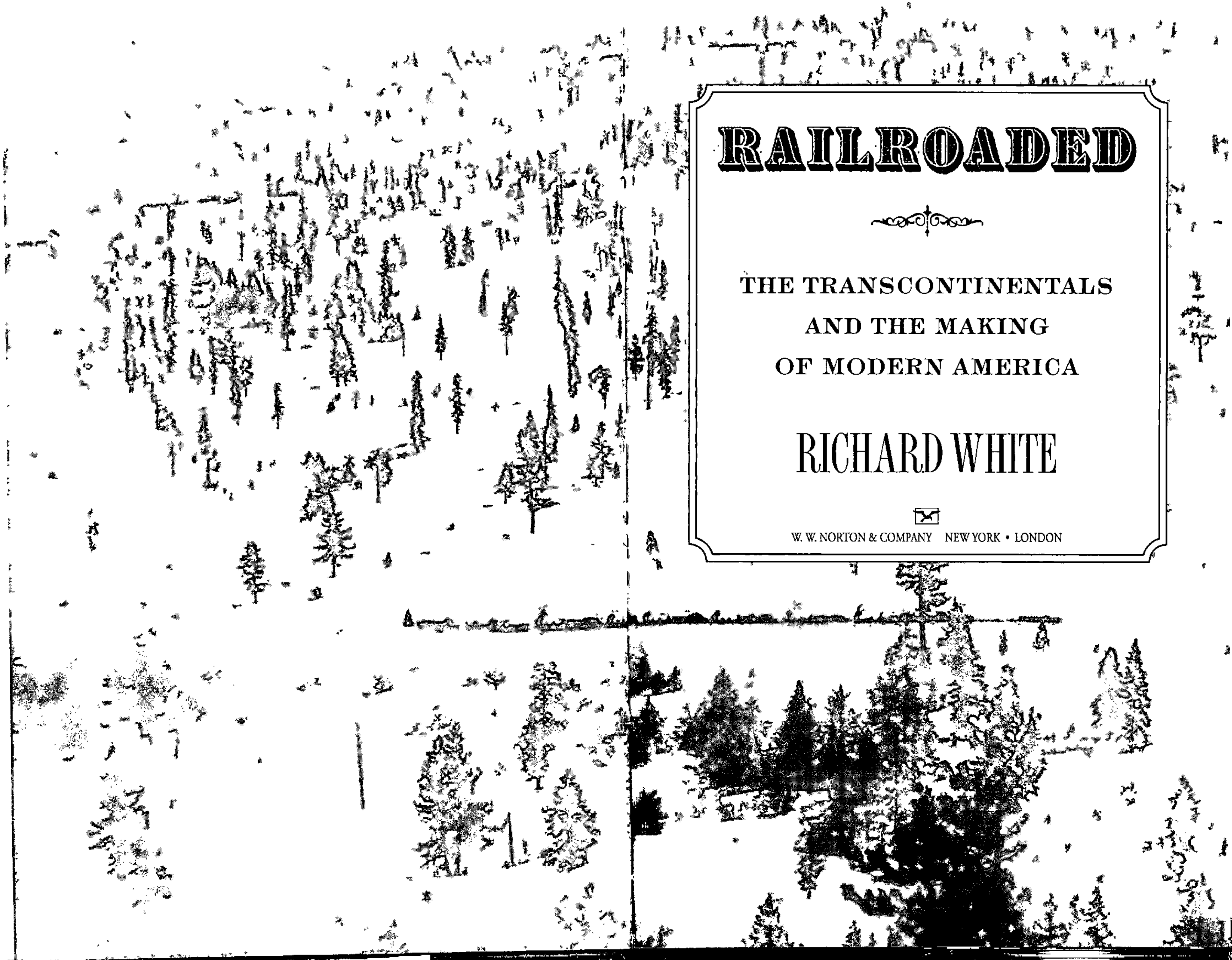

RAILROADED

THE TRANSCONTINENTALS AND THE MAKING OF MODERN AMERICA

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CHAPTER 4

SPATIAL POLITICS

But a little practice and a little study of field geometry will enable any one of ordinary intelligence without any engineering knowledge whatever . . . to lay out a railway, from anywhere to anywhere.

—ARTHUR WELLINGTON, *The Economic Theory of the Location of Railways*[1]

THE RAILROADS MADE nineteenth-century Americans realize that space was political.[2] It was a disconcerting recognition because space and politics seemed categorically different. Space was natural; it was what existed in the world separate from humans; politics was cultural, one of many different arrangements humans created to deal with one another. Space always seems the most natural when it is the most static, when it is measured simply as the distance from here to there. Measures of distance differ from society to society, but distance, the stuff being measured, seems a creation of the natural world changing only as continents drift and mountain ranges rise.

Conventional representations of railroad lines rendered them static and thus a mere overlay on a natural space. The gorgeous maps printed in the late 1880s by the *Engineering News* depicted the American railroad network and its recent expansion as a jungle of multicolored railroad lines, their trunks crossing and their branches sometimes intertwining. They captured

the growing extent of railroad space, but they could not capture the way this expansion changed space itself since, like all maps, these were static.[3] The deeper meanings of railroad space remained invisible unless the trains were put in motion. Emphasizing motion was essential to creating a spatial politics.

The railroads made space political by making the quotidian experience of space one of rapid movement. A railroad train in motion was a snorting, smoking, roaring thing; for all the beauty of its movement, it was an assault on the human senses, which registered that it was the train's movement that mattered. But it wasn't just the train that moved; the things the train connected seemed to move with it. The British novelist Anthony Trollope while visiting the United States in the 1860s wrote, "The town that is distant a hundred miles by the rail is so near that its inhabitants are neighbors; but a settlement twenty miles distant across the uncleared country unknown, unvisited, and probably unheard of by women and children. Under such circumstances the railway is everything. It is the first necessity of life, and gives the only hope of wealth." Trollope captured why the locomotive had "been taken to the bosoms of them all as a domestic animal."[4]

What Trollope grasped was that space itself took on different forms according to how movement was measured. The speed of the train determined the time of the journey and the experience of space. Substituting time for distance made space political, but only to the extent that politics determined which places got railroads and which did not.[5]

A further step was necessary for the full fruition of spatial politics: people had to measure space primarily by cost. Measuring space by cost rendered it radically unstable. It changed every time a freight rate changed. It became apparent that whoever controlled this measure of space gained considerable power and advantage. And once this became apparent, the struggle to control and regulate those measurements not only irrevocably entered the realm of politics but moved to the center of nineteenth-century American politics. North Americans realized that the building of railroads had created the hardware of the railroad network, but just as critical to the operation of railroads was the software—the time schedules and tariffs (rates) that managed movement of people and things through space—and the administrative apparatus that kept track of railroad cars, determined routes, and set prices. These formed the heart of a railroad politics that was fundamentally a spatial politics.

I. ABSOLUTE SPACE

In 1869 Butler Ives, a thirty-nine-year-old engineer in the employ of the Central Pacific, helped complete a first draft of western railroad space. He had been in the field surveying the route of the railroad for three years, in some cases working far to the east of where the Central Pacific would run. The country he traveled was often Indian country. Ives was a romantic who feigned a cynicism that often became an ill-concealed form of boasting, as when he described the work of laying out the route across the Great Basin: "For 150 miles of the distance we had day camps or for every camp in that distance we had to haul water with mule teams from 10 to 15 miles for cooking & drinking purposes & some of that was brackish. I found it a good place to take the romance out of some enthusiastic young engineers I had in my party." But at other times his own romance was all too apparent, as when he led his party east of Ogden and into the mountains.

> *The country, for 150 miles east is but a succession of Mt. Ranges with very narrow valleys along the streams. There is but little timber except on the higher slopes of the Mts while most of the country is covered with good grass. The streams are filled with trout and the Mts. with game rendering it one of the best sections of country I have ever been in for camping purposes. I have carried my old shot gun on the pommel of my mule's saddle all summer. Have killed one brown bear, one antelope & geese, ducks, grouse, hare etc. without number. We have had trout whenever we took the trouble to fish for them.*[6]

Ives, who was from Michigan but had long lived in California, took pride in his ability to live in these western places. "They keep me out on this infernal region of Salt & desolation," he wrote his brother, "because I am familiar with the country and don't fear the Indians which is a bugbear to most people in this country. In fact, I am sort of a vagabond pioneer of the

R.R. Co. singled out for difficult jobs with a carte blanche to do pretty much as I please."[7] His skills were transportable, but the local knowledge that he developed was not. That did not matter, however, because the whole point of creating railroad space was to make such local knowledge superfluous. A passenger train would cover those 150 miles in less than a day without any need for the travelers to find or carry water or to camp.

"Vagabond pioneer" was a role Ives played; he was really a very modern figure, a professional engineer whom a corporation employed for a salary. He carried with him not only his shotgun but his tools of abstraction—the "old solar compass" and two barometers. He knew he was using these tools to measure and transform space. His work helped make the East, once so far away, near, whether he measured his separation in time or in money. "I don't know how things will shape with me when the road is finished," he wrote his brother. "If I can get time I will come & see you. It will not cost me much for I am a deadhead on both roads."[8] He was a company man with company benefits.

Ives's correspondence largely stopped in 1869, and then, in the way that documents and history truncate fuller lives, there was in 1872 a final letter from Jonathan Valentine, a superintendent of the Wells Fargo Express Company, to the superintendents of the Union Pacific. "We forward tomorrow express addressed to Detroit, Mich. the remains of Mr. Butler Ives who was one of the Pioneer Engineers in surveying and locating the route of the present overland railroad, the C.P. and U.P. lines. As a tribute to Mr. Ives attainment as R.R. Engineer, and character as a gentleman, and as a courtesy to Railroad Managers, we forward the remains free and will esteem it a favor if the U.P. & American Cos. will cooperate with us."[9] Ives was dead; he was just cargo, but he remained a deadhead. His corporate privileges were intact; the railroad did carry him home.

Ives passed away five years before the first edition of Arthur Wellington's *The Economic Theory of the Location of Railways* appeared. Wellington served as an engineer on the Mexican Central Railway and the Mexican National Railway, but his most impressive production was his book, which would go through five revised editions by 1891. Like Ives, Wellington was an engineer who reduced local knowledge to numbers, a universal language of elevations, grades, curves, and the power that a steam engine could muster. He did this to create railroad space.[10]

Wellington was an enumerating modernizer, and a very intelligent one, who wanted to lay out the physical infrastructure of railroad—its tracks, bridges, tunnels, stations—so that movement yielded the highest possible revenues. He thought methodically about the connections between infrastructure, movement, and revenue, and his skill lay in keeping all three elements in play at once. He was engaged in a perpetual act of translation. He translated geography into a kind of hybrid space—at once abstracted and physical. I will call this hybrid space absolute space; it was both geometric and natural. It came into being when workers altered an existing landscape by driving a railroad through it. The track created an axis. Looking down the track, engineers could measure a linear space and the length of journeys; looking outward from the tracks, surveyors could find the series of square sections that made up the railroad's land grant.

The Canadian Pacific in the years immediately following its completion in 1885 formed a nearly pure example of absolute space as a paradigm of order and control. The Canadian Pacific laid out its stations every eight miles. Why eight? Apparently eight miles was the maximum distance at which a farmer could make a roundtrip with a wagonload of grain on level terrain in a single day. A farmer along the line halfway between stations would still be able to make his journey and be back by dark. At every second station there would be "depots, section-houses, and water tanks" as well as the various sidetracks necessary to load, unload, and switch trains. And roughly every one hundred miles, the train would reach a divisional point with railroad shops and yards, which inevitably meant jobs and larger towns. The Canadian Pacific was imposing a pattern here that would determine the movements, routines, and opportunities of people not yet in the country.[11]

Besides the railroads, only the state could structure space on this grand scale. Together the Canadian and American land surveys and railroads marked out the shapes of what was to come. It was as if Manitoba, Alberta, Saskatchewan, and all the places like them across half a continent were a child's coloring book with the patterns presketched. Farmers could add color and variety, but the lines of their fields, the locations of their roads,

the places where they would take their crops and buy their supplies—all of these had first been determined by the survey grid and later elaborated by the railroads.[12]

W. C. Van Horne was the primary architect of railroad space on the Canadian Pacific. He was a striver. As an old man, he remembered how he had aspired to be a general superintendent of the railroad, any railroad. He imagined that a general superintendent "must know everything about a railway—every detail in every department," and Van Horne, as much as any man, did. General superintendent may have been his original destination, but general superintendent was a local stop and Van Horne became an express. He was a general superintendent before he was thirty. He "took no holidays and . . . worked nights and Sundays. . . . And not any of this could be called work, for it was a constant source of pleasure."[13] An American lured north to run the Canadian Pacific, and eventually rising to be its president, Van Horne became an ardent Canadian nationalist, in part because Canadian nationalism was the fuel for the Canadian Pacific.[14] Van Horne was a man conditioned to think about railroad space in terms not only of the thousands of miles that the Canadian Pacific spanned but also of the inches and feet involved in the design of a car, or the square footage of a warehouse or grain elevator.

Van Horne recognized the power of spatial arrangements—how, for example, the precise arrangement of sidings and the buildings along them in Manitoba could influence the price that wheat grown in the province brought a continent away. The Canadian Pacific leased rather than sold land adjoining sidings, and that allowed Van Horne to mandate the kinds of structures that could be built there. By replacing numerous small buyers and their small single-story warehouses, in which high- and low-quality wheat were promiscuously mixed, with "two or three suitable elevators at every grain station on the line," which separated wheat by grade and loaded wheat mechanically rather than manually, the railroad could exert control over the quality of wheat.[15] Van Horne reduced the harvests of tens of thousands of western Canadian farms into a small number of graded classifications that enabled a buyer in Liverpool to know what he was getting when he purchased Manitoba wheat. That gave it an advantage over wheat shipped from

Duluth, Minnesota—the Northern Pacific's terminus—which was "very variable, sometimes . . . 'No. 1 Duluth Hard Wheat' means one thing at one time and quite a different thing at another, and this has had the effect of injuring its reputation and reducing its value in the World's markets." Rigorously graded Manitoba wheat would bring a premium on world markets, and the railroads as much as the government had to take responsibility for ensuring uniform grading.[16]

II. RELATIONAL SPACE

Absolute space, in turn, yielded a second kind of railroad space: relational space. Relational space came into being only when the geometrical measures of absolute space, calculated in inches, feet, or miles, were related to other abstract measures such as time or cost. Relational space was the railroad space of movement that arose when humans calculated their journeys not in miles and feet but in hours and minutes or dollars and cents. Railroad distance measured in miles between two points was stable; distance measured in time or money was often radically unstable and a matter of bitter dispute. It formed the heart of the entire railroad enterprise.[17]

Like Ives, Arthur Wellington was both cynical and touchingly naïve. He was scornful of much engineering practice, but he still thought that, if engineering was rightly defined, railroad problems were ultimately still engineering problems. Western railroads in particular were primers on where not to locate railroads. The Kansas Pacific never left the prairies and the Great Plains, but it contained "numerous and heavy grades, distributed over the whole of it."[18] The Mexican Central had rejected a route that would have put it through Silao, Guanajuato, and León. It decreased its tributary population per mile even as it added "nearly 500 miles of extra haul" between Mexico City and El Paso.[19] The Western Pacific took the shortest route between San Francisco and Sacramento, but an alternate route, taken by the California Pacific Railroad, was shorter "in the sense of economy and transportation," which is to say it was a "dead-level road," while the other had a maximum grade of fifty feet to the mile.[20]

Wellington measured the success of railroad technology by its ability to

move freight at minimal cost. By these standards the technological success of most western railroads was open to question. As Wellington pointed out, "a little practice and a little study of field geometry will enable any one of ordinary intelligence without any engineering knowledge whatever . . . to lay out a railway from anywhere to anywhere." There was "no field of professional labor in which a limited amount of modest incompetency, at $150 a month, can set so many picks and shovels and locomotives at work to no purpose whatever."[21] Many engineers built railroads badly, and it might take years to discover the hidden costs of steep grades, sharp curves, missed sources of traffic, and the failure to keep a line as level as possible.

Once built, a railroad's absolute space became part of the local geography ideally suited for mapping and conventional description in a railroad guidebook. *The Pacific Tourist,* designed to entertain and inform, provided railroad travelers information about towns, sights, stage connections, and a rudimentary history. Its readers encountered a set of maps, anecdotes, descriptions, statistics, and illustrations all set firmly in absolute, three-dimensional space. Archer, Wyoming, "is 508 miles from the starting place (Omaha), with an elevation of 6,000 feet above tidewater. This station is a side track with section house nearby." Cheyenne, the "Magic City of the Plains," was "516 miles from Omaha, elevation 6,041 feet."[22] The *Railroad Gazetteer,* "For Gratuitous Distribution on Railways, Steamers and Stages" of the Central Pacific, meticulously located for its captive audience of travelers tunnels, snowsheds, and exceptional sights by their distance from San Francisco and their elevation.[23]

What distinguished railroads from the natural geography through which they ran was their centrality to measures of value; they transformed everything around them. There is no such thing as a badly placed river or a mountain, although humans may wish they were located elsewhere. They are where they are, but engineers located railroads for human purposes. There were good locations and bad. To determine the line between "the utterly bad and barely tolerable" in railway location, Wellington relied on a second abstract measure: the dollar. Wellington thought engineering should not be considered the art of construction but rather "the art of doing that well with one dollar, which any bungler can do with two after a fashion." How to build a railroad was widely studied, but "the larger questions of where to build and when to build, and whether to build them at all" had been neglected.[24]

The first step in the engineer's job of giving maximum value to railroad movement was to reduce the natural complexity of a road to a mathematical simplicity that would indicate the optimum route over which a single engine could pull the maximum number of fully loaded freight cars a given distance at the lowest cost. Through the 1880s, with the coupling technology then in use, the maximum length of a freight train was fifty to sixty cars. On most lines, however, the real limit was lower, often much lower, and was set by the number of cars a locomotive could pull up the ruling grade.[25] The ruling grade was not necessarily the maximum grade. If a train had to approach a grade at low speed or from a standing stop then this "virtual" grade might be the ruling grade while a steeper grade approached at high speed might be more easily surmounted. Numerous short steep grades forced railroads to run smaller more frequent trains, and the cost of doing so was far greater than running large trains. This ability to limit the length of trains was, in Wellington's view, "the whole objection to gradients."[26]

Ideally, a railroad should follow the most level terrain, using nature to reduce the grade as much as possible. Curves, as long as they were not excessive, were tolerable. *Railway Location* was nearly a thousand pages long by the late 1880s, but its essence was clear: railway location was primarily about gradient and traffic. If there was a "fundamental law for location," it was "*Follow that route which affords the* EASIEST POSSIBLE GRADES FOR THE LONGEST POSSIBLE DISTANCES, *using to that end such amounts of distance curvature, and rise and fall as may be necessary, and then* PASS OVER THE INTERVENING DISTANCES ON SUCH GRADES AS ARE THEN FOUND NECESSARY."[27] Engineers should choose routes that concentrated grades into a limited number of places of steep ascent where helper engines could assist.[28]

Wellington's concern with the ruling grade was, of course, not the whole story, but it was most of it. His second concern was traffic, which also reduced down to a maxim: the layout of railroads should secure the largest possible tributary population and, whenever possible, link major centers of population.[29] Wellington thought engineers paid far too much attention to what he called the minor details of railway location—relatively small variations in

distance, curvature, and the rise and fall of topography less than the ruling grade of the road. These "minor details" did influence the cost of moving people and goods and at the extreme could cripple a line, but improvements should be made only when they were justified by increases in business, gross receipts, or savings in operating expenses greater than the costs of improvements.[30] Such calculations should be made conservatively, never estimating an increase in traffic more than two to five years in the future.[31]

Wellington's calculations of movement took him into the realm of relational space, which was the wonderland of modernity. It rendered what was close distant and the distant near. For Wellington its key measure was cost of transport, and that did not vary "in direct ratio, or in anything like direct ratio" with distance. Other items—"grades, . . . cost of construction, terminal expenses, volume of traffic, whether cars return full or empty"—had more to do with the actual cost of service. In any case, Wellington thought the price of transportation had nothing to do with the cost of producing it. It was, he believed, simply a function of what people were willing to pay.[32]

Calculations of cost disrupted the clichés about the annihilation of time and space that governed people's initial reaction to the railroads. Margaret Irvin Carrington had captured that first reaction in 1869 when she wrote that with the transcontinentals and the Atlantic cable "the Christian world and all civilized people [may] rejoice that the islands of the sea and the barbarism of Asia have been brought so near to our homes that with only a single wire to underlie the Pacific, the whole earth will become as a whispering gallery, wherein all nations, by one electric pulsation, may throb in unison, and the continent shall tremble with the rumbling of wheels that swiftly and without interruption or delay transport its gospel and commerce." The Pacific Coast was by 1869 only four days from Omaha, and "[a]n officer of the army recently returned in forty hours over a distance which required a march of sixty-four days in 1866."[33] But Carrington did not speak of the shifting costs of such trips.

Railroads reduced the cost of movement, but they also rendered it dramatically unstable. Ignore the instability, and the whole world did seem to be collapsing together. The Senate Select Committee on Interstate Commerce reproduced this orthodox vision when it reasoned that a mechanic in Massachusetts had only to work a single day to pay the cost of transporting the food he would eat for a year one thousand miles from the western prairies. "If the mechanic will give up one holiday a year . . . he is placed alongside of the prairie, and distance is eliminated from his condition."[34] Such calculations, however, ignored fluctuations in costs and differences in costs between one destination and other. When rates rose, or when they sank faster for one place than for another, seemingly fixed places grew not closer but more distant. This was relational space, and it became the heart of antimonopoly politics.

The measures of relational space were the timetable and the tariff. Both translated distance into other abstract measures—time and cost—but to get the full measure of relational space they had to be read together. The whole purpose of the timetable was to translate distance from miles into time. Going eastward from San Francisco in November of 1871, a passenger left San Francisco at 7:00 in the morning and reached Sacramento at 2:00 in the afternoon. It was after midnight when she reached Reno, and roughly twenty-four hours after leaving San Francisco she was at Humboldt in Nevada. Nearly another day would pass before she reached Ogden. People moving through space had to orient themselves by time—when the train departed, when it arrived, how long it was in transit—and compare the savings in time with other means of transportation. The timetable's measures of space were always shifting: schedules changed, stations were added or dropped, new technologies increased the speed of the train and thus shortened the time between places, and weather delayed the train and thus increased the time. Ultimately this orientation in space by time changed time itself. The Central Pacific Railroad in November of 1871 had to specify that the schedule operated on Sacramento time because each city, operating on sun time, had its own time. Eventually, in 1883, the railroads promoted and enforced standard time to coordinate their schedules. Lives took shape around this.[35]

Just as the timetable translated space into time, so the tariff list translated distance into money. This was a relatively simple translation in the case of passengers. It depended largely on the class of travel, but it was a much more complicated translation in the case of commodities. The cost of shipping

varied from commodity to commodity and was always changing. Here is where relational space grew most important. When the price of movement between two places fell, then those places drew closer together. When it rose, they grew farther apart. Since the prices, or tariffs, that the railroads charged fell as a whole throughout the late nineteenth century, space had shrunk. The average rate per ton-mile on freight declined fairly steadily on both the Central Pacific and the Union Pacific between 1870 and 1885, with the rates in 1885 roughly one-third of what they had been fifteen years earlier.[36] Things were, however, more complicated than they seemed.

The overall decline in freight rates and comparisons between American and European freight rates became something of a stock answer to complaints about American railroad tariffs, but they were not answers that stood up well to scrutiny. In 1897 the president of the Atchison, Topeka, and Santa Fe informed the Kansas legislature that the average rate charged per ton-mile by his system had fallen 55 percent between 1882 and 1896.[37] The average rate per ton-mile, however, was not a particularly revealing statistic. Because railroads charged more for short hauls than for long hauls and because they discriminated between commodities (charging less for bulk goods like coal or wheat than for luxury goods like coffee or tea), a change in the length of the haul or an increase in the amount of lower classifications of freight would produce a decline in the average rate per ton-mile without much alteration in rates. The expansion of the Santa Fe after 1882 and the rise in Kansas coal, corn, and wheat production would in and of themselves have gone far to reduce average rates. An American Statistical Association forum in 1897 concluded that "the low average freight rates per ton-mile in this country are due chiefly to the enormous amount of long-distance freight traffic."[38]

The average rate per ton-mile told little about the fall in the cost of transportation in relation to the fall of commodity prices. It appears that falling rates for the transportation of corn and wheat at best mirrored the falling prices for those commodities. The railroads charged what the crops would bear. Real rates may have fallen in the 1870s, but the price of transportation maintained either roughly the same proportion to the value of the crop or actually claimed a higher proportion from the 1880s into the 1890s.

Real railroad rates spiked proportionately to corn and wheat prices during the depression of 1893–97.[39] The Atchison's statistics did not answer what C. E. Prevey later called the "ethical question regarding the fairness of rates." Prevey wondered whether "the reduction in average rates per ton-mile [has] been at the expense of the railroad companies and a direct gain to the public, or does it consist in merely doing less work for less money?"[40]

Falling prices and average rates were not the issue; comparative prices and discrimination between shippers were the issues. Because prices did not fall evenly, distance did not shrink evenly, and this gave rise to the chronic discontent of those who used the railroads. It did not matter to wholesalers in Spokane, for example, if they seemed to grow closer to Chicago as their rates decreased over time if the rates to ship from Chicago to Seattle fell even faster. In such a case, they were at a disadvantage. They were in comparison to Seattle growing farther away from Chicago even though Seattle was 229 miles west of Spokane. Similarly, the special rates granted to Winnipeg brought that city closer to eastern Canada than any other place on the Canadian prairies.[41]

III. THE THINGS THEY CARRIED

If one thinks of the railroad tracks, bridges, and stations that made up the railroads' absolute space as hardware and rate tables that governed their relational space as software, it is easier to understand how railroads could project order and create disorder in such a way that the very concepts blurred. The physical capacity of railroad lines steadily increased. The limits of the technology—the need of locomotives for coal and water and the restraints on how far farmers could profitably haul goods by wagon—shaped a seemingly uniform railroad space, but technological restraints were to some extent plastic.[42]

Over time everything on a railroad swelled. Freight cars increased in size from 10 tons in 1870 to 15 and 20 tons, reaching 40 tons in the early twentieth century, even though these large cars rarely carried a full load.[43] The increases in car size as well as in train size were the fruits of steel rails, which allowed heavier loads, rebuilt and ballasted lines, better brakes; better

couplers, and more powerful locomotives. The Pennsylvania was the gold standard of railroad lines, and the one that kept the best records. Its average train carried a payload of 94.3 tons in 1863, 116.8 tons in 1873, and 196 tons in 1883. Western lines, not as well built or as well equipped, almost certainly averaged far less.[44]

As railroads built more tracks, and as trains increased in length and in number to carry more freight, they required more freight cars. Freight cars remained inexpensive individually, with their cost remaining steady at about $500 from the Civil War to 1900, but collectively they were a major drain on the railroad. To take just three representative western railroads over this period—the Central Pacific, the Northern Pacific, and the Chicago and Northwestern—the number of freight cars on each road increased, respectively, from 3,200 to 5, 850 (Central Pacific), 0 to 16,726 (Northern Pacific), and 5,982 to 35,194 (Chicago and Northwestern). And on each the large majority of freight cars were the simplest: boxcars and flatcars.[45]

As railroad tracks connected more and more places, movement often spawned disorder. The timetable disguised this disorder not simply because trains were often delayed but because it disguised the fact that many trains were not scheduled. Passenger trains, express trains, and scheduled freights usually did move along smoothly enough, but by the 1880s most western freights were unscheduled and put together as cargo required. For these trains the railroad was less a single line through space than a contraption that looked like an old Tinkertoy.

Imagine each stick of the Tinkertoy as a division of 100 to 125 miles, and at the end of each division—the round connecting piece of a Tinkertoy—was a railroad yard. This division point was the key marker in the absolute space of railroads. Now imagine a freight car bound from San Francisco to Cleveland or from Vancouver to Quebec. The car moved in divisional increments. A locomotive moved it from San Francisco to Sacramento, at which point the engineer put the engine in the roundhouse and the cars with their cargo in the yard, and a new train was made up. The car might sit there for a day or more before going on to the next division at Reno, where the process was repeated. And so a freight car proceeded across the country. The bigger the division point—at Ogden, where the cars moved from the Central

Pacific, to the Union Pacific or Omaha/Council Bluffs, where it moved to one of the Chicago lines—the longer the possible delay. In Chicago it could take a week or more to move out of the yards.[46] And none of this took into account bad weather, accidents, or the endless hours spent on sidings waiting for other trains to pass. It was impossible to simply divide the distance traveled by the speed of a freight train—11 miles per hour to 18 miles per hour—and get the duration of the trip.

In 1886 William Van Horne traced nine freight cars moving through mountainous British Columbia westbound from Donald to Port Moody. The first six cars to depart took from six to nine days to make the entire journey; they spent most of their time sitting in yards and sidings. It took these cars five to seven days to travel the 121 miles between Kamloops and North Bend. The next week the last three freight cars made the entire trip in half the time—in from three to four days. During the same period cars going east over the same track took between two and five days between Port Moody and Donald. "It is not necessary to run our freight trains very fast to make first rate time," Van Horne admonished his divisional superintendent. "It is only necessary to keep cars full watch to see that they are not scattered along the road or delayed at Divisional Points."[47]

The inefficiency of normal railroad movement played to the genius of nineteenth-century railroad owners, who were usually able to find occasions for profit in their own ineptitude. Insiders organized independent fast-freight companies—each with its own colored cars reflected in its name, such as the Blue Line or the Red Line—to move freight continuously across the country. A fast freight attained no greater speeds than any other freight, but it kept moving instead of pausing every hundred miles. Insiders skimmed the cream of this traffic for years until management created internal fast-freight divisions.[48]

Changes in technology produced additional opportunities to divert profits to insiders or well-connected customers. When, by the end of the century, refrigerated cars were beginning to be used for chilled beef and fruit, the railroads left their purchase to fast-freight lines. In 1890 American railroads owned 8,500 refrigerator cars; the fast-freight lines and the so-called shipper lines, such as the Armour Packing Company, held 15,000.[49] They,

too, became a way to drain off the most profitable traffic, often for the benefit of railroad insiders.[50]

Fast-freight companies profited by keeping goods in motion, but value also accrued at those places where movement stopped so that shippers could load goods and customers could take them off. With all else equal, farmlands with ready access to railroad stations, warehouses, and elevators had greater value than farmlands too far from a railroad for an easy haul. Towns competed so desperately for railroad connections because railroads increased not only business but also property values. There was money in knowledge of where a railroad was going or, better yet, where a railroad would erect stations, elevators, and, warehouses and where it would establish its divisional points with yards and repair shops. Both those running the railroad and those in existing towns knew this.

There were two kinds of urban places in the West: market centers, which very often existed prior to the arrival of the railroads, and railroad towns, usually divisional points on the railroad that owed their prosperity and even existence to the railroads' location of roundhouses and shops within them.[51] In both the railroads created value, in both the railroads, either the corporation itself or, more often, privileged insiders, sought to monopolize as much as possible the increased land values that they created. The degree of railroad control varied significantly.

The Canadian Pacific was one of the few roads that succeeded in allocating this profit to the corporation. In choosing possible division points, the railroad selected the site that allowed it "to secure a large enough interest in the adjacent real estate to recoup" its expenditures on shops and sidings.[52] In the words of the *Toronto Globe* in 1882, the managers of the Canadian Pacific had "a say in the existence of almost every town or prospective town in the Northwest. Individuals rarely have an opportunity of starting a town without their consent and cooperation."[53] When landowners at Grand Valley, Manitoba, tried to negotiate a better price for a future townsite, the railroad found more amenable men at what would become Brandon.[54] When the Canadian Pacific's superintendent Alpheus Stickney and chief engineer Thomas Rosser tried to use insider knowledge to engage in private land speculation, Stickeny was replaced by Van Horne, who then fired Rosser.[55]