Transport as a Large Historical Factor

A Case Study in New Philosophy of History

Dan Little
University of Michigan-Dearborn
“New” philosophy of history

• A backwater in philosophy
• An important set of questions worthy of philosophical analysis
• A new approach: pay close attention to the best practice of leading historians
The task

– The task of the philosophy of history as I will pursue it is to analyze and assess the practice of outstanding historians in order to uncover the assumptions they make about the goals of historical inquiry, the ways in which evidence, theory, and inference can lead to discoveries within historical disciplines; and to identify some of the conceptual and methodological difficulties that arise in the practice of historical investigation.
Conjunctural contingent meso-history

- Conjunctural: many independent factors converge
- Contingent: outcomes are not determined; agency and structure
- Meso-level: not grand history, not localistic; but at an intermediate level of comparison and contrast
The defining question in this paper

- in what ways does transportation function a large-scale factor in historical change? What can we learn about processes of change across historical contexts by studying this case?
- Transportation is intermediate between the highest level constructs—“technology”—and more local constructs—“water mills in the ancient world”. Transportation intersects with technology; but it also has much to do with social purposes, economic processes, and the interests of powerful agents in society. Sheds light on the imperatives that lead to innovation in transportation technology, as well as the down-stream effects that important innovations have.
Questions to ask

• How does the development of transport affect history—political power, state intensity and pervasiveness, settlement and urbanization, economic integration?

• Does consideration of the logic of transport and innovation provide a theoretical basis for prediction of outcomes as a result of a given type of transport system or a given kind of innovation?
Questions (cont)

• Are there useful generalizations about transport in history (analogous to "hunger in history", population, war, environment, technology)?

• What drives the development of transport systems?

• What is the importance of the "system" side of the issue? Are there interesting system properties that have historical effects?
• Are there useful differentiations to make in different settings—where transport has had significantly different pattern of development or different effects (e.g. Skinner on cities, or Hughes on different technological “styles”)?
Cases

- Illustrations of transport and its social effects
Cases

- Rail and military power
- Trolley systems and patterns of settlement
- Water transport and Chinese history
- Chicago’s metropolitan development
The suburbs of Boston

• Thesis: the extension of streetcar lines into land west of Boston before 1900 created new opportunities for working people in Boston that led to patterns of settlement resulting in the western suburbs.

• Samuel Bass Warner, Streetcar Suburbs
Map 6. The three towns in 1870

typicality. Twentieth century observers have coined the term "subur-
Map 3. Street railway tracks, 1872
Map 4. Street railway tracks, 1886
Map 5. Street railway tracks, 1901
Amount of rail service 1872-1901
Rate of new residential construction 1872-1901
Central places of Sichuan

• Thesis: The constraints of transport costs created (1) a hierarchy of central places from hamlet to market town to city, and (2) a spatial arrangement of places that conformed to the hexagonal arrays predicted by central place theory.

• G. William Skinner, Marketing and Social Structure in Rural China
Macroeconomics of China

Map 1. China’s macroregional systems in relation to provinces, showing metropolitan cities, 1990
Sichuan central places
Sichuan central places
Sichuan central places
Water transport in China

- Thesis: water transport was a fundamental variable in structuring social and economic activity in pre-modern China, leading to patterns of habitation, commerce, and the flow of ideas and innovations.
- G. William Skinner, Regional Urbanization in Nineteenth Century China
Marketing systems in pre-modern China

• Thesis: water transport was a fundamental variable in structuring social and economic activity in pre-modern China, leading to patterns of habitation, commerce, and the flow of ideas and innovations.

• It is possible to document the spatial spread of places over time.

• Mark Elvin, Market Towns and Waterways
Map 1. Southeastern Kiangnan, ca. 1660. Underlining indicates centers of administrative units in which the dike administrator system is known to have been in operation around 1600 (only Hoing-hua, off the map to the north, is not shown). The distribution of these centers suggests that both the need to drain Lake T'ai and the particular circumstances of the cotton belt may have played a part in the creation of the system.
Map 2. Market Towns in the Vicinity of Shanghai, ca. 1470
Map 3. Market Towns in the Vicinity of Shanghai, ca. 1600
Chicago’s metropolis

- Thesis: the emergence of Chicago as the major rail hub in the midwest created an economic dynamic that
  - shaped the city and its environs
  - stimulated the emergence of new business organizations and technologies
  - structured economic activity throughout a vast region
- William Cronon, Nature’s Metropolis
The Franco-Prussian War

• Thesis: the French rail system had developed extensively throughout the mid-19th century. The system had specific characteristics:
  – “hub and spoke” system centered on Paris
  – administrative organization was weak

• Poor performance of the system in moving troops and material in 1870 represented a major cause of the French collapse in the Franco-Prussian War.
Institutional logic

– Individuals have a set of purposes; movement of people and goods influences their ability to achieve these purposes; individuals will adapt opportunistically to the opportunities and constraints created by the transport system; and large social patterns (e.g. patterns of settlement, market integration) emerge as the consequence of the large number of independent actions and choices made by individuals in the population.
Modes of influence

- settlement patterns
- market integration and commercialization
- patterns of social interaction over space (transmission of ideas and movements)
- amplification of military power and flexibility
- effectiveness of state power
Characteristics of transport systems

- material variables--speed, reliability, volume, cost
- technological factors--pace and nature of innovation
- system factors
- managerial factors
- social factors
Transport technology change

- gradual change over an extended time
- significant “revolutionary” change--steam replaces wind
- The Thomas Hughes points about how technology systems develop
- national cultures of technology change and preference
- path dependency, stalled development, blind alleys
hypotheses about the causal influence of transport

- transport innovation $\Rightarrow$ settlement, concentration, rising population density through market mechanisms. Greater demand density, greater flow, greater incentive for collateral innovation and institutional development.
Hypotheses (cont)

- new transport link $\Rightarrow$ rapid diffusion of ideas, tastes, fashions
- new transport link $\Rightarrow$ rapid diffusion of disease
- Improved transport $\Rightarrow$ amplification of the projection of military power
Mechanisms of causal influence

• Institutional logic: incentives, opportunities, constraints
• Entrepreneurial, opportunistic behavior
  – consumers
  – investors
  – officials
• Network and settlement patterns emerge as result
Mechanisms

- “At any given time the arrangements of streets and buildings in a large city represents a temporary compromise among such diverse and often conflicting elements as aspirations for business and home life, the conditions of trade, the supply of labor, and the ability to remake what came before” (Warner 1962:15)
constraints

• capital investment in network (roads, ports, rail system)
• system operating conditions--through-put, cost/unit, velocity, capacity, regularity
• network coverage
Predictable consequences

- settlement is densest where transport is most available and inexpensive
- markets move towards greater volume and integration when transport becomes more effective
- states with superior transport can project military power more effectively
Contingent consequences

• Chicago rather than St. Louis; Seattle rather than Port Townsend; the bypassing of Worcester
• contingent early technology choices create inertia. VHS/Betamax
• political and regulatory choices also important and different across countries--England, France, US
Contingent consequences (cont)

- Both “structure” and “agency”
- The point here is that agents make a difference, because transport and its technologies have great inertia. Once the system design is set, many of its properties are difficult to change. And these system properties have large potential consequences.
Unintended consequences

• creation of suburb-city-exurb divides
• transport of criminal activity, epidemic disease
• social inertia of early choices--e.g. auto over rail
• social disruption from failures of transport system
• diffusion of rebellion through marketing channels (Hsieh)
Conclusions

• Transportation is a plausible instance of a “portable” large factor
• There is enough systematicity to transport to permit analysis and prediction
• Transport provides a basis for some degree of generalization across historical contexts
• Transport represents an instance of significant “contingent and conjunctural” variability across contexts.