Innovation, Labor, and Gridlock: The Unbuilt Freight Plan for Manhattan’s Geography of Production

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Abstract
Planning historians seldom examine freight infrastructure proposals as potential interventions into the political economic trajectories of materially productive regions. Combining interpretive approaches from planning history and economic geography, this article discusses one such proposal, the *Joint Report with Comprehensive Plan and Recommendations*, proposed in 1920, by the New York/New Jersey Port and Harbor Development Commission, as a response to the traffic problems generated by New York City’s innovative, small-batch manufacturing economy. Pointing out some of the limitations of the established explanations for the dramatic decline of this industrial center, the article argues that the nondevelopment of any local freight infrastructure similar to that proposed by the *Joint Report* closed off the continued development of the city’s materially productive economy as a historical possibility.

Keywords
New York City, freight transportation, port planning, innovation, industrial clusters

Introduction
If cities are planned, then so too are economies. For economies cannot exist without production, which in turn cannot exist without an infrastructure. Infrastructure is a human-designed interface, between natural materials and human use, the mechanics and maintenance of which is precipitated by some period of premeditation, or planning. The economies of towns and cities are no exception here—and yet in the United States in recent decades historians of town and city planning have tended to frame their work exclusively as a history of shifting sensual and social experiences: of architectural and commercial display, of spectacular landscape symbolism, of the crowd and the wrecking ball; of thrill, fear, stimulation, boredom, isolation, and abuse. Rarely have historians assessed their scholarly subject as the planning of a process wherein work materials and products are moved and exchanged within designed spatial environments.

But planners of towns and cities are planners of freight movement. Whether they openly articulate this in their schemes or not, planners bring into every aspect of their work persistent ideas and assumptions regarding where, relative to other uses, material production ought to take
place, to what extent production ought to depend on automated machinery as opposed to innovative human minds, and to what degree the exchange of materials ought to be socially concentrated. To use one example, the City Beautiful planners, whose overlapping set of metropolitan infrastructural ideologies and neoclassical architectural tastes reigned in many American planning circles from 1890 to 1929, was above all else symptomatic of a political impetus to push industry outside the urban core and create conditions under which, on the one hand, large and locationally flexible assembly plants could thrive, and, on the other, an ownership class could dictate the range of cultural practices characterizing city life. In other words, the City Beautiful commitment to the separation of industrial from luxurious residential and commercial uses hinged not only on a collective fascination with the stylistic formalism of fin-de-siecle European capitals but also—and, from a political standpoint, more fundamentally—on deep-seated loyalties to structures of concentrated ownership over industrial operations as well as over regional infrastructures capable of mediating the separated realms of use.2

The most extensive comprehensive plan ever proposed for the New York metropolitan region—the 1929 Regional Plan of New York and Its Environs—closely adhered to this logic of urban deindustrialization. For the metropolitan center, the Regional Plan’s authors (an ensemble of engineers, Manhattan businessmen, good-government reformers, and economists) sought to transform much of the island’s then-industrial Hudson River waterfront into a chain of elite commercial and institutional districts.3 For the metropolitan periphery, the plan authors advocated new and consolidated rapid transit lines for commuters, a massively expanded highway system for motorists, and circumferential freight railroads designed to encourage the development of large-scale port and factory facilities far from the old urban core.4

Today this plan is fairly well known among American planners, planning historians, and urbanists.5 Less well known is the fact that in terms of its goals for the industrial geography of the metropolis, the Regional Plan and the other City Beautiful–influenced planning schemes did not represent the only voices animating the urban planning dialog during that era. Indeed, another voice, less remembered but every bit as important, advocated the use of infrastructural planning to maintain the urban core as a place where physical materials were not only consumed but also innovated and produced. This article is about one such voice, that of the 1920 Joint Report with Comprehensive Plan and Recommendations. This was, like the Regional Plan, also a scheme for New York—a scheme that could stand, then, as the Regional Plan’s historical foil.

The Logic of Production on an Island

Immediately after World War I, the ten-square-mile southern portion of Manhattan Island, the very heart of the New York metropolitan region, had more than 21,000 separately owned manufacturing workshops, employing roughly a half million people in materially productive work.6 The average five acres, here—the area of a typical long, thin Manhattan block—contained sixteen separately owned manufacturing establishments, each with an average of twenty employees; in other words, roughly 320 laborers and craftspeople making and innovating physical things.

A city commissioner had planned out these long, thin blocks in 1811, hoping to open up as many roads as possible to the protracted riverfronts on the east and west side of this narrow island, imagining that entrenched and evenly spread infrastructural access to the water might be a very important thing for the life of the city. There, for the material existence of a New York City then still contained to Manhattan Island, was the harbor lighterage fleet, the enabling factor in this peculiar productive space. These lighters were charged with the movement of goods from the railroad terminals, on the New Jersey—or mainland—bank of the Hudson River, to the piers of the island city. So too were they charged with the movement of goods from pier to pier around
the island itself, so as to get materials to larger ships along the West Side waterfront, or to urban wholesaling and manufacturing floors.7

The so-called short hauling8 of the continental railroad carriers bound for New York from the western hinterland and truncated by the Hudson River—in other words, the carriers’ inability to carry freight quite as far as it needed to go—resulted in an oligarchic centralization of transport operations on one side of the river, and a great diffusion of these operations on the other. If by 1900, Jersey City, on the New Jersey side of the Hudson, boasted one of largest freight yards in the world, divided among numerous carriers, the Manhattan side boasted the largest concentration of deepwater piers.9 On the New York bank of the river, constant dispersal of freight mixed with a regular influx of labor and material goods, to give rise to a productive space that was organized not around the enormous freight loads provided by transcontinental trains but around the smaller (“lighter”) loads carried by the small and dexterous trans-Hudson boats. Thus, while industrial firms interested in capital-intensive, large-batch, repetitive mass production located west of the river, someplace in the interior of the country, selecting sites through a calculus of land cost, availability of cheap labor, and access to unprocessed materials, firms interested in less capital-intensive, smaller-batch, and more innovation-driven production clustered in Manhattan in the brick and cast-iron loft buildings still characteristic of Canal Street and the Bowery.10

Such workshops’ machinery was usually technically primitive—not only out of necessity (firms tucked away on the upper floors of loft buildings were unlikely to have the spatial means to install elaborate equipment) but also as a form of competitive advantage. Workshops specializing in trades subject to constant product change needed to focus capital on not mechanical but rather flexible instruments—like the learning ability of a workforce or like the intricate network of services provided by their environs. Thus, rather than internalizing instruments within the plant, owners tended to draw as much as possible on nearby external services. For an experimentation-based manufacturer, this meant employing as scientifically knowledgeable and mechanically skilled a workforce as possible and allowing a diverse array of suppliers to deal with the inherent expenses, like space and maintenance, of stocking or making apparatus parts, components, or reactants. The full operations of such a workshop would have to combine small-scale production with intensive experimentation attempting to identify or create new markets. In turn, these new markets themselves would have to consist to a considerable extent of nearby manufacturers looking for specialized products to combine as components with some new product of their own.11

In Manhattan, and to some extent the outer boroughs of the city, this quality of production—one sometimes described within economic history and geography as a regime of “flexible specialization”12 or, more emphatically, “collective innovation”13—resulted in a vibrant but contradictory political economic predicament for working people. In some sense, workers employed by innovative workshops found themselves quite empowered, as they were valued not only as lever-switchers but also as scientific thinkers within an expanding employment market.14 Yet workers were also subject to the highly unpredictable consequences of their employers’ (and their own) risky product schemes. Firms in this environment could not sit still. Any workshop that hit on a potentially mass-marketable, mass-producible commodity, and then managed to secure a patent and some capital, was likely to leave Manhattan to set up a larger, more machine-intensive plant somewhere outside the city.15 And owners embedded in Manhattan, but also insistent on providing workers with job security (in effect focusing risk management on themselves), were likely to lose money and go out of business. A plant in Manhattan simply could not produce goods on a massive enough scale to accumulate the capital necessary for internalized benefits—be those benefits and job security for the workers or, for the owner, a stately mansion on Fifth Avenue.

Under these circumstances, workers tended to direct collective demands not against their employers but against municipal government. By the time the city’s jurisdiction expanded
off-island, aspects of the city’s municipal services were beginning to resemble those associated with a social democratic polity (albeit procured, mediated, and often undermined by local political machinery). The tense, complex, and crucial sense of fellowship between workers and owners resulted in a coalition capable of leveraging tremendous municipal investments in industry- and worker-friendly infrastructure and institutions. Surviving examples of such projects include the many innovative attempts, such as subsidized garden apartments, precursors to rent control, and lower-income public housing, to keep factory labor living in the center of the city near their jobs so that employers would not have to bear the firm-threatening burden of paying for commuting time. More impressive still, perhaps, was the city’s gradual development of its own, municipally financed hospital and university systems, with affordable care costs and free tuition.

Still, one could live in Manhattan for years and never know the university system was there, even miss the great majority of the manufacturing workshops, tucked away as they were on the upper floors or posteriors of cast iron loft buildings, and perceive only certain odors and lots of traffic. Manhattan was a crowded island that through vertical growth had managed to make room for clashing economic sectors. Indeed, by 1900, an expansive and influential sector, quite separate from local workshop production activity and entangled in a wholly different and complex set of interests, had emerged on the island: the corps of financial and transactional services. Ultimately, such office-based industries were to eclipse manufacturing as the city’s main economic base. Yet this eclipse had not fully occurred until well into the second half of the century. Indeed, the presence of manufacturing in Manhattan remained relatively stable between the 1910s and 1950s, wavering at around half a million manufacturing jobs. During this time, numerous globally consequential technologies were innovated here, in the shadow of the new art deco office skyscrapers of Midtown and Downtown: chemicals and dyes; radios, televisions, and semiconductors; medical and musical instruments; to say nothing of the countless stylistic innovations, within fashion, art, literature, music, and theater, for which New York City is still well known. By the late 1950s, though, the local manufacturing workforce was in decline. And by the 1970s, the number of people engaged in materially productive work had fallen from its mid-century heyday by nearly 50 percent. New York, and especially Manhattan Island, became, increasingly, a purely office-oriented working place—innovative still, perhaps, but not in those forms of innovation dependent on (and, to some extent, deferent toward) agglomerations of small manufacturing workshops.

Historians of New York City have tended to adopt a purely institution-oriented interpretive approach when discussing this dramatic local deindustrialization process, tracing local decline in manufacturing to global market pressures on the one hand and regulatory transformations on the other. Thus, one explanation, prominent within the economic history literature, would suggest that manufacturing activity in Manhattan fell victim to a post–World War II decline in national and international demand for high-cost, specialized products within certain industries. And to be sure, this sort of explanation is crucial for understanding how specific industries in New York City—and in similar urban industrial centers of the early twentieth century, such as London or Hamburg—tended to follow a “life cycle,” germinating in the cores of the cities themselves (which were relatively market-insulated thanks to transportative and regulatory cushioning), then maturing as mass-productive, locationally flexible industries generative of price-competitive commodities. Yet in light of Manhattan’s diversity of production activities during the period from 1900 to 1960, as well as the ongoing capacity of these production activities to spawn wholly new, as-yet uncategorized industries (for instance, the gradual emergence of the semiconductor industry out of the metalworks trades), it does not necessarily make sense to assess Manhattan’s production regime as having depended on the output of a fixed range of goods, and so as having been vulnerable to trends within the routine global markets for those goods. Manhattan was in effect a type of what some economic geographers refer to as an innovation region, dependent not on its capacity to monopolize existing industries but on its capacity to
generate new industries. The New York City innovation region may have bottomed out by the 1970s, but since then many similar materially productive clusters have emerged throughout the developed world—in part filling the vacuum left by Manhattan’s industrial collapse.23

Dissatisfied with such overdetermined global explanations, some New York City scholars have thus assigned more determinative power to local institutional practices. Such scholars often identify the 1961 Manhattan Zoning Law as a chief culprit undermining the local production regime.24 This decree sought to limit industrial activity to peripheral areas of the island. And to be sure, this act did signal a shift in the municipal government’s economic commitments. Yet the chronology of events suggests that the law was much more a symptom than a cause of industrial decline. By 1961 the island’s manufacturing sector was already beginning to shrink.25 Moreover, the relatively small quantity of working plants that actually found themselves stranded behind the redrawn lines and coerced into closing their doors does not account for the loss of hundreds of thousands of jobs. The explanatory power here thus seems conditional at best.

Still other scholars, similarly following a locally focused interpretive model, have attributed New York’s deindustrialization to the overzealousness with which highway and housing czars in the 1940s through 1960s razed city acreages for single-use projects, such as Title I housing complexes and spur links to the region’s suburban expressway system.26 The problem with this explanation is that while these sorts of city planning efforts certainly did not help local manufacturing activity, geographically they produced only corridors and pockets of destruction, which tended to end up in the less industrial outer boroughs such as Queens and the Bronx. In Manhattan, the evictors tended to leave industry alone. The six-square-mile Lower West Side, which was by far the most intensively industrialized district in the city, lost to public housing only forty out of its thousands of acres, and no ground to highways whatsoever.

Ultimately, these sorts of historical interpretations, whether globally or locally focused, can relate only their authors’ historiographical tendencies—in particular, the tendency to attribute tremendous determinative power to forces, such as global market pressures or the whims of government authority, outside of the peculiar rhythms of the local production process itself. In the industrial decline of Manhattan, such external forces were certainly significant, but they played an exacerbating rather than rudimentary role. As I submit here, one overlooked but critical factor limiting and undermining production in Manhattan was in fact internal to the production process. This factor was Manhattan’s mounting problem of freight transport.

A dilemma is implicit in the logic of innovative material production in densely settled workshop clusters. As materials pass through and among an ever-increasing quantity of workshops, the traffic generated by all this commotion promises to reach a point of gridlock. Past such a point the production regime cannot expand or enrich its capacity to access, exchange, or reconstitute materials, so as to remain fundamentally innovative—not, that is, without radical transformations in the local freight-bearing infrastructure. Manhattan never experienced any such transformation. Indeed, today the island’s freight circulation depends entirely on its overburdened streets and avenues, just as it did a century ago. The nondevelopment of an industrially appropriate freight system thus closed off, as a historical possibility, the continued intensification of local material production and innovation.

In part, then, the great hope for New York City’s materially productive economy rested with those engineers who, as the material economy approached a point of gridlock, designed and advocated an expansive freight infrastructure system specially suited to the intimate scale of this production space. The 1920 Joint Report with Comprehensive Plan and Recommendations presented just such a plan.

Background to the Joint Report

By its own account, the lawful existence of the Joint Report emerged from a congestion crisis palpable at both local and transoceanic scales. The crisis occurred during the long winter of
1917-1918—in which trains throughout the U.S. Northeast became trapped in place for weeks on end, their stock often abandoned within, stranded amid the snow drifts. Railroadmen referred to this rail standstill as “the Eastern Front,” the railroad workforce as “the railroad army.” And if this was a “front” in a military sense, it was surely a deep one, with blockades as far off as Europe, where the engineers of the American Expeditionary Force placed their expectant demands on the home country’s production yields. Deep, and distending westward: The main lines between the Atlantic and the Great Lakes were at times choked by queues as long as seven hundred miles.27

Several years later, an account called this the “worst freight car congestion in the history of American railroads,” an event that had “meant the humiliation of a nation which prided itself upon its industrial genius, yet was unable to handle the indispensable tool of its industry—its railroad transportation.” The “inextricable knot” of the problem, the account supposed, was the Port of New York.28 Through here had to pass a better part of the produce of the nation’s interior. Yet in December, more than two hundred oceangoing ships sat idle in the harbor, trapped for want of their cargo or coal. The port’s essential fleet of 134 tugboats had been cut in half by ice damage and the unavailability of docking facilities to handle repairs.29 By January, 3,500 train carloads of war freight had accumulated along the tracks leading up to the piers.30

A great and concentrated mass of domestic wartime labor lingered here, at the mouth of the Hudson, out of work as a result of the snail’s pace of shipping, but in no position—as (again) there was no infrastructure for it—to scatter across the countryside and help in the severely undermanned railroad dig-out. Along the comb-like river piers, federal authorities proposed to alleviate the situation by installing new crane machinery. Dock laborers, fearing for their livelihoods should these war machines never go away, fiercely resisted, threatening to strike precisely when such action would have been most crippling.31

In the years immediately after the war, the federally chartered Interstate Commerce Commission (ICC) was charged with the task of resolving the New York Harbor freight dilemma once and for all. The agency might have done so simply by advocating the reduced centrality of the Port of New York to the transatlantic transport system, and concomitant expansion of facilities elsewhere along the Eastern Seaboard. Such decentralization was, in fact, what eventually happened, with the drastic post–World War II expansion of port facilities in Norfolk, Virginia. But this was not the ICC’s original recommendation. Rather, the ICC saw its task as dual: both the resolution of the congestion problem and the continued economic development of the entire Port of New York, meaning both the New York and the New Jersey sides of the Hudson River.32 This aim led to the 1919 formation of the New York, New Jersey Port and Harbor Development Commission—the first federally chartered bistate planning effort in American history. The Development Commission published its principal product, the five-hundred-page Joint Report with Comprehensive Plan and Recommendations, a year later.

The Proposal

In the opening of the Joint Report, the engineers (whose identity I discuss later in this article) commissioned by the ICC assessed the port dilemma thus:

This is not merely a problem for the concern of public officials, directors of railroads, steamship companies and other terminal enterprises. It is a great sociological problem of chief concern to the public at large. . . . Continuous streams in and out of goods of all kinds are required to carry on the business of the Port and to sustain the life and health of its inhabitants. So large have become these streams, so little reservoir space is available in certain parts of the Port, that extraordinary mechanisms are required to make them flow with the necessary volume and smoothness.33
The report authors referred to their “extraordinary mechanism” as the “automatic electric system.” In a technological sense, there was nothing otherworldly about the proposal; nonetheless, if built, and extended according to its own design logic, it may very well have opened up as a historical possibility the Manhattan manufacturing economy’s continued growth and prosperity. The authors grasped that the port’s congestion problem emerged from Manhattan’s inappropriateness to what they called “standard rolling stock.” This they understood as a mode of freight transport where any increase in the total quantity of transferred goods, throughout the general field of freight transfers, necessitates larger vehicles. Thus the logic of standard rolling stock had necessitated, for the nineteenth-century expansion of industrial imperialism, greater train lengths and hull sizes, as well as more railroad routes and more ships on the sea.

Yet this imperative of engineering vehicular bigness, the authors supposed, did not apply if the work process in question happened to operate against the concentration of goods on enormous vehicles. In Manhattan, it was not pound-for-pound productivity driving the material economy but rather craftsmanship and innovation, which from a transportative standpoint encompassed the flexible diffusion and circulation of small batches of materials among tens of thousands of clustered workshops. In this political economic context, a wholly different type of freight infrastructure, a “radical departure from anything found in New York, or in fact any port,” would be necessary. The immensity of this mode of transportation would have to emerge not from some pharaonic vehicular scale but from relatively even infrastructural application across the entire contiguous space.

In a sense, every city in the world already had a primitive infrastructure indicative of such a logic: a local system of densely clustered lanes (and sometimes canals), intended for use by small vehicles carrying small loads of freight. As the report authors observed, Manhattan’s lane system had reached capacity—each particular street was choked with trucks (three quarters of them horse drawn) crawling, queued or parked to give and receive their loads. The authors articulated their dissatisfaction with the state of affairs in sociological terms, writing:

Methods which prevailed during the latter part of the nineteenth century are still in vogue. Destructive competition is responsible for some of the evils, ineffective organization for others, poor design of terminals and limitations of the ferries for still others. The merchant blames the driver, the truckman, the railroad, the steamship company, the ferry and the warehouseman for delays. The railroads, the steamship company and the warehouseman blame the merchant, the driver and the truckman. The truckman blames the driver, the railroads, the steamship companies, the ferries, the warehouseman and even the merchant. The driver blames everybody.

The authors saw as their goal not the annihilation or expulsion of these various social roles but their cohesion. They supposed they needed to expand somehow the freight capacity of each lane in the city—without disrupting a given’s lane’s density, on which the industrial vigor of the city depended. In other words, the authors could not solve the problem horizontally, by widening surface thoroughfares and dismantling adjacent structures, in the fashion of a Baron Haussmann (or for that matter a John Hylan, the New York City mayor who was widening avenues throughout the city at this time). They had to solve it vertically—by creating new lanes underground with the subways and sewers, or overground amid the treetops. They suggested both: tunnels for a rail-conveyor system that could haul small containers for small freight batches and an elevated automobile “esplanade” to pull up from city streets traffic not hauling freight, thus freeing up space down below.

As the report authors saw it, the greatest exacerbating factor in the port’s congestion problem was the frustration and complexity of getting goods across the Hudson River. The authors...
understood the local lighterage system as an element of “strength not weakness” for overcoming this basic obstacle. But they also supposed that this waterborne system was in no position to expand—if only because by 1920 the supply of unused advantageous riverfront was depleted. To confront this predicament, the authors had two options. One, they could attempt to open up new water frontage by expanding the river into the island, in the form of a canal system. Two, they could get their small-batch conveyors across the river by means of tunnels or bridges. These options were by no means mutually exclusive, but the authors, somewhat imprecisely seeing the port problem as primarily a railroad problem that therefore demanded a rail solution, devoted their attention to the latter.

The graphical product of this mode of reasoning was understated. A decade earlier, one of the engineers (William Wilgus) had, on his own time, drawn up explicit plans for a vast rail conveyor system imposed beneath the city’s entire street system, with freight platforms and elevators at the basement of every loft building in the city (see Figure 1). By contrast, the Joint Report focused its graphical attention on only one proposed conveyor tunnel, which would follow a meandering path from avenue to avenue within the Lower West Side, the most intensively industrialized district in the city (see Figure 2). There was an element of false modesty here—intended, perhaps, to assuage fears regarding the industrial radicalism of the plan. Nonetheless, elsewhere, in written rather than graphical terms, the authors plainly called for the “expansion” of the tunnel system throughout the port. Moreover, they affixed to their published volume a separate, foldable map that showed several possible freight conveyor lines branching off from the proposed Lower West Side route, accessing the Wall Street area, the Lower East Side, districts in the northern half of the island such as the Upper East Side, Morningside Heights, and Harlem—even extending into the Bronx. Moreover, this map suggested that the conveyor tunnels across the Hudson River could function not only to link up to the transcontinental railroads at the Jersey City freight yards but also to push beyond these yards, and wind down through the center of Jersey City and the peninsular working-class community of Bayonne, and up through the palisade towns of Weehawken and North Bergen (see Figure 3). This implied the possibility not just of a place of intermodal transfer, between island conveyor system and continental railroad system, but also the infiltration of the conveyor system into the rail system (and, tellingly, not the other way around). Thus an underlying expansive logic to the proposed system emerged: if there could be one small-batch conveyor tunnel in Manhattan, there could be three, or six; if there could be that many in Manhattan, there could be that many in the Bronx, or Long Island, or Jersey City.

Much as the proposal’s expansive logic was muted in the finalized graphics of the report, the relevance of the plan to manufacturing per se was muted in the volume’s text, as well as in the wider communications of the Port and Harbor Development Commission during the 1920s. The Joint Report authors’ discussion of Manhattan as a place where freight did not merely go but was everyplace produced was persistently indirect. Words like “factory” and “assembly” were nonexistent in the report’s five hundred pages. Yet this absence did not signify a lack of commitment to island manufacturing. The authors simply articulated this commitment through a different language, that of transportative science rather than of political economy. In any freight transport system, they posited, the maintenance of transportative equilibrium depended not only on an adequate supply of appropriately sized vehicles but also on the full utilization of these vehicle’s freight capacity at all times. Empty vehicles meant transportative disequilibrium and congestion. And one sure way to clutter streets with such wasted vehicles was to give over large swaths of the city exclusively to consumption activities, capable of sending off only unfilled trucks (or trucks filled only with waste residue).

In this sense, the very point of the underground conveyor system was to work against such separation of uses—to promote the spatial integration of material production with material consumption throughout the island. Thus, each freight station (or “inland terminal,” as the authors
called them) within the conveyor system was designed to put out as much freight as it took in. This equilibrium was concretized in the very architecture of the model station. Large freight elevators leading up from the principal underground platforms were to access multiple stories above for freight storage and handling. These stories were to alternate in use, odd floors for input, even floors for output (or vice versa), with truck and wagon ramps spiraling along the perimeter of the building, making their way down to street level. At the main entry of the station there was to be a concourse for traffic spillovers from the ramps (see Figure 4).
Figure 2. The Lower West Side line of the proposed automatic electric system
Source: New York, New Jersey Port and Harbor Development Commission, Joint Report with Comprehensive Plan and
To judge by their tone, the authors were quite enamored with this conveyor concept—in particular with the degree to which it would depend on those automatic electric switching technologies being developed at this time by the island’s nascent semiconductor and electronics industries. They treated the construction of new transport infrastructure *over* the surface of the ground as something of a lesser priority. Still, their “esplanade” lining the Hudson waterfront, decking over the major surface-level waterfront boulevard (which was named, in different places, West Street, Eleventh Avenue, and Twelfth Avenue), was a significant element in the plan.47 As the plan

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*Figure 3.* The thick black lines here (enhanced by the author) represent an expanded automatic electric system, while the thinner lines represent an improved belt railway system for standard rolling stock.

Figure 4. Joint Report engineer William Drinker’s prototype for a Manhattan freight delivery station, designed to put out as much freight as it took in

Figure 5. Plans and sections of the Joint Report’s proposed waterfront esplanade, which would have had spaces above and below the elevated road for warehousing and industrial activity
authors viewed the matter, if the streets of the island could not flow "with the necessary volume and smoothness," the overall productive space was sure to lose its broader raison d’être. Thus, it was essential that the primary use of city streets be the locally scaled transport of goods—that is, from one point within the island to another.

Along these lines, the great benefit of the Joint Report’s proposed elevated esplanade was to get non-freight vehicles—automobiles hauling nothing other than the indivisible bodies riding them—off of city streets. Thus, the report authors advocated the exclusive use of the raised road by passenger automobiles—with some extra space given over to pedestrians looking to get a westward view.48 Thinking about the architectural design of the elevated structure, the authors further proposed that wherever possible the object “double” as an industrial building. Spaces both above and below the raised road could be useful for manufacturing or storage. And just as vehicular ramps would funnel automobiles from street to elevated highway, pedestrian ramps would integrate the occupied floors below and above the highway with the floors of the pier buildings next door (see Figure 5).

Thus, the very concept of—for the first time anyplace—elevating the urban automobile to the level of the city’s upper stories seemed to open up a whole new frontier in this particular production space. From today’s perspective, the proposed esplanade looks like what we might call an expressway, and so perhaps evokes a certain vast metropolitan scale. Yet for the Joint Report authors, their “esplanade” was a painstakingly localized object, designed at every twist and turn to complement and facilitate the intricate freight-hauling activities occurring directly in its shadow. As it turned out, this elevated object was the only part of the Joint Report plan to be built (though sadly without the industrial floors and the raised pedestrian walkways). That was in 1929, making it the first urban express road in the world—conceived of (as if defying subsequent urban history) to make the inner city more crowded and more industrial.49

These novel recommendations, then, constituted the “extraordinary mechanism” that the authors of the Joint Report hoped would facilitate the development and expansion of Manhattan’s realm of small-batch freight transfers. But the authors did not contain their analysis to this realm alone. Expanding the scale of their purview to the continental and transoceanic freight systems that became interconnected at New York Harbor, the authors advocated a sweeping overhaul and expansion of mass shipping and handling activities throughout the port. Roughly 30 percent of the goods passing through the harbor left unprocessed by any local manufacturing or consumption activities—for instance, grain originating from the American Midwest and bound for Europe.50 Such materials, the authors supposed, had no place in or near Manhattan. Thus, the authors suggested the dredging of marshlands west of Jersey City and east of Brooklyn to make way for crane-operated handling facilities (of a scale that anticipated the containerization ports that were to come midcentury).51 These two new port complexes were to be connected by a freight railroad tunnel ducking under the harbor, leading from Long Island to New Jersey, bypassing Manhattan altogether. This tunnel would constitute an important link in one of several new “belt” rail lines, wrapping around the metropolitan periphery rather than cutting into it, enabling a consolidation of railroad operations approaching the port.52

The logic of these suburban schemes contrasted sharply with that of the schemes for Manhattan. The island small-batch conveyor and automobile esplanade system sought a spatial integration of production with consumption. The suburban belt lines and port facilities sought an intensification of mass shipping—that is, a spatial pulling apart of production from consumption. Yet to the report authors, these logics were not (or did not have to be) antithetical. After all, the integration on Manhattan Island depended on the hauling of raw materials like coal or copper over many hundreds or thousands of miles. And the hauling of materials over long distances depended on the kinds of technological novelties (in particular in chemicals and communications) whose manufacture so often clustered on the island. The synthesis of these two scales of transport and industry
became manifest not only in the proposed intermodal switching yards intended for New Jersey but in the potential of the conveyor and esplanade system to expand well beyond the perimeter of the island, to start filling up all that space left over by the “uneven” geography of the transcontinental railroads. Such a synthesis would on one hand radically expand the small-batch realm, establishing it as dominant within the region’s workaday social life, while on the other preserving and fortifying the necessary other realm, that of mass production and mass shipping. And it would accomplish this by combining intricate three-dimensional infrastructures at the insular core with monumentally scaled freight complexes at the harbor periphery.

Advocacy and Political Defeat

Graphically—that is, through a semantics organized around visual and numerical measurements—the authors supposed that their plan could help a great many people in the environs of New York Harbor. But questions regarding who the beneficiaries of the plan might be and why their benefit was a desirable end—these demanded much more than graphical thinking. Such questions, to be even recognized and approached, necessitated the logical exposition of a set of political, and perhaps even philosophical, ideas. Such a discussion was absent from the Joint Report; and without any kind of careful political self-reflection, the report authors were never able to identify an appropriate political coalition toward which to advocate their plan.

The authors certainly did try advocacy. They prepared articles for the daily press, formed an education council to arrange for lectures in meeting halls on the “social burden imposed by inefficient transportation methods,” organized contests for high school essays on the subject of transport problems, posted bulletins in public forums and circulated pamphlets at street corners, and screened a documentary at schools, social clubs, societies, theaters, and churches. They went to local community leaders, shippers, truckers, and trade organizations for support and scheduled a conference for local politicians to critique or weigh in on the proposal.

Yet the plan never became a cause célèbre. Political leaders rarely attended the Development Commission’s events. Trade organizations showed only a casual, noncommittal interest. Truckers eyed the report with suspicion. “Society” audiences tended to respond more enthusiastically to the suburban aspects of the plan—the belt rail lines and the mass-shipping facilities—than they did to the unusual mechanism intended for Manhattan. The report authors did not engage with organized labor (or attempt to articulate their plan in terms that might pique laborers’ interest) either through the major labor newspapers or through labor leaders directly. Nor, apparently, did organized labor attempt to engage with the harbor project. And perhaps, given who the project authors were, given their backgrounds and social routines, such a connective failure was a forgone conclusion. The industrialist Eugene Outerbridge, one of the Development Commission’s principal directors, had made his fortune off train-part factories throughout the region. William Wilgus, the mastermind of the early, omni-street conveyor plan, had previously been chief engineer for the New York Central Railroad (for which he had designed Grand Central Station). William Drinker, the engineer of the conveyor freight stations, had established himself professionally working for both the Erie, Lackawanna & Western Railroad and the Erie & Hudson Railroad.

And yet it was not as if petty factory or railroad interests had especially assigned these individuals to the harbor project. The assignments originated from seats of wider power, from military and industrial agencies in Washington. The Development Commission—or Port of New York Authority, as it was called by 1921—was the first federally chartered interstate agency in the history of the United States. Its very existence was not “business as usual” so much as a crisis-borne war measure, a historically embedded response, in the form of a local intervention, to an event that had dramatically restructured the industrial-imperial world. Thus, Wilgus himself had been the
chief consulting engineer for General John J. Pershing at the French front. Political counsels Irving Bush and Julius Cohen had served as director and secretary, respectively, of the Port War Board. Consulting engineer George Goethals was a West Point graduate and career military engineer; immediately before his appointment to the New York Harbor project, he had been chief engineer of the Panama Canal and served as interim civil governor of the Canal Zone.58

For the report authors, the shared experience of imperial crisis substantiated the port problem as a dual geography, of state conflict on one hand and freight congestion on the other. This particular spatial understanding blocked out explicit questions of production and labor, and yet under the peculiar political and historical circumstances, marked by abruptly fragmented economic structures and uncertain institutional commitments, it could in fact amount to the same thing.

Nonetheless, once having formulated a solution to the port problem the authors could not then grasp that if manifest, this solution would have consequences in a much wider arena than that of transportative science, which had contained the problem’s primary articulation. It was as if, passing in person through Manhattan’s crowded streets, the authors each had seen that there was something here worth developing but then could articulate that thing only in terms of its mechanical process, never in terms of any kind of abstract political logic—and so (as an institutional biography observed two decades later) “did not fully comprehend its importance.”59

Whether structural or personal, this failing deeply undermined the plan authors’ efforts to garner political support for the implementation of the automatic electric system. Even in the original legal drafting of their charter, in 1919, the harbor project commissioners’ lack of perspective on the jealous nature of the railroads’ economic self-interest led these commissioners to accept, either passively or naively, the replacement of the drafted phrase “under one administration” with the phrase “so far as economically practicable.”60 This substitution defined the political authority of the Development Commission not in legally fixed terms, through which the commission could then maneuver, but in a vague ideological cipher—“economic”—sure to be controlled by the most politically competent actors, the railroads themselves.61 Thus, when the next year the commission published its report and advocated the terminal consolidation of the various rail lines, the railroad companies, guarding their private fortunes within the region, were able to undercut this suggestion on the grounds that it violated, as they wrote to authorities in Washington, certain “fundamental principles” of economy, and so was “neither advisable nor practicable.”62

By 1928, the Port and Harbor Development Commission advocacy effort was over. The original commissioners and engineers either shifted their ambitions within or left the Port of New York Authority, the bureaucratic apparatus of which legislators quickly committed to suburban highway, passenger railroad, and ultimately airport and container-port projects. In the 1960s and 1970s the interstate agency, under the auspices of “improving” the (by then long undermaintained) port facilities along Manhattan’s Hudson waterfront, replaced sixteen acres of Lower West Side manufacturing lofts with a fifty-million-square-foot office mega-complex known as the World Trade Center.63 Thus, the scrapped port organization was ultimately recycled into its antithesis—a vehicle not for expanding freight-handling in and around the harbor, but for rolling these activities back, and asserting, as the metropolis’ sole economic base, the socially polarizing interaction between elite business decision making and office and service tasks.

Conclusion

It would be misleading to claim that had the Joint Report authors grasped and expressed the political economic significance of their plan, they then would have succeeded in articulating the plan to an appropriate political coalition (i.e., one composed of parties sympathetic to the local integration of production with consumption). Nor can we suppose that such a coalition, if formed, would have had sufficient capital or leverage to get the automatic electric system built, nor even,
for that matter, that the system would have worked, technically, even if built. Yet we can say this: the reason that neither the political viability of a pro-Joint Report coalition nor the technical feasibility of the proposal itself ever had a chance to be tested within history was a discursive elision—of the theoretical relationship between infrastructural design and political economic outcome. Indeed, this elision closed off the formation of an appropriate political coalition as a historical possibility.

This nonarticulation, or missing discourse, fits into a broader and deeply persistent pattern in the history of both planning theory and political economic theory. Neither transportative nor political economic views of the world have recognized as substantial the extent to which separate and distinct logics of infrastructural design can enable separate and distinct logics of material production. Even Jane Jacobs’s 1961 Death and Life of Great American Cities, which pioneered theoretical thinking about the impact of street patterning on urban economic diversity (using Manhattan as its case study), neglects the problem of material production within densely settled locations. The task of illuminating and filling this theoretical gap is crucial—especially for those planning theorists and historians eager to speak to the political economic insecurities of the present day.

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Notes
1. One possible exception here is Keller Easterling’s 2001 Organization Space: Landscapes, Highways and Houses in America (Cambridge, MA: MIT Press).
2. A quintessential example of this mindset is provided by Daniel Burnham and Edward Bennett’s 1909 Plan of Chicago, which advocated the development of downtown Chicago as a luxury and office district, and the placement of industrial activities along the interurban railroads to the region’s southwest. See Daniel Burnham and Edward Bennett, Plan of Chicago (New York: Princeton Architectural Press, 1993 [1909]), 67.
8. Erwin Bard discusses this term in his The Port of New York Authority, 22.
11. See in particular the section “The Bits and the Pieces,” by James Hund, in Hall (1959), Made in New York (Cambridge, MA: Harvard University Press), 278-92. Hund argues that during the nascent years of the electronics industry (between 1920 and 1950), electronics firms in Manhattan existed not so much to churn
out specific commodities on a repetitive basis but rather to experiment with apparatus parts developed by similarly experimental neighbors. As Hund points out, firm mortality was high under these circumstances, but firm rebirth was higher (at least, within the electronics trade). While on a day-to-day basis a given firm’s productive existence was by no means an unplanned free-for-all, long-term innovation thrived so long as local divisions of labor had a capacity for fluidity and rearrangement.

20. This is the argument Lizabeth Cohen makes about New York City in her *Consumer’s Republic: The Politics of Mass-Consumption in Postwar America* (New York: Vintage, 2003), pointing to the “planned obsolescence” of such local industries as garment making.
23. In his 2007 edition of *Global Shift* (New York: Guilford), economic geographer Peter Dicken points to such current “technopoles” as California’s Silicon Valley, Boston’s Route 128 Corridor, London’s M4 Corridor, the Baden–Württemberg region in Germany, the Emilia–Romagne region in Italy, Paris–Sud, Seoul–Inchon, Taipei–Hsinchu, Singapore, and Tokyo.
35. The report authors were emphatic on this point: “No joint railroad for standard rolling stock will solve Manhattan’s freight distribution problem.” PHDC, *Joint Report*, 222.
38. PHDC, Joint Report, 287.
40. PHDC, Joint Report, 394.
41. Referred to in PHDC, Joint Report, 217. See William Wilgus, Proposed New Railway System for the Transportation and Distribution of Freight by Improved Methods in the City and Port of New York (Submitted to the Public Service Commission of the First District by the Amsterdam Corporation, 1908).
42. PHDC, Joint Report, 280.
43. PHDC, Joint Report, 12.
44. PHDC, Joint Report, 268.
45. PHDC, Joint Report, 294.
46. PHDC, Joint Report, 256.
47. PHDC, Joint Report, 347-49.
48. PHDC, Joint Report, 349.
49. The so-named West Side Elevated Highway was to prove a temporary installment in the Manhattan landscape. In 1973, the section of highway passing over Gansevoort Street, in the Lower West Side, unexpectedly collapsed. The four-mile-long structure was closed to traffic and ultimately razed in 1988.
51. PHDC, Joint Report, 367-68.
52. PHDC, Joint Report, 281-86.
53. Bard, The Port of New York Authority, 48; see also New York Times, July 29, 1921, p. 20. This film featured a cartoon of “Mr. Potato,” whose face became visibly wearier as he embarked on his complex odyssey from a train yard in New Jersey to the Washington food market in Manhattan.
60. Bard, The Port of New York Authority, 44.

Bio

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