

## **Presidential Address, 1982: Transportation in Business History**

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The opportunity to speak to you tonight in this city provides a bit of nostalgia for me, for all of my college years were spent just a few miles from here at the University of Minnesota. And it was just 20 years ago that I completed graduate study and began my academic career at Northwestern University.

Twenty years does somehow seem to entitle one to reflect at least briefly on accumulated experience, although I am not sure whether that entitlement springs as much from the value of the experience as from the expiration of the statute of limitations! In any event, I would like to take this occasion tonight to make three broad observations about transportation history in the context of American business history and to try to illustrate these generalizations with some supporting evidence. These generalizations pertain to (1) the historiography of American transportation, (2) the role of technological change in the transportation industry, and (3) transportation and public policy.

### **THE HISTORIOGRAPHY OF THE AMERICAN TRANSPORTATION SYSTEM**

Let me start with the observation that the body of transportation-history literature is at the same time voluminous in extent and surprisingly uneven in coverage. This imbalance is evident in terms of the attention given to the different modes of transportation, the type of historical studies undertaken, and the time periods involved.

For example, historians have examined nineteenth century railroads and canals in great detail, both as powerful engines of economic development and as fascinating business enterprises [12,

15, 31, 37, 22]. However, the literature on these modes in the twentieth century is quite another matter. In the case of the railroads, we do find a significant number of books and articles about individual companies and specific twentieth-century railroad problems. Unfortunately, the number of volumes which integrate these micro studies into broader perspectives are relatively few and far between. More than half of the life-span of the railroad industry now falls in the present century, and I for one hope that we shall soon see this fact reflected in additional integrative studies along the lines of John Stover's and Albro Martin's fine volumes [35, 25].

In the case of canal transportation, that industry for all practical purposes was a nineteenth century industry. Yet there is a twentieth-century counterpart known as the inland waterways industry, which has existed for over half a century, consumed billions of taxpayer dollars, and played a significant role in both the industrial and agricultural sectors of the economy. Historical notice of this industry, however, remains virtually nil.

If we turn to other modes of transportation, we find a similarly uneven picture. For example, while the American maritime industry prior to the twentieth century has attracted considerable historical attention [20, 3, 4], the present century has been left largely to economists and political scientists repeatedly analyzing the deficiencies of public policy toward the industry [16, 23, 7]. Historians have exhibited relatively little interest in either the changing technology of the ocean transportation system or the fortunes of twentieth-century shipping companies.

To a large extent this pattern also holds true for the nation's seaports. The limited historical attention devoted to American ports, even preeminent ports such as New York and San Francisco, centers on the nineteenth century. Except for an occasional study such as Marilyn McAdams Sibley's history of the Port of Houston [34], the twentieth century remains the province of economists and geographers engaged in endless calculations of the local economic benefits created by various levels of port activity [2, p. 167].

Commercial aviation, a strictly twentieth-century mode of transportation, fortunately has begun to attract considerable historical interest, especially since the industry celebrated its 50th anniversary in the mid 1970s. Scholarship to date has focused on pioneer entrepreneurs such as Juan Trippe and Eddie Rickenbacker, on individual firms such as Delta Airlines, and to a much lesser extent on public policy [9, 32, 33, 24]. However, historians have yet to address, in any substantial way, air

transportation from an industry-wide perspective, the economic and social impact of this mode (including its revolutionary impact on the tourism industry), or the historical development of the nation's airports, which are really the union passenger stations of the post-World War II era.

Most surprising of all to me is the scant historical attention which motor vehicle transportation has received. Social observers have long characterized the period since the 1920s as the age of the motor vehicle, whether viewed from its pivotal role in our economy or its broader impact on society. Yet aside from a few accounts of leading entrepreneurs and firms in the automobile manufacturing industry and the pioneering automobile history efforts of John B. Rae and James J. Flink [38, 27, 28, 13], the historiography of this most ubiquitous mode of transportation is remarkably thin. The same holds true for the motor bus and motor truck segments of the industry, where we find only a handful of monographs and articles, most of which pertain to specific firms [8, 29, 11].

I am frankly puzzled why a transportation mode of such momentous scale and consequences as motor vehicle transportation has been so neglected. In the case of the automobile, perhaps the explanation lies precisely in the fact that it is ubiquitous, and that it is a fundamentally private form of transportation as well. After all, its predecessor, the common everyday family horse, never attracted much historical attention either! However, in the case of trucking the ubiquitous everyday use of trucks for private transport represents only part of the industry. Trucking also contains an enormous public dimension which makes the historical neglect both less understandable and less acceptable.

By virtually any yardstick one might use, except gross ton-miles, the for-hire or public segment of the trucking industry has been the preeminent mode of freight transportation in the United States for nearly a quarter of a century. The speed and decisiveness with which trucking asserted itself can be seen in the annual revenues of motor carriers regulated by the Interstate Commerce Commission, a category which constitutes less than half of the trucking business in the country. In 1945 revenues of ICC-regulated motor carriers were only 21 percent as large as railroad industry revenues; five years later in 1950 trucking revenues were 47 percent of railroad revenues; 12 years later in 1962 trucking revenues were equal to railroad revenues; and 12 years later still, in 1974 trucking revenues were nearly 50 percent greater than railroad revenues [1, pp. 35-36].

Moreover, we intuitively know there has been an extremely important relationship between growth of the motor carrier

industry and the character of American economic development since World War II. Trucking has been the driving force in the decentralization of the nation's manufacturing and distribution just as the automobile provided the impetus for the suburbanization of American housing. The focal point of manufacturing and distribution in the United States no longer lies in the central business district of our major cities, but rather along the belt line highways which the Interstate program placed around those cities.

The dramatic success of the trucking industry, along with some of the other twentieth-century transportation developments I have mentioned, clearly deserve a more prominent place in our historical literature. I hope we shall soon begin to respond to this challenge.

#### THE ROLE OF TECHNOLOGICAL CHANGE IN THE TRANSPORTATION INDUSTRY

The second generalization I would like to make is that transportation history offers one striking example after another of the decisive role of technological change in business history. To illustrate the powerful impact of this process within a single mode of transportation, we might reflect briefly on the experience of the ocean shipping industry.

At the beginning of the nineteenth century, merchant ships were very small, had wooden hulls, and were powered by sail. By the middle of the nineteenth century, the typical vessel had grown considerably (putting historic ports like Salem out of business), some ships had iron hulls, and steam propulsion was increasingly used in combination with sail. By the end of the century, vessels were larger still, steel hulls had become commonplace, and sail power very rare.

Nor, obviously, did the process stop there. In the twentieth century, coal-fired boilers gave way to oil-fired boilers and diesel engines, vessels became increasingly specialized by function, shipboard tasks became mechanized and automated, and vessels grew to such proportions that by 1970 many tankers and bulk carriers were too large to enter the principal ports of the world and the Suez and Panama canals [2, pp. 174-75], and a few vessels were so gigantic that they were unable to traverse such historic sea lanes as the English Channel and Straits of Malacca. As you can well imagine, the consequences of these technological changes on the fortunes of shipbuilders, shipping companies, investors, maritime labor groups, individual ports, national economies, and even world politics have often been of revolutionary proportions.

Striking evidence of the decisive role of technological change in transportation history can also be seen in relationships among the different modes of transportation. At the beginning of the nineteenth century, domestic transportation in the United States consisted of coastal shipping, navigable rivers, and primitive roads [37, pp. 3-31]. The development of steam-powered vessels for use on rivers and in coastal waters, plus various canal projects, reinforced the dominance of water transportation for a few decades; but as this group well knows, by 1850 a new form of technology called the railroad was rapidly achieving leadership.

Following the Civil War the superiority of railroad technology, coupled with aggressive business practices, effectively eliminated water transportation as a serious competitive force. However, the de facto monopoly which the railroad industry built on superior technology itself began to disintegrate in the twentieth century as a result of other technological developments.

For example, during the 1920s the automobile and the motor bus began to conquer the short-haul passenger train, and following World War II the airplane began a similar assault on the long-distance passenger train. I might also note that during the latter period the airplane similarly drove the ocean passenger ship out of business except as a cruise vessel [5, pp. 240-42]. Meanwhile, the motor truck first attacked the railroad industry's traditional local-way freights and their LCL traffic; then as the highway system matured, vigorous truck competition was extended to long-distance trains and carload traffic, especially involving agricultural products and manufactured goods.

At the same time, the canalization of major rivers, the development of new towboat technologies, and break-throughs in laying and operating long-distance, high-capacity pipelines resulted in the nation's enormous petroleum traffic moving out of the traditional railroad tankcar and into barges and underground pipelines. Still more recently, technological advances have made it economically feasible to move large quantities of electric power over great distances, thereby providing an alternative to the transportation of coal and oil to electric-generating plants near the point of consumption.

Although time limitations have made it necessary to sketch these examples with broad brush strokes, I believe that these examples do underscore the fact that technological change has been and remains the dynamic element in transportation history. The waxing and waning of individual, corporate, and community fortunes which have occurred as a result of this powerful process

are what ultimately make transportation history such an intriguing subject.

## TRANSPORTATION AND PUBLIC POLICY

The third observation I would like to make is that I have long been impressed by the frequency with which the transportation industry has been on the cutting edge of policy in the United States. Much of the explanation for this phenomenon no doubt lies in the fact that from the earliest days of the republic American policymakers recognized that transportation played a unique and critical role in the well-being of society. This in turn gave society a special stake in transportation matters and a legitimate basis for intervening to affect the industry's development and performance.

However, we should note that the process of technological change discussed above also has contributed to transportation's prominent place on the public agenda. In every sector of society there is a dynamic relationship between the level of technology which exists and prevailing institutional arrangements and social values. Significant changes in technology inevitably create corresponding pressures for changes in institutional arrangements and social norms. The primary challenge of public policy has always been to make the institutional adjustments needed to deal with the disturbances caused by technological change.

Beginning with Albert Gallatin's landmark report in 1808, the pre-Civil War policy agenda at both the state and federal level was filled with proposals for internal transportation improvements, discussion about the technologies to be used, and debate over the appropriate role of the various levels of government and the private sector in accomplishing these objectives [15, 18].

The post-Civil War period saw the public agenda shift from the promotion of transportation to its regulation, as state and federal policymakers sought to find institutional arrangements capable of protecting the public interest from the private power created by railroad technology [6; 22, pp. 75-136]. Economic regulation of the railroads, together with regulatory initiatives involving steamboat boilers and other aspects of transportation safety, were really the prototypes of what in the twentieth century became comprehensive government regulation of business generally.

During World War I the breakdown of American railroad operations, together with growing regulatory tensions, led to

another striking departure in public policy, the nationalization of an entire basic industry [21; 25, pp. 319-51]. The rather mixed results of this experiment caused the federal government to retreat quickly, and in the Transportation Act of 1920 Congress sought to construct a permanent regulatory solution to the social and economic problems presented by this largest of all American industries.

Unfortunately, neither technology nor Congress itself would cooperate with this unprecedented attempt to legislate permanent stability. As we have already observed, the transportation industry in 1920 was embarking on an extended period of rapid technological change and growing intermodal competition, a process which Congress accelerated by generous infusions of public capital to nonrail transportation.

By the 1970s transportation as an object of public policy found itself coming almost full circle. For example, in the northeastern United States the secular decline of the region's economy, coupled with the uneven nature of federal promotional and regulatory policies, led to the physical and financial collapse of Penn Central and other railroads serving the region [30]. Congress found it had no practical alternative except to turn to public ownership. Thus, in the same region where the Pennsylvania's Main Line system of the 1830s sought to develop a vital transportation artery and promote economic development, Conrail in the 1970s sought to preserve transportation services essential for regional economic survival. The fact that both enterprises had the same city as a focal point and depended upon public capital to meet a public need caused at least a few historians to have a distinct sense of deja vu.

Finally, I would note that the 1970s also brought the policy agenda nearly full circle in regard to transportation regulation. The public utility model of economic regulation which the federal government applied to railroads in the late nineteenth century and extended to other modes of transportation in the twentieth century was finally recognized as being technologically and economically inconsistent with the inherently competitive nature of post-World War II transportation services [14, 19, 10, 26].

This resulted in a series of administrative and legislative steps at the end of the 1970s which served to deregulate the airline and trucking industries [36, 17], and a major portion of the railroad industry as well. The industry where comprehensive federal economic regulation of business began a century earlier thus became the first industry to experience the repeal of such regulation. Both actions were unprecedented in their day. The passage of time has enabled us to learn much about the origin of transportation regulation and its historical consequences, but in

the case of the deregulation movement we are, at best, only contemporary observers. We shall have to wait for the next generation of transportation historians to provide the definitive report on this bold experiment.

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# **Managers and Entrepreneurs in Regional Industrialization**