# Transport Geography

## Meaning, Scope and Importance

**Dr. Sabiha Khan**

- Transport geography is a sub-discipline of geography concerned about movements of freight, people and information.
- It seeks to link spatial constraints and attributes with the origin, the destination, the extent, the nature and the purpose of movements.
- Transport geography, as a discipline, emerged from economic geography in the second half of the twentieth century.

# Defination:

- It investigates the movement and connections between people, goods, ideas and information on the Earth's surface.
- *Transportation is a measure of the relations between areas and is therefore, an essential aspect of geography" (**Ullman,** 1954).*
- This term is an apt reminder that "communication", the movement of ideas and "transportation", the movement of goods and people, are not rigidly separated, but rather grade into each other (Eliot **Hurst**, 1972).
- According to "**New Standard Encyclopedia** (1990), Transportation means "all means of travel and of moving persons and goods from place to place".

# Purpose of Transport Geography

The unique purpose of transportation is to overcome space, which is shaped by a variety of human and physical constraints such as distance, time, administrative divisions and topography.

Jointly, they confer a friction to any movement, commonly known as the friction of distance (or friction of space

In an **ideal world**, transportation would come at no effort in terms of cost and time and would have unlimited capacity and spatial reach.

Under such circumstances, geography would not matter.

In the **real world**, however, geography can be a significant constraint to transport since it trades space for time and money and can only be partially circumscribed.

The extent to which this is done has a cost that varies greatly according to factors such as the length of the trip, the capacity of modes and infrastructures and the nature of what is being transported.

# Transport geography can be understood from a series of core principles:

- Transportation is the spatial linking of **derived demand**.
- Distance is a **relative** concept involving space, time, and effort.
- Space is at the same time the **generator, support, and a constraint** for mobility.
- The relation between space and time can **converge or diverge**.
- A location can be **central**, where it generates and attract traffic, or an **intermediate** element where traffic transits through.
- To overcome geography, transportation must **consume space**.

- These principles underline that there would be no transportation without geography, and there would be no geography without transportation.
- The goal of transportation is thus to transform the **geographical attributes** of freight, passengers, or information, from an origin to a destination, conferring them an **added value** in the process.
- There are substantial operational differences between transportation modes, particularly between passengers and freight, which often operated separately.

**Mobility** *The ease of a movement of a passenger or a unit of freight. It is related to transport costs as well as to the attributes of what is being transported (fragility, perishable, price). Political factors can also influence mobility, such as laws, regulations, borders, and tariffs. When mobility is high, activities are less constrained by distance.*

- The specific purpose of transportation is to fulfill a demand for mobility since transportation can only exist if it moves passengers, freight, and information around. Otherwise, it has no purpose.
- This is because transportation is dominantly the outcome of a derived demand; it takes place because other activities are taking place.
- Distance, a core attribute of transportation, can be represented in a variety of ways, ranging from a simple Euclidean distance – a straight line distance between two locations – to what can be called logistical distance.

Any movement is linked to spatial flows and their patterns. The concept of flow has four major components:

- **Geographical**. Each flow has an origin and a destination and consequently, a degree of separation. Flows with high degrees of separation tend to be more limited than flows with low degrees of separation.
- **Physical**. Each flow involves specific physical characteristics in terms of possible load units and the conditions in which they can be carried. Flows, depending on the transportation mode, can be atomized (smallest load unit) or massified (moving load units in batches).
- **Transactional**.: Commonly, a flow is related to a monetary exchange between a provider of transportation services and the user.
- **Distribution**. Flows are organized in sequences where the more complex are involving different modes and terminals. Many transport flows are scheduled and routed to minimize costs or maximize efficiency, often through intermediary locations.

- Urbanization, multinational corporations, economic globalization are all forces shaping and taking advantage of transportation at different but often related scales.
- Consequently, the fundamental purpose of transport is geographic in nature, because it facilitates movements between different locations.
- Transport plays a role in the structure and organization of space and territories, which may vary according to the level of development.

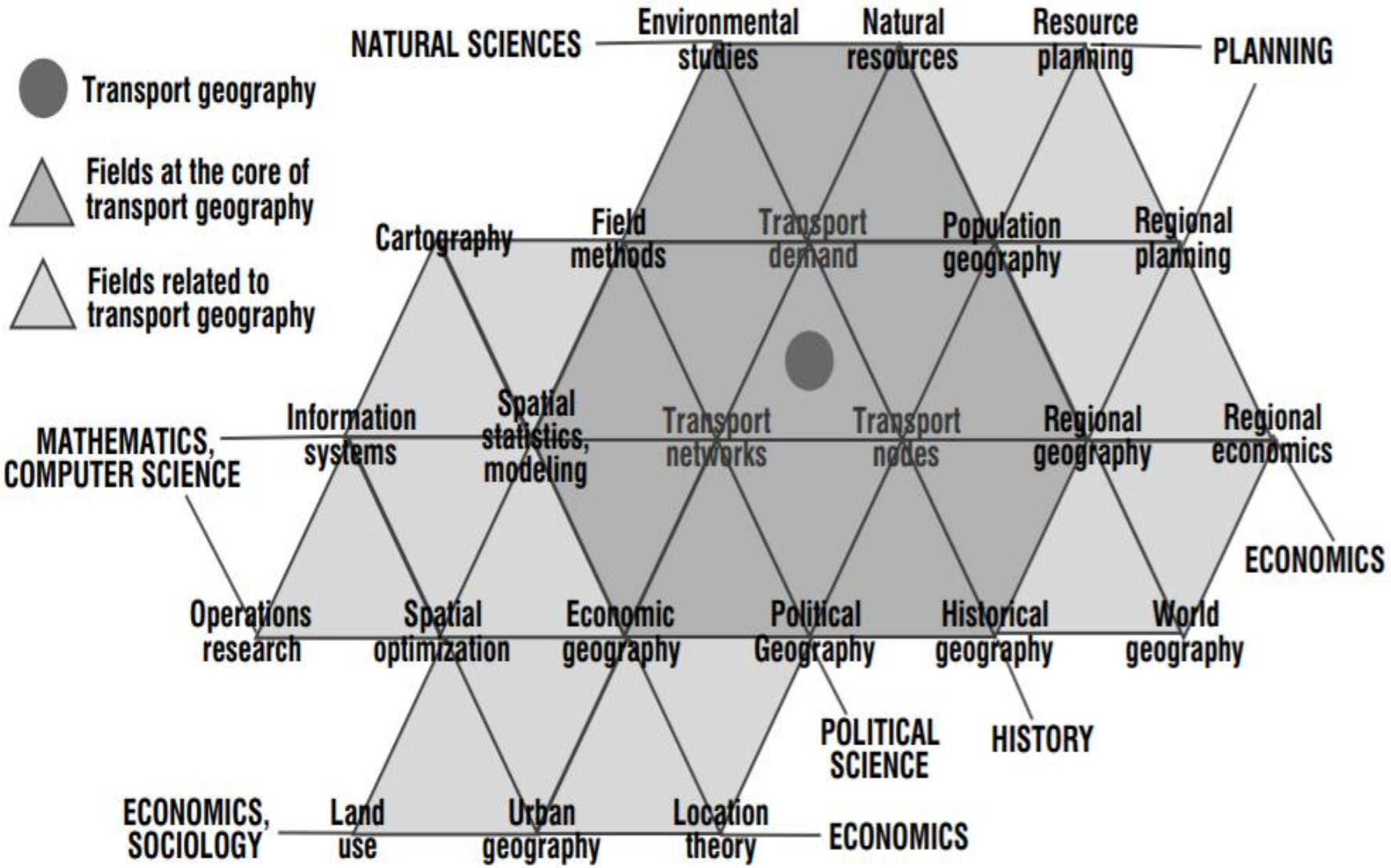
# Transport is a multidimensional activity whose importance is:

- **Historical**.
  - Transport modes have played different historical roles in the rise of civilizations (Egypt, Rome and China), their trading networks, in the development of societies, and in national defense.
  - As such, transportation offers a valuable perspective to understand historical processes at any scale; from a local to a nation.
- **Social**.
  - Transport modes facilitate access to healthcare, welfare, and cultural events, thus performing a social service.
  - They shape social interactions by favoring or inhibiting the mobility of people.
  - Higher mobility implies the potential for extended social interactions.

- **Political**.
  - Governments play a critical role in transport as sources of transport investments and as regulators of transport operations.
  - The political role of transportation is undeniable as governments often subsidize the mobility of their populations, such as providing highways and public transit.
  - Many transport infrastructures have been constructed for political reasons such as national accessibility or job creation. Transport thus has an impact on nation-building and national unity but is also a tool shaping policy.

- **Economic**.
  - The evolution of transport has been linked to economic development.
  - The transport sector is also an economic factor in the production of goods and services. It contributes to the value-added of economic activities, facilitates economies of scale, influences land (real estate) value, and the specialization of regions.
  - Transport is both a factor shaping economic activities and is also shaped by them.

- **Environmental**.
  - Despite the apparent advantages of transport, its environmental impacts are also significant. They include negative impacts on air and water quality, noise level, and public health.
  - All decisions relating to transport need to be evaluated considering the corresponding environmental costs and how they can be mitigated.
  - Transportation is, therefore, a dominant factor in contemporary environmental issues, including sustainability and climate change.




Fields of transport geography (Source: Haggett 2001)

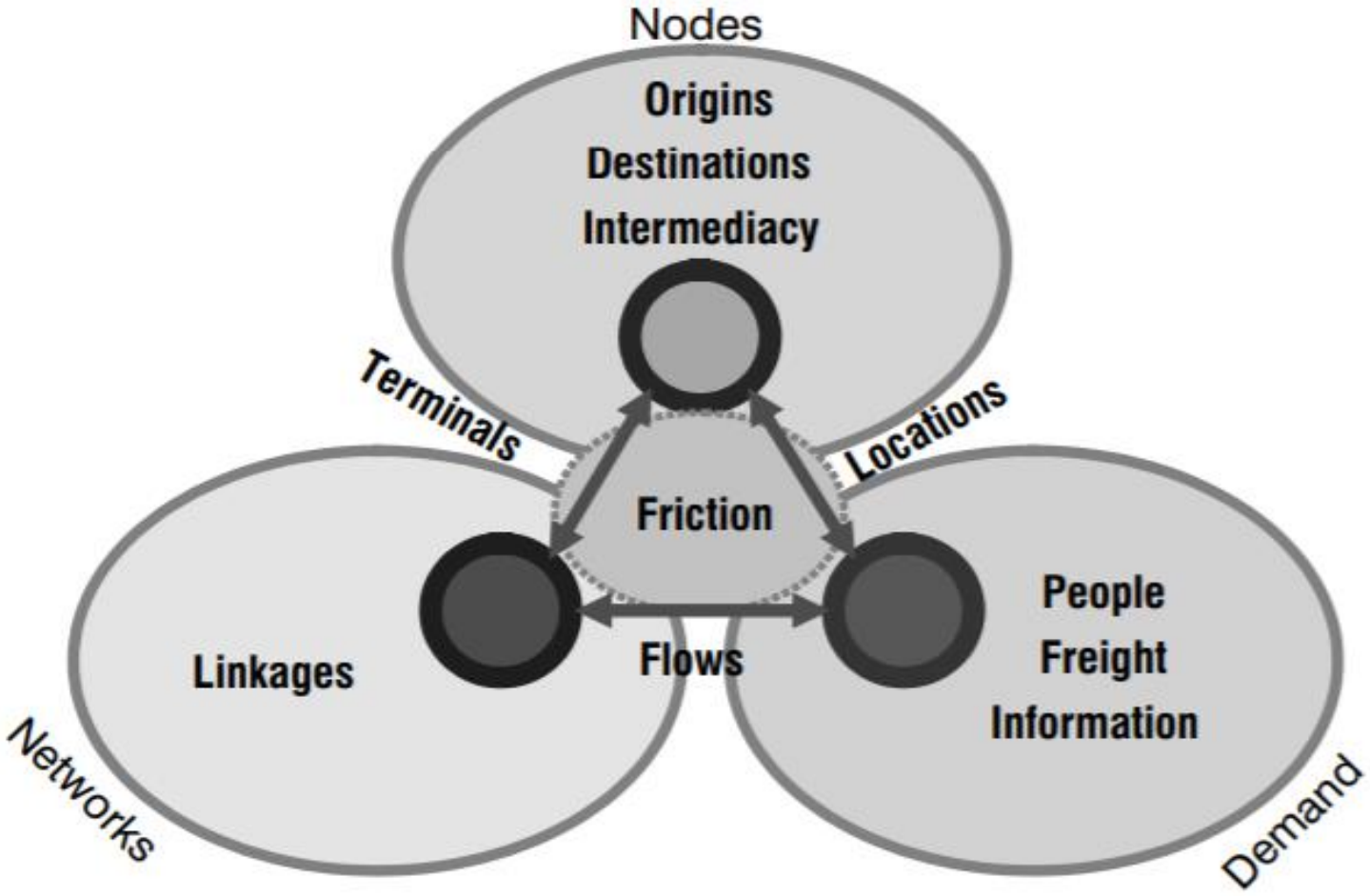
# The Importance of Transportation

- Transport represents one of the most important human activities worldwide as it allows us to mitigate the constraint of geography.
- It is an indispensable component of the economy and plays a major role in supporting spatial relations between locations.
- Transport creates links between regions and economic activities.
- It is composed of core components, which are the **modes**, **infrastructures**, **networks,** and flows. These components are fundamental for transportation to take place, but they also underline that geography, in spite of significant technological, social, and economic changes, remains a salient force shaping transportation.

There are twelve key concepts related to transport geography among which are at its core:

- transportation networks
- transportation nodes and
- transportation demand

They are closely linked to economic, political, regional, historical and population geography, among others.


Nodes
Origins
Destinations
Intermediacy
Terminals
Locations
Friction
Linkages
Flows
People
Freight
Information
Networks
Demand

- **Demand** for the movement of people, freight and information is a derived function of a variety of socio-economic activities.
- **Nodes** are the locations where movements are originating, ending and being transferred. The concept of nodes varies according to the geographical scale being considered, ranging from local to global (poles of the global economy ).
- **Networks** are composed of a set of linkages derived from transport infrastructures.

The three core relationships and the impedance (friction) they are subject to are:

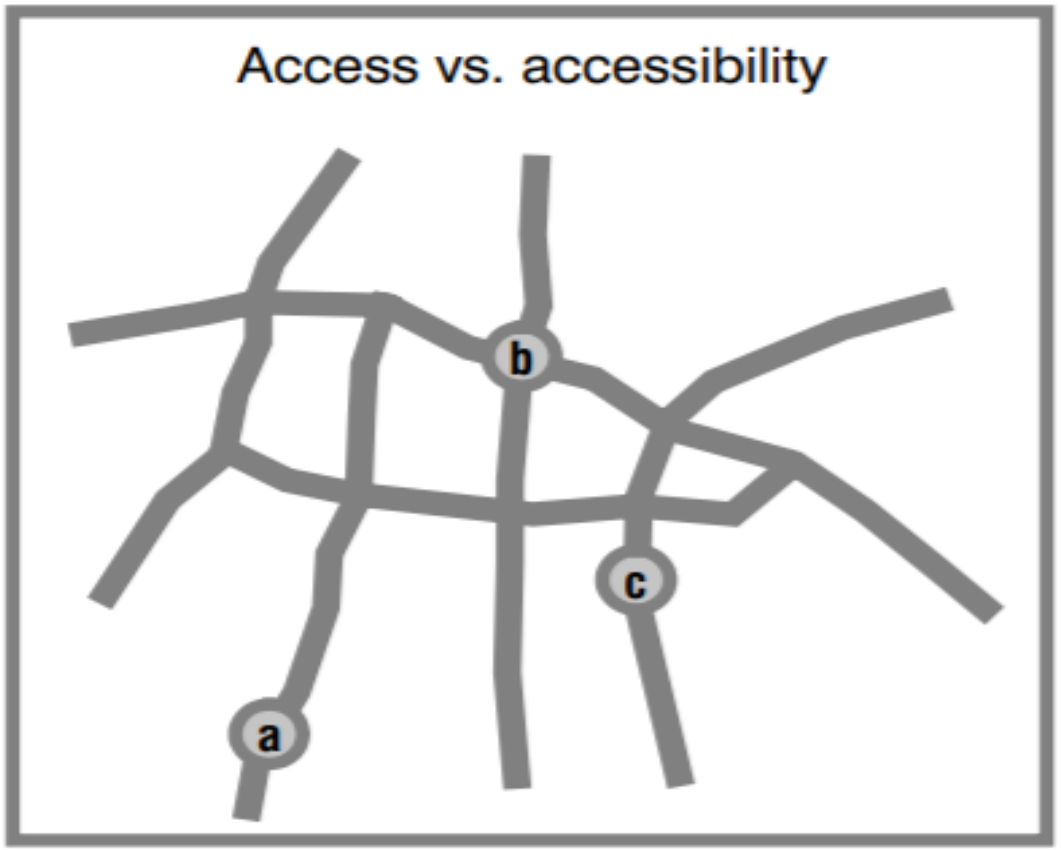
- **Locations**. The level of spatial accumulation of socio-economic activities jointly defines demand and where this demand is taking place. Impedance is mostly a function of the accessibility of nodes to the demand they service.
- **Flows.** The amount of traffic over the network, which is jointly a function of the demand and the capacity of the linkages to support them. Flows are mainly subject to the friction of space with distance being the most significant impedance factor.
- **Terminals.** The facilities enabling access to the network as terminals are jointly characterized by their nodality and the linkages that are radiated from them. The capacity of transport terminals to handle flows is the main impedance factor.

Substantial empirical evidence indicates that the importance of transportation is growing. The following contemporary trends can be identified regarding this issue:

- **Growth of the demand**.
  - Considerable growth of the transport demand related to individual (passengers) as well as freight mobility.
  - the longer distances are carried.
  - Mobility growth, which has led to the multiplication of the number of journeys involving a wide variety of modes that service transport demands.
- **Reduction of costs**.
  - Even if several transportation modes are very expensive to own and operate (ships and planes for instance), costs per unit transported have dropped significantly over recent decades.
  - Overcome larger distances
  - As a result, despite the lower costs, the share of transport activities in the economy has remained relatively constant in time.
- **Expansion of infrastructures.**
  - The above two trends have obviously extended the requirements for transport infrastructures both quantitatively and qualitatively. Roads, harbors, airports, telecommunication facilities and pipelines have expanded considerably to service new areas and add capacity to existing networks.
  - Transportation infrastructures are thus a major component of land use, notably in developed countries.

# Access is not accessibility

- Many transport systems have universal access; no specific user can have a competitive advantage over others since access is the same for anyone.
- For instance, a public highway system can in theory be accessed by anyone, for example by a major trucking company having a large fleet, its competitors, or by an individual driving an automobile.
- Thus, access is **uniform** wherever one is located in regard to the transport system as long as there is a possibility to enter or to exit.
- On the other hand, accessibility varies according to one's location within the transport system.
- Access is thus uniform while accessibility is not; the latter is a relative concept.




**Location b appears to be more accessible than the other two due to its central location in relation to the network.**

# Distance is not time

Distance often tends to be interchanged with time when measuring the performance of transport systems, which is a conceptual error.

While distance remains constant, time can vary due to improvements in transport technology or because of congestion .

Distance is thus a uniform attribute of the geography, while time is relative.

# THANK YOU