For the past few years I have been examining two developments in the history of freight transportation that I now realize were closely related to one another. One is the strategy the federal government followed after the Second World War when regulating freight transportation. The other is the origin of cargo containerization in the 1950s. This audience hardly needs to be reminded that federal transportation policy and cargo containerization remain matters of central importance to today’s railroad industry. You also know that since the 1970s, freight transportation in America, as in the rest of the world, has been transformed by containerization, deregulation, intermodalism, digitization and globalization. But reciting this litany of change agents is not very helpful, for these broad terms obscure more than they illuminate. If we really want to understand what happened, we need to describe each of these developments as precisely as possible in the historical contexts in which they occurred. In this paper I will try to demonstrate how this can be done.
Historical studies of federal transportation policy, like nearly all other studies of transportation as well, have for the most part been conceived and written in modal terms. This approach may simply be a matter of convenience. I am inclined to believe, however, that most historians and policy analysts regard the different modes of transportation as natural elements, the fundamental units that give rise to the properties of the whole. Whether or not I am right about this, the modal approach has long dominated transportation studies, and by its very nature it has directed attention away from political and industrial efforts to create policies and systems that are more than aggregations of competing modes.

Although it is now largely forgotten, during the first half of the twentieth century there was in the United States a sustained effort to organize the modes of surface freight transportation into a coordinated system capable of providing the nation with efficient, reliable transportation services. The Interstate Commerce Commission was charged with the task of implementing this policy. In the 1970s, however, when this regulatory strategy had manifestly failed, the government turned first to deregulation and then to promoting modal integration, what we now call intermodalism.

There are important differences between the earlier government-directed effort to promote modal coordination and current industry-driven efforts to increase intermodalism. Today, companies that provide transportation services are encouraged to respond to market signals without first seeking permission from federal regulators. It should also be noted that the transition from the earlier regulatory approach to decision-making to today’s market-based approach only came about after a dramatic and exceedingly messy policy failure, and not through a gradual evolution.
Following the bankruptcy of the Penn-Central Railroad in 1970, “one of the biggest business failures in United States history,”\textsuperscript{1} the failure of the Interstate Commerce Commission’s prolonged attempt to coordinate surface freight transportation could no longer be denied or tolerated. Like the fall of the Bastille in France in 1789, this collapse of America’s foremost railroad company marked the end of an Old Regime and the beginning of a period of revolutionary change. The railroad revolution, again like the French Revolution, lasted ten years and involved further bankruptcies and frenzied federal efforts to salvage essential railway assets. In the end the government, through the Staggers Act of 1980, essentially told the railroads to look to their markets and reorganize themselves accordingly.

The old regime was officially over and a new era had begun. But during the last years of the old regime of railroading, and before it was clear how the new regime would be constructed, another sector of surface freight transportation, one that had no direct connection with the railroads, was undergoing its own revolution. In 1954 Malcolm McLean, a hard-driving businessman and the owner of America’s second largest interstate trucking company, gathered his salesmen together for a dinner at the Waldorf Astoria. There he revealed his plan to begin packing the goods moved by his trucks in strong, trailer-sized cargo boxes. These boxes would then be moved by rail or ship between terminals along the Atlantic coast. Two years later McLean loaded his first cargo-carrying containers onto the deck of the \textit{Ideal-X} and sent them off to Houston, Texas. There the boxes were placed on trailer chassis and delivered to their destinations, while another set of boxes bound for Newark, New Jersey, was swung aboard ship for the return voyage. The container revolution, a revolution that eventually transformed freight service worldwide, was underway.
I will now try to convince you that there is a common element, one that I have only recently perceived, that links the story of the first ten years of the container revolution -- the years between 1956, when McLean sent the Ideal-X to Houston, and 1966, when he sent his first containership to Europe -- and the epochal failure of railroad regulation in 1970. This common element is the ICC’s attempts to implement federal transportation policy during these years. The rise of containerization and the deregulation of the railroads were both shaped, if in somewhat different ways, by a federal policy designed to promote and coordinate multi-modal surface freight transportation. This connection has not previously been noticed because the container revolution and the Penn-Central bankruptcy have traditionally been analyzed in strictly modal terms. That these two revolutions were part of a larger story becomes evident, however, when one focuses on federal transportation policy and the ICC’s efforts to implement it.

Federal transportation policy and the ways it was implemented evolved over time, and the issues addressed grew increasingly complex as new modes of transportation were brought on line and carved out market niches for themselves. The basic structure for federal regulation was laid out in the Interstate Commerce Act of 1887. At the outset this Act addressed what was then identified as “the railroad problem,” a phrase that encompassed all the politically vexing consequences of frenzied railroad building and rapacious operational practices that were beyond the control of the states that chartered the railroad companies. The Interstate Commerce Act called for the creation of an expert Commission, the ICC, and gave it broad powers to regulate railroad operations. The ICC was the first such expert regulatory commission, and for many decades it served as the prototype for other federal regulatory agencies as well.
As you know, the ICC was abolished just before the end of the twentieth century. It was a long time dying. Over a quarter century ago, two decades before the Commission’s formal demise, the opening sentence of a new history of the ICC announced that “nearly everyone agrees that the Interstate Commerce Commission has failed.” Although the ICC is now long gone, scholars are still tracing out how its creation and its activities during the years in which it wielded great regulatory authority helped shape the history of transportation in America.

The story of how the ICC evolved from being solely concerned with railroads to being broadly responsible for regulating surface freight transportation begins in 1912, when the Panama Canal was nearing completion. Congress was at that time understandably eager to ensure that the tolls ships paid for using the Canal would cover its costs. The legislators knew that the railroad companies that carried freight across the continent had opposed building the Canal. They also knew that during the nineteenth century railroads had bought up steamship lines operating along the Atlantic and Pacific coasts and then managed them so as to maximize railroad profits. If the Canal was going to fulfill the naval and commercial expectations of its advocates, the great rail companies had to be prevented from capturing the intercoastal cargo that the Canal’s backers expected ships to carry through the Canal. To that end, the Panama Canal Act passed by Congress in 1912 amended the 1887 Interstate Commerce Act by adding a provision stating that no ship that used the Canal could be owned by a U.S. railroad. Congress’ fears were well founded, for once the Canal had opened, the affected railroads reduced their freight rates and increased the services they offered to transcontinental shippers.

The Panama Canal Act turned out to be the first in a series of such amendments to the Interstate Commerce Act. In 1912 the goal was to
restrain the power of the railroads, but less than a decade later the railroads were in dire need of governmental assistance. The limitations of the nation’s transportation system became painfully evident during the rapid run-up to U.S. entry into the First World War, and the federal government found itself forced to take over and operate the railroads until the war ended. When the railroads were returned to private operation, the ICC’s mandate was again amended. Its new purpose, as stated in the Transportation Act of 1920, was to guarantee that the nation had an overall surface freight transportation system capable of meeting its commercial and military needs. The ICC was to rationalize the nation’s rail system and monitor its performance so as to keep the railroads healthy. Later, when the Great Depression knocked the wind out of the fledgling interstate trucking industry, Congress again expanded the ICC’s mandate. The Motor Carrier Act of 1935 directed the ICC “to stabilize the [trucking] industry by creating a legal cartel that limited competition to the few so that they might prosper.”

Congress was increasingly directing the ICC to coordinate domestic transportation so that each mode provided the services for which its technology gave it a distinct competitive advantage. But how was each mode’s proper arena to be identified and defined? This age-old challenge to those tasked with regulating economic activity was never resolved. Modal competition remained intense, with each mode of surface freight transportation aggressively defending its turf as new technologies were introduced and as the economy that the transportation industry served changed rapidly in war and peace. Legislative oversight and the administrative efforts of the ICC Commissioners succeeded in imposing some order on modal competition, but little thought was given to finding a better way to achieve modal cooperation and greater overall efficiency.
The railroads remained both the largest and the weakest component of American transportation. In 1940 Congress again addressed the industry’s problems, and the Transportation Act passed that year again expanded the ICC’s mandate. The Commission was given the additional tasks of regulating coastal and inland waterways and interstate pipelines, modes of domestic transportation that competed with the railroads, but this only intensified the problem as antagonism between the competing modes became increasingly sharp and embittered. One of the last acts in this saga of regulation was the Transportation Act of 1958, which gave the railroads greater freedom to alter as they saw fit the services they provided and the rates they charged. The government remained committed to a strategy of coordinating through regulation the competing modes of surface freight transportation, even though the strategy was clearly not delivering the levels of service desired.

Modalism, the single-minded championing of one’s own system for moving cargo, had triumphed. It was a way of thinking to which neither the government nor the industry was explicitly committed, but no better approach to solving the problems besetting surface freight transportation was being seriously considered. This unyielding fixation on modalism should not, however, lead us to assume that modalism is the ‘natural’ way to think about transportation. It now seems clear that the ICC’s regulatory program failed because it remained hostage to modal thinking. The scope of the ICC’s authority was repeatedly expanded, but no strategy for making the transition from modalism to a dynamic and evolving intermodal industry was developed. Goods were being carried to factories and markets by self-regarding and self-serving modes that were pulling against one another rather than pulling together. A kind of lightly-
referred modal anarchy reigned, and its costs were becoming insupportable.5 Let us now turn to the origins of the kind of cargo containerization that Malcolm McLean introduced in the 1950s. Why in the early 1950s did McLean, the owner-operator of the second largest interstate trucking company in the country and a highly successful businessman, decide to pack the goods hauled by his trucks in trailer-sized containers and move those boxes from port to port along the Atlantic Coast on ships that had been specially fitted out to carry them?

Before plunging into the specifics of the McLean story, I should point out that it has a bearing on another interesting subject as well, the question of how, where and why innovations arise. Economic historians, building on Joseph Schumpeter’s writings of innovation, find this question especially interesting. When the origin of an innovation is a scientific discovery or an invention, the source can usually be easily identified, but in the case of low-tech innovations, such as containerization, the origins of novel ways of doing traditional tasks are seldom obvious. There is, of course, no doubt that containerization is an innovation of great consequence, but the few accounts of its origins that have been advanced are largely speculative and unconvincing.

Some commentators have argued that although Malcom McLean may not have been the first person to propose packing freight in large boxes, he alone saw the potential value of using standard-sized cargo boxes on a large scale. This view, while plausible, can only succeed if we ignore the contemporary efforts of other maritime carriers such as Matson Lines, which was looking into containerization at the same time as McLean, and Grace Lines, which independently jumped into containerization. In fact, the idea of putting cargo in large, moveable boxes was not original with McLean, and in any case, the epiphany
explanation of innovation – “it just came to me one day!” -- is really not very helpful in explaining how a major industry come to be transformed by innovation.

When asked when he first thought of containerization, McLean often said the idea came to him in 1937. He had been forced to spend an entire day on the docks in Hoboken, New Jersey, while waiting to have cotton bales he had hauled north unloaded from his truck and stowed in the hold of a freighter. Wouldn’t it have been better, he thought, if his trailer could simply have been lifted aboard? This is, I believe, a credible story of the origins of containerization, even if McLean slightly embellished what actually occurred on that day in Hoboken. As I have pointed out in a paper that has not yet been published, it is highly likely that during that day of enforced leisure McLean took a good look at the Seatrain terminal in Hoboken. Seatrain was a niche company that carried loaded railroad freight cars in a liner service that called at New York, Havana and New Orleans. In each of these ports large shoreside gantries lifted the rail cars on and off Seatrain’s specially equipped ships, and each ship could carry up to 100 cars. The similarities between Seatrain’s system of cargo handling and McLean’s later Sealand system are obvious, although the two systems were not entirely identical.

Even if McLean did have the Seatrain model in mind, we still need to explain why he postponed starting his own company until 1954. By the 1950s he was running a large and very successful interstate trucking company; why not keep doing what he had been doing so well for many years? One reason, which McLean mentioned to a reporter in the 1950s, was that increasing highway congestion was rapidly pushing up the cost of hauling cargo over the road. We need to remember that in 1955 Congress again refused to fund a federal interstate highway program, and McLean had no reason to think the government would soon be
changing its mind on this matter. And even after President Eisenhower’s
grand plan for a National Defense Highway System was approved a year
later, it would still be many years before the new roads would significantly
relieve the nation’s highway congestion. McLean needed to control his
costs immediately. He was looking for a winning competitive advantage
and he believed he had found it by carrying his freight off the road.

McLean first tried to get the Southern Railroad to carry his
containers, but he was brusquely told that if the railroad wanted to carry
boxes, they would carry their own and they would be picked up and
delivered by the railroad’s own trucking firm. Of course hostility between
railroad men and truckers was an old story, so McLean decided instead to
take a look at coastwise shipping as a possible way to find relief from
crowded highways.

I mentioned above that ever since 1940 the ICC had been charged
with regulating coastwise shipping. McLean, whose trucking firm was also
regulated by the ICC, was familiar with this kind of regulation. Coastwise
carriers, like interstate truckers, had to obtain a “certificate of necessity
and convenience” from the ICC. This was an administrative device
designed to restrict entry by new firms and reduce cut-throat competition.
McLean obtained a certificate by buying a small coastwise shipping
company that was already certified, and he proceeded to modify its fleet
as needed to get his innovative experiment underway. He also worked
with his engineers on the design and construction of containers that
would serve his purposes. On April 26, 1956, the date traditionally taken as
marking the beginning of modern containerization, McLean inaugurated
his new Newark-Houston container service. It would be nice to be able to
say that after that, the rest was history, but the reality isn’t quite that
simple.
McLean expected the railroads to oppose his new service and he was not disappointed. What he did not expect was that Congress, increasingly desperate to save the railroads, was prepared to give them whatever they asked for when they faced threatening competition. Two years after McLean launched his coastwise container service, the ICC considerably loosened its control over railroad freight rates. Before 1958, new rail freight rates only became effective after they had been approved by the ICC, a process that could take years. After 1958, however, railroads could post and put into effect new rates that would remain valid unless and until the ICC had decided, after hearing appeals from other carriers, that they should not be given final approval. Given the pace at which ICC cases were heard and decided, the railroads had been handed a loaded gun. They wasted no time in turning this weapon on McLean’s new container service and on the other, non-containerized, coastwise carriers as well.

The railroads immediately began cutting their rates between coastal ports in an attempt to drive McLean’s new container service out of business. The coastwise carriers appealed to their friends in Congress. Detailed testimony from the interested parties can be found in the published hearings, held in 1960, conducted by the Merchant Marine and Fisheries Subcommittee of the Senate Committee on Interstate and Foreign Commerce. Sealand and other coastwise and intercoastal steamship companies provided reams of evidence showing that the railroads were posting predatory rates. The railroads responded that they were conforming to all the rules imposed on them by the relevant laws. No one suggested the railroads didn’t have real problems of their own, and everyone knew they would not sit idly by as truckers and coastwise carriers competed for freight the railroads considered rightfully theirs. It
thus appeared that as matters stood in 1960, the railroads would soon be able to eliminate McLean’s recently inaugurated container service.

Perhaps McLean’s most distinguishing characteristic, the one that carried him to ultimate success, was not wilting in the face of adversity. He had a good idea, he was a hard-driving manager, and he was going to make it work. To escape the railroads’ counter-attack, he turned his attention to trade with off-shore territories that were, according to the Jones Act of 1920, legally ‘domestic’, yet were beyond the railroads’ reach. McLean had some success going to Puerto Rico and Alaska, where he managed to capture cargo that had previously been carried by breakbulk liners. He also began carrying cargo for the U.S. Army, which, not being bound by ICC regulations, had long encouraged cargo unitization, and this led him into thinking of going further off-shore. And as it turned out, it was Army contracts that eventually provided the stepping-stone McLean needed to enter the essentially limitless markets overseas. This was the breakthrough that saved McLean’s container initiative from becoming, like the service Seatrain provided, a small, niche freight operation.

When McLean sent his first ship loaded with containerized military supplies to Germany in 1966, he was entering a new world. Not only was he escaping the reach of the Jones Act and the American railroads, he was escaping the tortuously slow oversight of the ICC. Liner service on the Atlantic was coordinated by conferences, legal cartels composed of steamship companies engaged in international trade. These conferences set freight rates and allocated market shares. European governments were not opposed to such industrial cartels, and ever since 1916 the U.S. government had allowed American companies to join these carrier conferences under certain restrictions that posed no threat to McLean. The European international liner companies had been keeping an eye on
the new container services introduced by Matson, Sealand and Grace Lines, and they worried about having to meet the challenge posed by this new technology. McLean, however, assured them he would charge his customers conference rates. He could happily do so because his costs would be so much lower than those of his competitors, and the service he provided would be so much better, that he would soon have all the cargo he could carry. In practically no time North Atlantic liner service was being buffeted by “a gale of creative destruction,” to use Joseph Schumpeter’s vivid image of the impact of successful innovations. That’s when the container revolution began in earnest, and that’s the point at which we can with some justice say that “the rest is history.”

The story I’ve just told highlights several important features of the container revolution and the development of intermodalism. One of these is that neither containerization nor intermodalism was an entirely new idea. Innovation does not require invention, nor does invention guarantee successful innovation. A second, and now widely appreciated, point is that regulatory regimes can all too easily become impediments to innovation and efficiency gains, and hence fail to advance the public interest. This certainly is what happened to the ICC as it struggled with the challenge of containerization. And finally, we need to recognize that Malcom McLean was not only a successful trucker who had a bright idea. He was also a shrewd student of freight transportation who found ways to defeat those who were determined to thwart containerization and intermodalism. McLean did not invent containerization, but he was the first operator to turn this idea into a successful and far-reaching business. His commercial success and the efficiencies he introduced to surface freight transportation are his lasting legacies.


4 Richter, p.326.


6 GPO, 1960.