

A Different Counterfactual Perspective on the Eads Bridge

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My article, “Not the Eads Bridge,” (*Technology and Culture*, July 2014) provides a case study of a consequential choice made in 1867-68, a choice influenced by politicians, financiers, railroad managers, and businessmen from St. Louis, Chicago, Philadelphia, New York City, and London. St. Louis needed a rail bridge across the Mississippi River, two projects competed for support, and one had to give way for the other to advance. As matters turned out, the dark horse project, led by James B. Eads, went ahead while the less risky venture, the Boomer/Post bridge failed to garner sufficient support. The article illustrates an analytic method, the “constrained counterfactual,” that I believe has wide applicability in the history of technology. It can speak for itself.

Here I offer a different perspective, described in the article as a “contingent counterfactual.” Assume that Lucius Boomer had won against James Eads in the summer of 1867, and that Boomer then completed his bridge at St. Louis by January 1871. Given those postulates, what results for railway development in the region might have flowed from the Boomer/Post bridge? And how does that counterfactual history compare to the events that transpired, the landscapes that *were* built? This analysis must be more speculative than a constrained counterfactual, considering ramifications across three decades, throughout the city and beyond. But these bridges served the corporate needs and strategies of railways. And those railroads in turn had broad regional and national consequences. So this contingent counterfactual takes us to some interesting and important historical developments.

The exercise starts with a premise: that each bridge venture had unique design qualities, personnel, corporate allies, and strategic plans that would take them in different directions – and result in different histories. This is the premise of all contextual history of technology. We don’t know enough about these foundational aspects (we never do), but what we do know is revealing and worth recapping.

In the summer of 1867, Lucius Boomer had stitched together a group of allies for his St. Louis bridge. The structure would be financed, built, and owned by the Illinois and St. Louis

Bridge Company. Officers of the Chicago and Alton Railroad dominated that company's board of directors. The board chairman for the bridge company was the Alton's general counsel. The road connected Chicago to East. St. Louis, Illinois. Resulting from a number of recent mergers, the Chicago and Alton was well connected in the Illinois political world, and profitable.

The men who accepted Boomer's invitation to serve on his August 1867 engineering review board suggest other alliances. Accomplished civil engineers from across the country came to St Louis to serve on the board; their endorsement assured potential investors that the design was sound. Boomer also enlisted leading railway officers. The review board had two representatives from the Alton, including its president. Lines operating west of the Mississippi also sent officers. The carrier later known as the Missouri Pacific put two men on Boomer's board; that line ran due west from St. Louis, aiming for Kansas City, which it reached in 1869. Another company (later the Kansas Pacific) had two men on the review board; it hoped to link Kansas City to Denver. The transcontinental Union Pacific, then building westward from Nebraska, sent a representative. These officers from major western carriers suggest that Boomer was building a coalition with direct interest in using his proposed crossing. If all worked out, the bridge would bolster local and through traffic on a chain of lines from Denver and Omaha to St Louis and onward to Chicago or directly to the east.

All did not work out. By lobbying in the press, James Eads turned the Alton connection into a liability, alleging that dark forces from Chicago aimed to block a St. Louis bridge, rather than to build one. Boomer fought back by adding St. Louis business leaders to the board of his bridge company. Daniel Garrison, long a force in the line that became the Missouri Pacific, became board president. Also joining the board were Charles Chouteau and James Harrison – merchants, financiers, and partners in an iron fabricating business. If Boomer's bridge prevailed against Eads's, the firm of Harrison, Chouteau and Valle was well placed to provide the iron. In the immediate battle for public good will, these men were all smart additions for Boomer's cause.

But the composition of Eads's 1867 board of directors underscores one weakness in Boomer's board. Crucially, Boomer lacked any representatives of eastern railways and banks. That's where the money was. By September of 1867, James Eads had brought onto the board of his bridge company Thomas Scott (vice president of the Pennsylvania Railroad), Robert Lenox Kennedy (president, National Bank of Commerce, New York City), and E. D. Morgan (then a New York City merchant and US senator).

The men on both boards had varied motives for their affiliations with a bridge at St. Louis. The venture might prove profitable in the long haul. More reliably, it would surely generate immediate profit-making opportunities to well-connected directors: shares of stock at nominal prices (easily sold as public interest rose), commissions on bond sales, mark-ups on contracts for stone or iron, the chance to throw business or subcontracts to friends, and so on. Railway officers could expect a personal reward (commonly in the form of free or low-cost

stock) for tying their lines to a bridge venture. Officers like Garrison and Scott also invested -- or speculated, depending on your point of view -- in the stocks and bonds of railroads across the country. Here too they mixed personal and corporate goals, and new bridge projects could advance or upset both those ledgers. Upsets were common. In 1866, just two railway bridges crossed the upper Mississippi River between St. Paul, Minnesota and St. Louis, Missouri. By 1874, fourteen such crossings carried rail traffic. Transcontinental lines preoccupy historians, but as James Ward notes, in this narrow window between the end of the Civil War and the Panic of 1873, the key American railway battleground lay in the rich farmlands bounded by the Mississippi and Missouri Rivers.

What consequences could have resulted if Boomer had bested Eads and completed his St. Louis bridge by 1871? On the St. Louis side, Boomer's bridge would deposit its rail and highway traffic onto Biddle Street, just two blocks north of Eads's alignment with Washington Street.

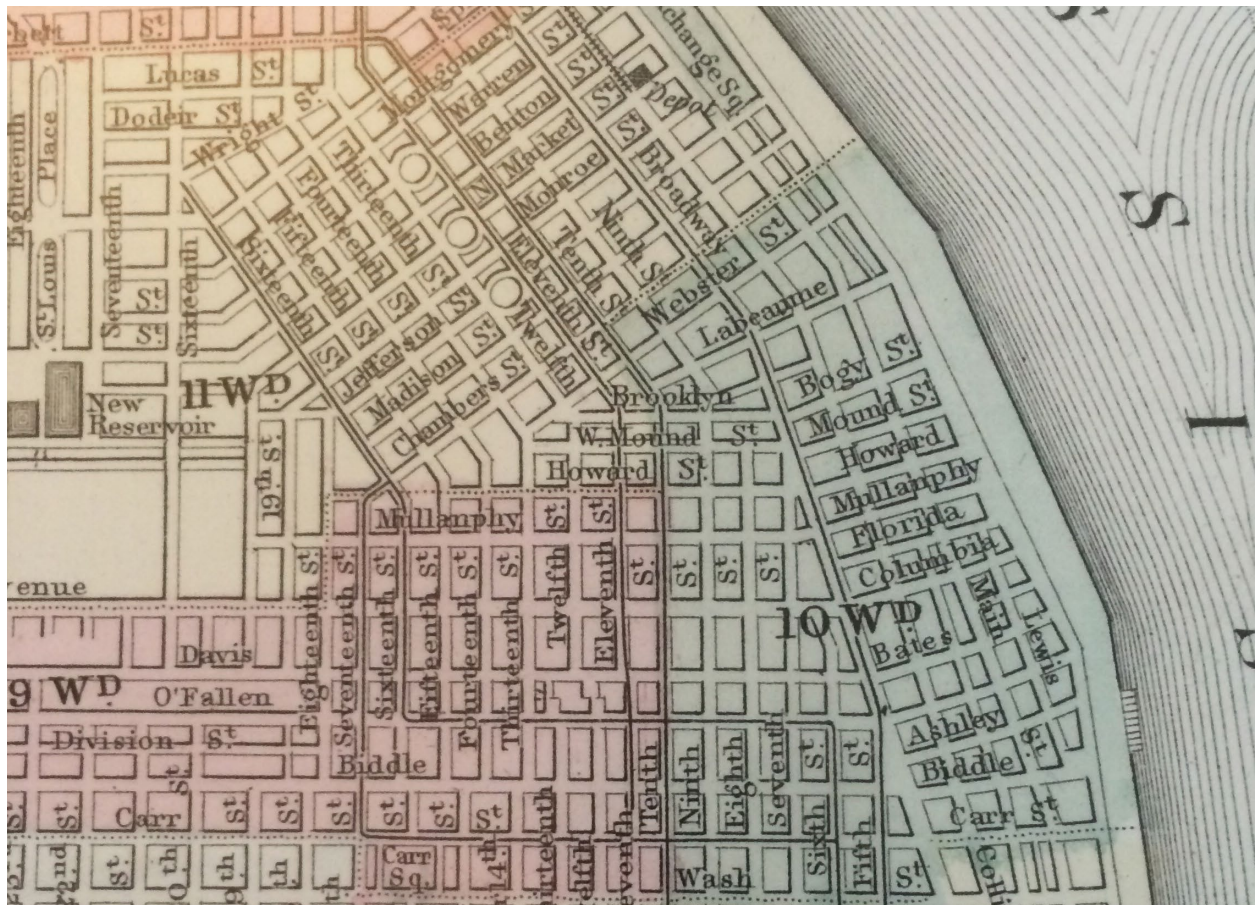


Figure 1 – The Boomer/Post bridge was to land on Biddle Street in St. Louis (lower right), with bridging and viaducts bringing the trains down to grade further west, along Cass Avenue (the street running parallel to and one block north of Davis, shown here). Also note the new reservoir, just to the north of Cass, and the depot of the North Missouri Railroad (top center). Detail taken

from map of St. Louis in *Mitchell's New Atlas of the United States and Territories* (Philadelphia: Zeigler and McCurdy, 1874), p. 32. Public domain

The ground was comparatively high there, one reason why Boomer chose this alignment. Nevertheless a viaduct to lower traffic from the bridge to the street grade would have speared through and divided the north downtown, a settled residential area. Once at grade, the trains would have run along Cass Avenue, one block south of the city's new reservoir. This northern sector of the city had only one rail line in 1868 (the North Missouri), so the city's politicians and railroad leaders would have to choose between two troublesome options. They could continue the westerly alignment for 2.5 miles through an established neighborhood, reach the city limits, then allow railroads to build connections in the open land there. Or the carriers would enter the city and build lines in a number of Eleventh Ward streets to connect to the bridge. Either way, once rail lines traversed this area, St. Louis merchants and manufacturers would have crowded in as well, shifting the city's commercial core away from the riverfront and the old downtown.

By contrast, James Eads largely sidestepped downtown congestion with his tunnel which took all rail traffic to the south and west – into the Mill Creek Valley.



Figure 2 – Eads brought his bridge into the city at Washington Street, just two blocks south of Biddle. The tunnel took trains south and west, into Mill Creek Valley (at bottom) where the

Pacific of Missouri (later the Missouri Pacific) already had its tracks and station. Nearby the Iron Mountain Railroad had its St. Louis depot (lower right). Detail taken from map of St. Louis in *Mitchell's New Atlas of the United States and Territories* (Philadelphia: Zeigler and McCurdy, 1874), p. 32. Public domain.

The Missouri Pacific line had already laid its tracks in the valley which provided a low-grade route out of the city to the west, and the Eads's tunnel could connect easily with the Iron Mountain Railroad to the south. These facts of geography suggest that the Eads routing was advantageous for the city of 1867. But geography was hardly determinative at the time. After all, Boomer's bridge best linked up with one line – the North Missouri – that Eads dominated. And Eads's bridge aligned ideally with the Missouri Pacific, yet that carrier had allied itself to Boomer.

The engineers backing Boomer's project endorsed a design that allowed trains of three different track gauges to cross the bridge. That leads to a number of interesting matters. Clearly Boomer's firm wanted to encourage every area carrier to commit to using the bridge, suggesting that immediate and ongoing financial support outweighed for Boomer's engineers the major operational hassles of running trains across multiple gauge trackwork. At this time, the Missouri Pacific used a 5-foot 6-inch gauge, while the Ohio and Mississippi ran on a 6-foot gauge (terminating in East St. Louis, Illinois, O&M trains connected with eastern lines and some O&M passenger cars ran through to Jersey City, New Jersey by 1864). Other major lines converging on St. Louis (Missouri) and on its sister city in Illinois were standard gauge carriers (4-feet 8.5-inches). The long-term trend was toward the standard; the Missouri Pacific changed over in 1868, the Ohio and Mississippi in 1871. Boomer's bridge might well have offered just the standard gauge by the time it opened.

But the choice in 1867 to serve three gauges also tells us something about the business model that Boomer's company envisioned. Its directors apparently believed they were providing a kind of toll bridge, upon which different firms might operate their own trains. Those firms would build their own tracks to connect to the bridge, and use their own freight and passenger terminals to serve the region. To avoid collisions, Boomer's bridge company would necessarily schedule and signal trains on the bridge, leaving operations to each railway. Had Boomer prevailed, opening for business in 1871, it seems likely that St. Louis would have had an accelerated pace of railway development: new lines, more of them, and more competition among them. More congestion on the Missouri side seems likely too as carriers built new lines and terminals there.

In his first full report as chief engineer of *his* bridge company, James Eads described his operational vision, and it clearly differed from Boomer's. Eads offered only standard-gauge tracks, his bridge debouched into a mile-long tunnel, passenger trains would then stop at a new union depot open to all ten carriers then serving the region. Eads planned that freight trains would terminate at a new union freight depot in East St. Louis Illinois or in new freight terminals in Missouri further west in Mill Creek valley. All this implies pretty strongly that Eads

envisioned the creation of a new union depot company *and* a new connecting railway company. These were quite different endeavors.

The first union station in the US had opened in Indianapolis in 1853. Such stations served trains of two or more railways, a great convenience to travelers making connections. But they remained exceptional into the 1890s. Railroad officers needed experience and incentives before they learned to place cooperation ahead of competition. Guided by Eads's vision and the prodding of his bridge company, five St Louis carriers grudgingly stepped forward to create a union station company in 1871. They managed to open the depot in 1875, a year after the bridge's opening. Typically owned by the railroads it served, a union station company had comparatively simple operations, focused on passengers. It owned the depot, apportioned rents, worked out schedules to avoid conflicts, and so on. Some eventually provided modest switching and yard services.

A connecting railroad was quite different. These firms built and operated freight terminals, railway yards, and connecting tracks to link up different railroads serving a major city. They had their own engines, crews, maintenance facilities, and operating procedures. Typically owned by the railroads it served, a connecting or terminal railroad moved freight efficiently into and through a city.

I know of no American terminal railroad in 1868. The Belt Railway of Chicago opened in 1882, and similar companies opened in other cities in the 1890s. The Belt Railway aimed to unsnarl the movement of freight among the tangled web of Chicago railways. St. Louis would derive a real advantage across the 1880s and later by having one connecting railway before such a snarl developed. Instead, the Terminal Railroad Association of St. Louis would guide and develop comprehensive facilities to serve all its owners – most of the major carriers converging on the city.

Eads's 1868 report says nothing explicitly about a connecting railroad, although the report chooses silence on many difficult matters. But Eads's bridge and tunnel design was also incompatible with the Boomer concept of a toll bridge open to all. For one thing, any experienced railway man knew that operating steam trains in a mile-long tunnel was an inherently hazardous operation. One firm with rigorous operating procedures and highly trained crews would have to provide that service. And it made sense for that firm to take charge of all movements through the trackage leading to the bridge and tunnel – from the Illinois yards to those in Missouri. Furthermore, Eads likely envisioned a new connecting railroad for St. Louis to link the union depot to the North Missouri Railroad in which he held a major financial stake.

These inferences suggest stark differences in the operational plans of the two bridge companies in 1867-68. I imagine that James Eads hoped, during construction of his bridge, to organize a connecting railway that would be co-owned by area railroads. Or more precisely, he likely sought to enlist the officers of those lines, giving them a personal stake in the success of

the new firm. It was a poorly disguised fact that many of those officers had ownership interests in the pre-bridge methods of moving freight in the area: the Wiggins Ferry Company and two freight forwarding firms that used wagons to move freight to final consignees. As matters turned out, Eads failed to peel these men away from those affiliations. Furthermore, once Eads's bridge opened, the railway officers failed to honor contracts committing their railroads to use the crossing. In short, Eads was outplayed by the railroads his bridge aimed to serve and by the men who ran them. Eads's bridge financing company had only one choice in 1874: to form its own connecting railway to build new freight facilities in Illinois and Missouri, purchase locomotives, and operate trains across its tracks. And Eads's corporate officers and business associates had to undertake all this while the bridge financing company itself fell into bankruptcy, the national economy slipped into depression, and Eads himself took up another grand and unique engineering project – to create a deep water shipping channel at the mouth of the Mississippi River.

The connecting railway struggled in its first years, denied traffic by the area carriers, competing against Wiggins Ferry, lacking needed facilities or the capital to build them. In 1878-79, J.P. Morgan stepped in to “Morganize” the situation. The reorganized bridge company emerged from bankruptcy as the St. Louis Bridge and Tunnel Railway. A year later, area carriers created a new Terminal Railroad of St. Louis to build new tracks and yards within a ten-mile radius of the bridge, all “to provide the most ample and convenient connections, accommodations, and terminal facilities . . . for all railroads now entering the City of St. Louis” (Taber's quotation from the articles of incorporation).

By this point, an unlikely figure had replaced Morgan in rationalizing St. Louis's rail map. Jay Gould took control of the Missouri Pacific in 1879, a year later he had the Wabash in his grip (by that point Eads's old flame, the bankrupt North Missouri Railroad, had been merged into the Wabash). Gould went on to build a web of lines that stretched from Toledo, Ohio deep into the American southwest. That web centered on St. Louis and the Eads Bridge, which Gould leased in 1881. Despite his reputation for looting properties across the country (or perhaps because of that reputation), Jay Gould had become a system builder in the 1880s, as Maury Klein argues in his biography of Gould.

With Gould's encouragement, St. Louis developed a highly successful unified railway network across the 1880s. In 1894 a new corporation was created to fund, run, and expand the network, the Terminal Railroad Association. At first, the TRRA was jointly owned by six railroads. In East St. Louis it provided connecting freight services to the sixteen lines that terminated there that year. In downtown St. Louis, TRRA opened a new union depot in 1894 that initially served thirteen passenger lines. Eventually trains from twenty-two railroads converged on the station, making it the world's busiest passenger terminal. Across the region, TRRA had yard facilities in 1894 sufficient to hold 5000 freight cars, according to William Taussig. James Eads's original blueprint had foreseen the benefits of such a systemic approach,

yet it took Gould's raw power and vision to force its full execution. Under his comparatively benign control, the TRRA became a model monopoly – serving Gould's properties directly and improving coordination for the benefit of all carriers in the region. In their planning for a shared railway infrastructure for St. Louis, Eads and Gould were foreshadowing the “community of interest” model that promoted coordination widely across the US railway map after 1897 (described in Klein's “Turning Point” essay).

By contrast, had Boomer's bridge succeeded in 1871, St. Louis likely would have had a much more competitive railway scene for many decades. For example, a competing bridge probably would have opened by the mid-1880s. New carriers clearly would have sought to tap and grow the traffic of the region; it was plum territory. With these competitive elements, it appears likely that St. Louis could have had the kind of rail anarchy that plagued Chicago by the 1880s, as William Cronon describes. Streets clogged by slow freights, through passengers bedeviled by hacks and congestion as they changed trains among the city's seven major stations, lost or delayed freight cars stuck on innumerable sidings – Chicago's rail history of the 1880s included all these problems. Give Lucius Boomer's bridge to St Louis in 1871, and two decades later the city's landscape, population, rail map, and manufacturing activity would have differed – probably quite significantly – from the realities that flowed from Eads's bridge.

This is mostly speculation, reasonable possibilities in my view, but certainly a “what if” scenario. Historians mostly shy from this analytic method, even though we commonly use counterfactual perspectives implicitly. For example, in arguing that Gould was a key figure in my story, I am saying another man would have produced a different outcome.

Return to the actual St. Louis of the 1880s, and we find a different “what if” scenario grabbing the public imagination. St. Louisians looked at Gould's expanding influence over freight and passenger services in the region, and they cried foul. Crusading newspapers hammered away at two themes: Gould had an effective monopoly that exploited the city, so St. Louis needed a second rail crossing. That crusade gained force across the decade, resulting in an 1886 charter from the US Congress for a new “Merchants Bridge.” The charter explicitly blocked any person associated with any other bridge over the river from ownership or management of the new structure – which opened on June 1, 1890. That clause had a clear goal: keeping Gould at bay to ensure competition in area rail services.

The 1890s was another miserable decade for American railroads, with endemic red ink and foreclosures, especially among lines in the Midwest and Rockies, where speculation had created far too many carriers for the sparse western populations. Even without a depression, however, the Merchants Bridge Company was likely to repeat aspects of the Eads Bridge story of 1874. Again a highly-indebted newcomer sought to take on an established rival; again the attempt quickly failed. By 1893, the Merchants Bridge Company hovered close to default. Somehow the congressional stricture on ownership was mysteriously revoked, and TRRA

assumed the debt and a majority equity interest in the new rail-only bridge, located just two miles upstream from the Eads Bridge. Legal actions ensued in state and Federal courts, all focused on a single question: did the merger constitute an illegal restraint of trade?

On its face, the answer was obvious. But railroad men and judges had learned that competition carried costs as well as benefits. In 1904, the Supreme Court of Missouri approved of the merger, believing it provided public benefits by enhancing efficiency and avoiding duplicate services. The matter then moved into Federal courts, and in 1912, the US Supreme Court handed down its decision in *US v Terminal Railroad Association of St. Louis*. The court found that TRRA did violate the Sherman Act, yet its remedy was clearly attuned to the newfound awareness that large corporations had become intertwined into even larger systems. If all carriers were granted equal access to the membership and facilities of the Terminal Railroad, the Court would allow its continued operation (no evidence at trial suggested that TRRA had in fact discriminated against any carrier). The decision was important then as the first application of the “rule of reason” after the Court’s landmark Standard Oil verdict a year earlier. It remains vital precedent to this day, setting the terms for access to the “essential facilities” required for business in many networked industries. In their decision, the justices also ratified James Eads’s prescient vision of how to design and operate rail services for St. Louis.

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