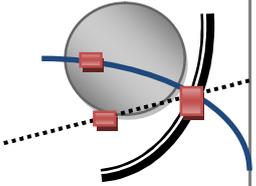
A variety of logistical actors can be identified around hubs. The hub’s customers consist of transport operators whose activities may range from local to global. Logistical tasks are performed by a logistical operator. The hub may be owned by an investor who rents it out to transport or logistics firms, or by a company whose exclusive role is to manage it, offering logistical services to transport operators. The interplay between these actors, in terms of market areas and integration within networks and the management of land and logistics affects the ties between a hub and the area in which it is located.

Figure 3: Variables that determine the local integration of logistical hubs



At the same time, geographical factors and the adverse environmental impacts of hubs mean that local interests of an area sometimes disagree with the overall benefits of logistical activities, leading to friction within the area. As hubs use land they may also come into conflict with other land uses. In addition, they are often opposed by residents or on environmental grounds. However, these conflicts are above all possible ways in which these issues, which have traditionally been the reserve of technocrats, may become politicized (Jobert, 1998), once again raising the issue of the role of logistical facilities in urban areas.

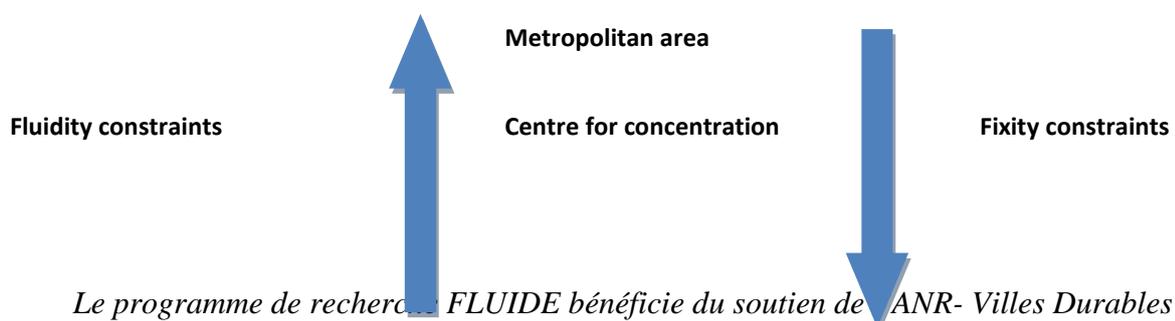
The construction of logistical hubs may thus arise from the interests of logistical companies, but also from those of the actors in an area who are responsible for fixity, in particular the different tiers of government, from the municipalities to central government, and the public and private actors engaged in the property sector and planning. Logistical hubs may also be created by the property market and planning operations for activity zones. Some logistical hubs are presented as “infrastructure” by various public authorities, from central government to local and regional authorities. They are the outcome of the importance given, at national or local level to the role of logistics and freight transport. The table below presents different types of hubs resulting from the interaction between the imperatives of flow and fixity and between the actors who embody them.

Type	Sub-type	Characteristics		Diagram
		Fluidity	Fixity	
Property	Warehouses	Near a motorway access to ensure centrality and/or nodality	Pushed to the periphery of the conurbation as a result of land pressure and nimbyism	
	Logistical zones	Ditto Near a metropolis in order to benefit from the insurance effect which strengthens integration in networks	Ditto Building public interest in the hub as a means of bringing about economic development and a zone for the location of firms	
Strategic infrastructure	Major gateway ports, airports and inland terminals	Centrality and/or nodality at the national and international level. Good access by sea and land necessary. Integration within international networks.	As above Building public interest in the hub as a means of integrating the national territory in European and global networks.	
	Multimodal hubs	Centrality and/or nodality at the local and regional level. Multimodal accessibility.	Building local public interest in the hub as a means of achieving modal transfer, serving urban areas or integrating the local area in national networks.	

While logistical hubs are primarily regulated by market mechanisms and firms, they are also built by various forms of public action. This may be promotional, reflecting a liberal desire to generate competition between different areas, or pro-active, creating logistical infrastructure or even firms that are in public ownership or that provide delegated public services in order to offer services or foster sustainable development. The different forms of logistical hubs do not only reflect policies with regard to industry or land but also the dynamics of public – private and political interactions. These interactions between public and private actors may be observed within governance bodies, where decisions are made and public action is implemented (Le Galès, 2003). Some logistical hub projects are managed like a specific type of “urban project” (Pinson, 2004) while others on the contrary exhibit no public regulation or planning vision.

The form taken by logistical hubs depends on the contexts of the areas in which they are located. They are multiscalar phenomena, varying from metropolitan specialization to the provision of activity zones, with two underlying principles - integration within the network and integration within the area.

Figure 4: The two underlying principles of logistical hubs



Integration within networks

Logistical activity zone

Integration within areas

Logistical firm

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