

Transport as a loosely coupled system: Implications for research and practice

Work-In-Progress

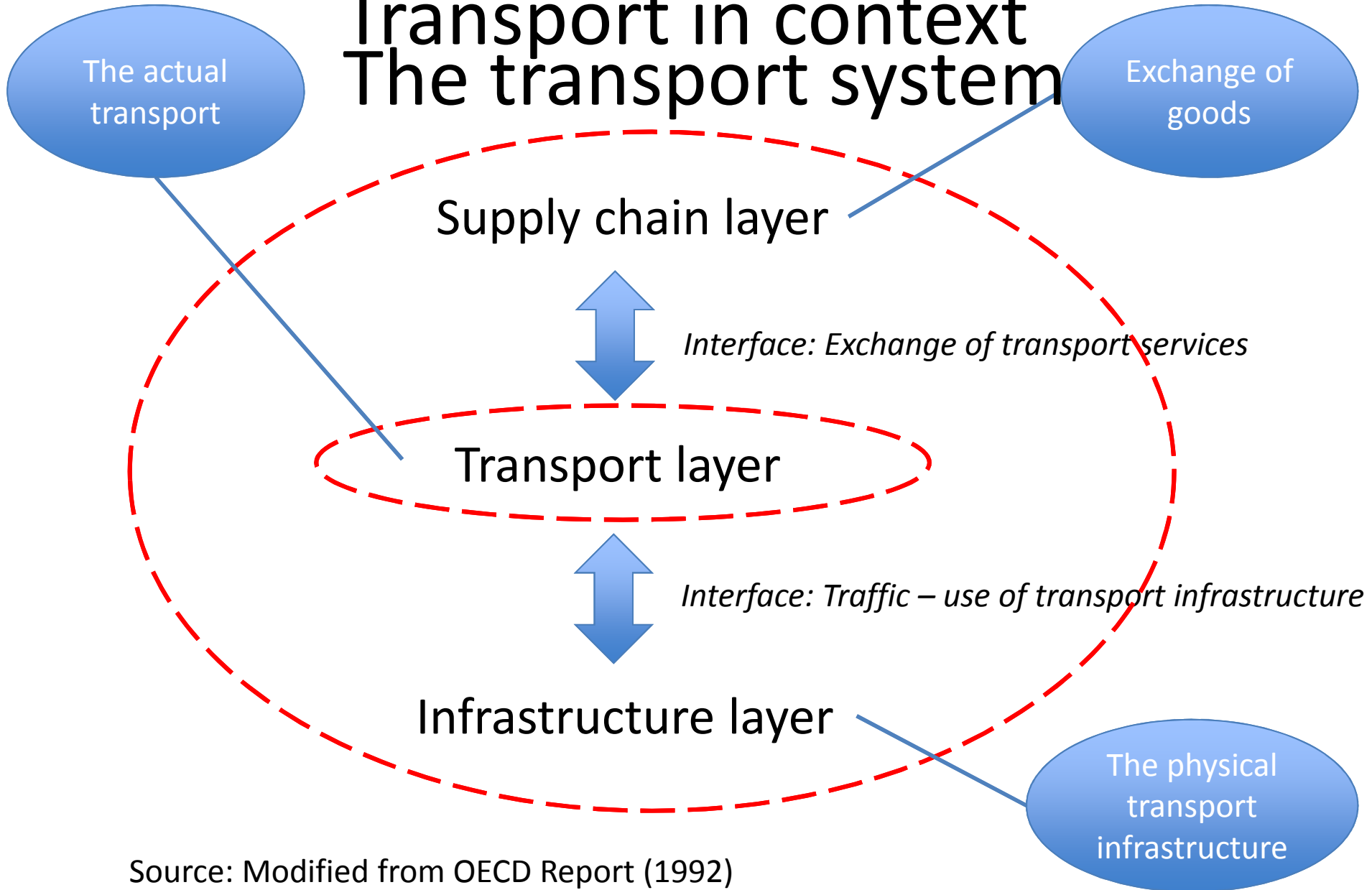
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Background

- Why is the transport system so hard to change?
- The transport system is a complex open system consisting of a number of layers that interconnects through a number of interfaces

Transport in context The transport system



Source: Modified from OECD Report (1992)

Loosely coupled systems

Enlight Weick (1976):

“loosely coupled events are responsive, but each event also preserves its own identity and some evidence of its physical or logical separateness”

Potential *functions* and *dysfunction* of loose couplings:

- Localised adaptations
- Sensing mechanisms
- Variation generation
- Self-determination
- Seal of and prevent problems
- Preservation
- Inexpensive to run

Aim

- *To analyse the organising of the transport system with regard to the pattern of loose and tight couplings:*
- *What elements are loosely coupled?*
- *What domains are they coupled on?*
- *What are the characteristics of the couplings and de-coupling?*
- *What are the consequences of these patterns of couplings?*
 - for research, practice and policy

General pattern of couplings

Domain: System layer/ <i>Interface</i>	Elements	Couplings
Supply chain	Actors, activities, resources of buyers and suppliers of goods	Tight - integrated supply chains subject to interdependence
<i>Exchange of transport services</i>	<i>Activities and resources of buyers and suppliers of transport services</i>	<i>Loose – transactional, independent (Tight when subject to special arrangements)</i>
Transport	Operations of vehicles for goods transport	Loose Adjustments to... (Tight when vehicles are adjusted to special goods/cargo)
<i>Traffic</i>	<i>Connections between vehicles and physical infrastructures</i>	<i>Loose for road transport Tight for rail, sea and air</i>
Infrastructure	Physical transport infrastructure components	Tight - subject to standards and long term investments

Implications

- Research at the respective system layers remains separated - need to proceed across layers/interfaces?
- Demonstration and implementation projects need to take into consideration couplings beyond the project boundary
- How can the current pattern of couplings explain successes and failures in attempts to effectuate changes/innovate in the transport system?
- (How) Can transport efficiency and effectiveness be improved by altered patterns of loose and tight couplings?