

## ABSTRACT

Open access is sometimes seen as promoting rail competition effectively when infrastructure geography and market demand restricts routings — e.g. in Europe. European railways are passenger-oriented, highly scheduled, poorly standardized, and lines serve specialized functions. Conversely, American railroads are freight-oriented, flexible, and highly standardized. Consequently, optimal forms of organization differ.

American railroads compete vigorously for through-traffic, and seek efficiency gains through competition and mergers. European railways are focused on local traffic, and are consolidated on a national basis. The technical, cultural, national and corporate incompatibility between European national systems precludes vertically-integrated parallel competition as a solution in the short term, requiring the operational complexity of infrastructure separation to create a pan-European network. However, American railroads, with some mandated infrastructure divestment, may compete positively, yet generate value effectively through creative inter-modal cooperation as true transportation retailers, without resorting to open access.

## ACKNOWLEDGEMENTS

The author is grateful to John G. Allen, Senior Transit Analyst, Chicago Regional Transportation Authority; Thomas Hoerber, Centre for European Studies, University of Cambridge; Carl D. Martland, Massachusetts Institute of Technology; and others for their helpful comments. All opinions are, of course, those of the author.

## WHAT IS OPEN ACCESS?

Open Access is the concept whereby trains owned by one party are permitted to operate over infrastructure owned by another. It does not necessarily (but often does) imply infrastructure separation, when the carriers own no fixed assets but instead purchase operating rights (i.e. departure slots) from infrastructure authorities.

European Union directive 91/440/EC mandated infrastructure separation for railroads throughout the Union, with Britain spearheading the drive to restructure in the Railways Act (1994). Institutional behaviour under such a regime could be summarized:

- Operationally complex, responsibilities unclear
- Low entry barrier for new carriers
- Consumer chooses carriers independently of routing
- Carriers' tendency to consider only short-run costs

Vertical Integration is the opposite scenario; the carrier owns the track and serve only those routes, as in North America:

- Operationally efficient and safe
- High entry barrier for new carriers
- Consumer chooses a route-carrier combination
- More incentive to account for long-run costs

# Open Access: a European Dream Unfulfilled, an American Nightmare?

(or Vertical Integration Versus Infrastructure Separation for Railroads: Different Optimums for Different Settings?)

Alex Lu, Center for Transportation Studies, MIT 1-084, 77 Massachusetts Avenue, Cambridge, MA 02139-4307. [lexcie@mit.edu](mailto:lexcie@mit.edu)

Presented at the 81st Annual Meeting of the Transportation Research Board, Washington, D.C., January 2002.

## The European Aspirations

Efficient pan-European intermodal transportation

High-speed passenger rail service between major population centres

Cultural integration within the European Union

Consolidation of manufacturing facilities to compete internationally



**Common Goal: Efficient Railroad Transportation.**  
But... *How* do you achieve *that*?

## The American Dream

Efficient and profitable transcontinental railroad systems — without service failures

Increased interstate and international commerce and economic growth

*Interstate Commerce, Chicago, and the Heartlands of America.*  
(Metra 603, Milwaukee-West.)



Nationalization and Rationalization (pre-Maarstricht, 1992)  
Open Access (post-Maarstricht)

## Many Routing Restrictions

European Railways are Passenger-Focused

**Passengers don't like to wait**  
— many prefer to go by the most direct route.

**Passengers don't like to transfer**  
— alternative routings may involve transfers.

**Passenger journeys tend to be under five hours**  
— an additional hour by an alternative route is a significant percentage of total trip time (and is associated with a large disutility)

**Passengers like to have a frequent service**  
— distribution of services over many routes results in less frequency for intermediate stations.

**Passengers like to board at intermediate stops**  
— e.g., commuters. The routing other than the one that takes the commuter home is useless!

**Passengers have idiosyncratic preferences**  
— “Sleep like a kitten, only on the Chessie System”

European Railways are Poorly Standardized

- Four main types of electrical supply systems
- Many types of control and signalling systems
- At least seven different types of incompatible drawgear
- Loading gauges differ between countries and between lines
- Incompatible vehicles safety-certificates between systems

Mainlines are Highly Specialized

In Scotland, the ex-Caledonian Railway Mainline specializes in passenger traffic and features 110mph top-speed, CTC and cab signals, with welded rail.



While the parallel ex-Glasgow & South Western specializes in local interurban and heavy freight traffic. It features 55mph track-speed, manual signal towers, semaphores, single-track, and jointed-rail.



Yes, *How*?

*And Why*?

*What* do you mean?



*Freight trains have to wait for passenger trains to pass in some places, even at night.*  
(Transrail 37 410 with ScotRail local service.)

*Standard American Locomotive, hauling a Standard American Train...*  
(CSX 610 at MP 66.5 near Deshler, OH.)



*What* does this have to do with *Open Access*?

**Routing restrictions preclude parallel competition by vertically-integrated carriers, requiring Open Access for consumer choice.**

Parallel Competition: Merger and Consolidation.

## Few Routing Restrictions

American Railroads are Freight-Oriented

**Freight doesn't really care if it has to wait an hour or so**  
— especially not coal.

**Freight doesn't really care if it has to transfer**  
— as long as you can do it cheaper, including the cost of transfer.

**Freight tends to go half-way across the continent**  
— an additional few hours doesn't really make much difference, when the shortest Los Angeles to Chicago timing is 34 hours.

**Freight doesn't really need short headways**  
— so you can send more of the transcons via the cheaper routing, the decreased frequency of intermediate stops will hardly be noticed.

**Freights tend not to board at intermediate stops**  
— on the railroad at least, they tend to go from hub to hub, with intermodal pick-up/delivery. There is no “commuter railfreight”.

**Freight doesn't have idiosyncratic preferences**  
— it doesn't even know where it's going. You can even make oranges into juice, concentrate, or bottles of juice before shipping it!

American Railroads are Highly Standardized  
(AAR worked to harmonize railroad technology since the last century)

- GE and EMD power can work in multiple
- Standard radios used for crew communication
- Regional (eg Canadian) restrictions are few and far between
- Interline waybill permits smooth interchange of traffic
- Rule book is at least 95% compatible between carriers

Mainlines are Generic, and have not Developed Specialized Purpose

All transcontinental mainlines feature no electrification, about 65mph track-speed, 10ft of horizontal and 20ft of vertical clearance

**Conversely, in North America, lack of routing restrictions encourage head-to-head competition by parallel carriers, resulting in efficiency and improved service.**

Strategic Bottlenecks are Commonplace in Europe

- Eurotunnel is the only rail link from Britain to Continental Europe
- The Øresund and Great Belt Bridges in Denmark are critical links between Northern and Western Europe
- Even the Severn Tunnel in West England and Forth Bridge in Scotland are critical links for passenger operations

The effect of market-power abuse on these links are devastating!

European Railways are Regionally Consolidated

- Existing institutions are focused on local traffic
- Rationalization under national control meant abandoning of potentially competitive trackage
- Incumbent national railroads are reluctant to relinquish control, due to national pride and the political need to safeguard domestic intercity and commuter traffic against trans-European freight flows.
- Regionally monopolistic nature of the existing institutions meant that no competition or seamless service is possible on inter-regional flows without Open Access!

**Goal: Promote Transcontinental Commerce, Cultural Integration, and Compete Internationally**

**Medium-term Strategy:** Encourage cultural interchanges, cross-pollination of best practices, joint-ventures, international services, without major institutional realignment. Use Open Access as a vehicle for these harmonization work — forcefully merging roughly equal but different systems such as SNCF and DB may lead to a Penn Central-like mess.

**Long-term Strategy:** Progressively standardize the infrastructure on a pan-European basis, possibly adopting the North American model of long, thin railroad carriers under the operationally efficient vertically integrated regime.

**Infrastructure Separation is a last-resort in an attempt to introduce some competition amongst stubborn former national institutions!**

*In Britain*

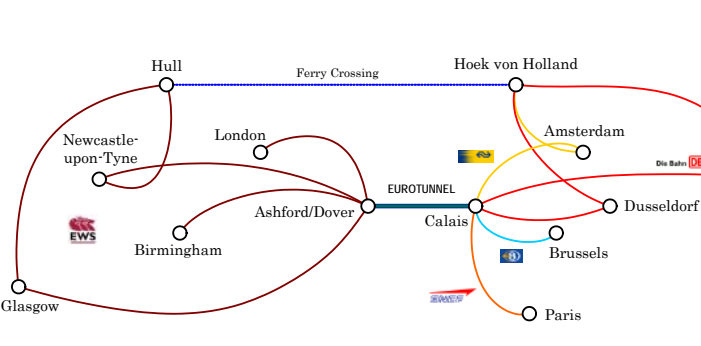
- Infrastructure authority Railtrack is bankrupt, following a series of safety-related crises
- French train operator Connex was refused a second-franchise term for poor performance
- EWS retained so little shareholder value that CP-Wisconsin Central disposed of its shares
- The value of franchises reflected serious market failures

*The Rest of Europe*

- In France and Germany, the former State Railways appear to be infrastructure-separated on paper only
- Very little pan-European standardization has taken place
- No serious competition seem to have taken place on any of the more lucrative routes

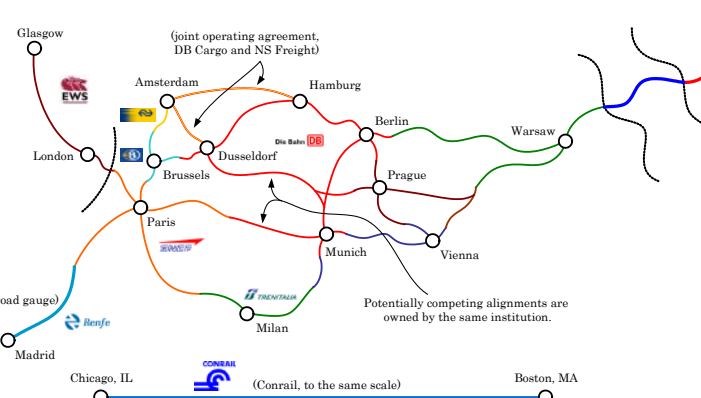
**Whether Open Access will fulfil its promise in Europe is yet to be seen.**

*Why else* is Open Access a European *Dream*?



*Strategic bottleneck of some order of magnitude!*  
(Forth Bridge, Edinburgh, Scotland.)

So, *what* are the Regulatory Goals and *Strategies*?



*How do we realign these institutions to form competing parallels?*

Implementation Progress to Date

or

Why is it a European *Dream Unfulfilled*?



*Is this a dream, or just a nightmare?*  
(Amtrak #69 on the Southwest Chief at Barstow, CA.)

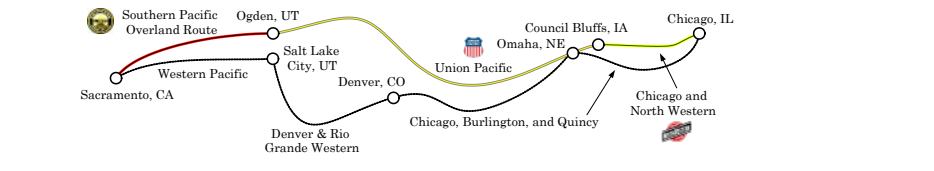
Strategic Bottlenecks are Rare in North America

Despite the Terminal Railroad Association's ownership of both bridges over the Mississippi at St Louis, market-power abuse is less of an issue as transcontinental shipments may be routed through Chicago, Memphis, New Orleans, or via Canada.

Historical bottlenecks such as the Cajon and Tehachapi Passes in Southern California are shared by the major carriers.

American Railroads form end-to-end Connections

- Existing institutions compete vigorously for through traffic in well-established corridors
- Competitive trackage are generally owned by different institutions
- Interwoven networks of the existing institutions meant that competition is stiff between rival roads in most origin-destination markets.



**Goal: Mitigate Service Failures due to Insufficient Capacity or Market-Power Abuse by Major Carriers, and Continue to Foster Commerce.**

**Medium-term Strategy:** Continue to monitor mergers and acquisitions to reduce anti-competitive practices. Evaluate the possibility of Federally-assisted enhancement schemes.

**Long-term Strategy:** Examine the possibility of mandated infrastructure divestment and terminal trackage rights for bulk commodities (which are difficult to transload). Encourage transportation-retailing behaviour by permitting closer truck-train cooperation. Investigate re-regulation of non-railroad trucking.

**Infrastructure Separation, and the associated operational inefficiency and complexity is not necessary to safeguard shipper's interests.**

*How could it become an American Nightmare?*

- Dispatching becomes legal rather than pragmatic
- Track capacity may be wasted due to legal squabbles — intermodals run late, coal trains don't run at all
- Safety is compromised as the new stakeholders blame each other
- Management posts are created for the contractors to “supervise each other” thus any efficiency gain through competition is lost
- No investment and little maintenance are carried out by the track owner, since the guest operators benefit under a free-rider scenario
- Major Class I's may go bankrupt within two years due to shortlines undercutting their rates, hauling intermodals with life-expired equipment and allowing their equipment to fail at bottleneck locations
- There would be no rail service when the infrastructure rots away

Shippers, do you really want to go down that road?

**Positive Competition is possible without Open Access in North America.**

**Conclusion: True Transportation Retailing for North America, Open Access for Europe.**