

PROJECTING CAPITALISM

A History of the
Internationalization of
the Construction Industry

Marc Linder

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The Internationalization of British Railway Constructors

So long as capital accumulates in this country, it must be expended in some productive way at home or abroad. Judiciously planned public works are always productive and the men who find the means will appoint the agents for carrying out their works, and those agents will always be their own countrymen, so long as they are competent. ... Be sure of this, that while we remain the greatest capitalists of the world, and the chief iron-producers of the world, the world at large will be glad to come to us for our capital, our material, and our scientific skill.¹

The complex of macro- and microeconomic causes inducing firms to transfer their production across political boundaries is neatly represented in the first major modern paradigm of international construction—British railway building in the mid-nineteenth century. This early phase of the internationalization of construction arose under the specific conditions of uneven development between Great Britain and Western Europe. Later, “a new...international division of labor” between the industrialized nations and the societies that they transformed into their “outlying agricultural...establishments” while dominating their domestic markets generated even more elaborate projects.²

The focus in this chapter is on the free-lance constructors and their profit-driven projects in Europe and the overseas white-settler colonies. The next chapter examines the transformation that the burgeoning international railway construction industry underwent as firms became subordinated to the political-economic and military goals of their national states in the exploitation colonies.

Brassey and Peto

The chief essential of trade is the means of transit. ... It is the great mission of England to supply that want, and increase the amount of profitable employment for her constantly increasing capital.³

As the railway construction mania in Britain subsided toward the end of the 1840s—it was not until the *Gründerjahre* following the Franco-Prussian War that Germany surpassed Britain in kilometers of line open—“railway building became

¹“Address of Mr. James Brunlees, President,” 72 *MPICE* 2, 21 (1883).

²Karl Marx, 1 *Das Kapital: Kritik der politischen Ökonomie* 442 (1867 [reprint, 1959]); John Stuart Mill, *Principles of Political Economy*, Bk. III, ch. 25, § 5 at 685 (W. Ashley ed. 1926 [1848]). See generally Ernest Mandel, *Der Spätkapitalismus* 47-48 (1973 [1972]).

³“Railways in China,” 18 *Engineer* 283 (1864) (editorial).

a service which Great Britain could dump abroad when her financial and constructing plant could not be kept employed at home."⁴ But whereas French capital and the French state, for example, soon overcame "this technical and financial colonization on the part of England,"⁵ and became in the latter half of the nineteenth century the dominant force in building and financing European railways, the formal and informal colonies did not.⁶

To the extent that capitalist production in Europe and North America presupposed the mass production of commodities and the mass valorization of capital, those economies could become reliant on distant sources and markets only because faster and cheaper means of transportation and communication made them accessible and accommodated the constant hurling of masses of capital and labor from one sphere of production to another that the new world market increasingly demanded.⁷ "British industry was linked to sources of food and raw materials by the world's largest fleet of deep-sea vessels. Further increases in supplies necessitated the improvement of communications at the other end, which by 1850 could only be provided by rail in the absence of a navigable river."⁸

British overseas construction activities therefore had to precede large-scale direct investments overseas by British manufacturing firms: "It was under the auspices of Brassey and Peto and Wheelwright that the full effects of the industrial transformation of Great Britain were transported abroad. And in the middle of the nineteenth century they were the active agents in the migration of much British capital upon the Continent and elsewhere."⁹ Although their projects promoted the export of English capital goods associated with the overseas construction, their shifting cosmopolitan alliances with European contractors and financiers eventually helped expand the world market beyond British domination.¹⁰

In order to appreciate the crucial role that the railway constructors Thomas Brassey (1805-70), Samuel Morton Peto (1809-89), and Edward Betts (1815-72) occupied in globally radiating capitalism, it is first necessary to situate their position within Britain.¹¹ In contrast with Brassey's modest origins, Peto inherited a large building business from his uncle, Henry Peto. After successful completion

⁴Leland Jenks, *The Migration of British Capital to 1875*, at 133-34 (1927) (quotation); Henry Lewin, *The Railway Mania and Its Aftermath 1845-1852* (1936); B. Mitchell, *European Historical Statistics 1750-1970*, at 581-88 (1975).

⁵L. Girard, "Transport," in 6 *The Cambridge Economic History of Europe: The Industrial Revolutions and After: Incomes, Population and Technological Change (I)* 212, 239 (H. Habakkuk & M. Postan ed., 1965).

⁶See Arthur Helps, *Life and Labours of Mr. Brassey: 1805-1870*, at 80-81 (1872); C. Hobson, *The Export of Capital* 119-20 (1963 [1914]); W. O. Henderson, *Britain and Industrial Europe 1750-1870: Studies in British Influence on the Industrial Revolution in Western Europe* 64-75 (2d ed. 1965 [1954]); Rondo Cameron, *France and the Economic Development of Europe 1800-1914*, at 204-325 (1961). On the displacement of English by Danish subcontractors on the Danish railways, see Helps, *Life and Labours of Mr. Brassey* at 222.

⁷See Karl Marx, *Grundrisse der Kritik der politischen Ökonomie (Rohentwurf) 1857-1858*, at 423 (1953); *idem*, 1 *Das Kapital* at 370; Werner Sombart, 3 *Der moderne Kapitalismus: Das Wirtschaftsleben im Zeitalter des Hochkapitalismus* 285-95 (1927).

⁸R. Joby, *The Railway Builders: Lives and Works of the Victorian Railway Contractors* 73 (1983).

⁹Jenks, *Migration* at 138. William Wheelwright (1798-1873) was an American entrepreneur, who, after developing shipping and mining businesses in South America, built the first rail line in 1850 to make mines in Chile accessible; later he collaborated with Brassey on the construction of railways in Argentina. See J. Albrédi, *The Life and Industrial Labors of William Wheelwright in South America* (1877); Charles Walker, *Thomas Brassey: Railway Builder* 126-27 (1969). For a literary caricature of the Victorian railway contractor melding Peto and Brassey, see the character Roger Scatcherd in Anthony Trollope, *Doctor Thorne* (1858).

¹⁰Jenks, *Migration of British Capital* at 173-78; George Hallgarten, 1 *Der Imperialismus vor 1914: Die soziologischen Grundlagen der Aussenpolitik europäischer Grossmächte vor dem Ersten Weltkrieg* 62-63 (2d ed. 1963 [1951]).

¹¹For the obituaries, see *Times*, Dec. 10, 1870, at 12, col. 1; 33 *MPICE* 246 (1872); 36 *id.* 285 (1873); *Times*, Nov. 15, 1889, at 10, col. 2; 99 *MPICE* 400 (1890).

of a number of projects including the new Houses of Parliament, Morton Peto and his cousin and co-inheritor, Thomas Grissell, dissolved their partnership in 1846 because the latter wished to avoid the risks associated with their railway construction undertakings in Britain. That same year Peto formed a partnership which was to last a quarter-century with Betts, who had married Peto's sister. While Peto was occupied with negotiating contracts and financing, Betts was in charge of carrying out the work.¹²

By 1847 Brassey and Peto & Betts employed almost two per cent of the British labor force, used a tenth of the iron produced for domestic consumption, and were the largest customers of British industry. At their peak they were the largest single employer in Britain, with a cash flow reputedly larger than that of the then-world's-largest company, the London and North Western Railway. They managed as much as a third of all British railroad construction. Brassey alone accounted for one-twentieth of the worldwide rail network. At his peak, Brassey employed as many as 80,000-100,000 (all non-union) workers worldwide through his system of pyramidal subcontracts.¹³

Brassey became...a European power. He ruled over a little kingdom; but, unlike other subjects, his were kept by him, not taxed. They attended him to France, to Belgium, to Italy, to Spain...ready to follow their liege lord in his grand leadership of developing the resources and strengthening the pacific intercourse of nations. ... He is...the very Ashuerus of contractors.¹⁴

The capital that these constructors accumulated "during the British Railway Mania became available for recirculation elsewhere."¹⁵ Their contemporary, Karl Marx, characterized these firms' accumulated capital as the product of the double exploitation of their construction workers "as industrial soldiers and as renters" of the unhygienic wooden huts of, as a parliamentary committee put it, "a most wretched description" that the contractors provided them.¹⁶

When, in 1841, the directors of the London and Southampton Railway, of which Brassey had built a segment, decided to gain control of the carrying trade along the Le Havre-Rouen-Paris route by building a railway, they and their engineer, Locke, provided Brassey, who had been contracting for only a few years, with his first project outside Britain.¹⁷ In the absence of adequate French manufacturing facilities, Brassey soon co-financed the construction in France of factories to produce the requisite rails and rolling stock. That French railway construction was more profitable than similar projects in Britain¹⁸ helps explain why by 1848 Brassey and his partners had participated in the construction of three-quarters of the French trackage. Brassey and Peto & Betts, separately and in partnership, in the 1840s, 1850s, and 1860s shifted their operations to other parts of Western Europe—France, Belgium, Piedmont, Switzerland, Austria, Spain,

¹²[Henry Peto], *Sir Morton Peto: A Memorial Sketch* 6-19, 51 (1893).

¹³See chapter 3 above. As a member of Parliament, Peto was frequently referred to as one of Britain's largest employers of labor. See e.g., 168 *PD* (3d ser.) 1147 (1862) (statement of Mr. Seeley). Middlemas claims, without documentation, that the difference between Brassey's labor force of 100,000 and the 45,000 of the largest early-twentieth-century British international builder, Weetman Pearson, was "entirely the result of increased mechanization." Robert Middlemas, *The Master Builders* 173 n.2 (1963). On the London & North Western as the world's largest joint-stock corporation, see Lewin, *Railway Mania* at 427.

¹⁴Devey, *Life of Joseph Locke* at 151.

¹⁵Middlemas, *Master Builders* at 51, 57; Joby, *The Railway Builders* at 58.

¹⁶Marx, 1 *Das Kapital* at 652-53; *Report from the Select Committee on Railway Labourers* vi (13 PP 1846 [530]).

¹⁷On the financial origins and structure of this first British-built railway in France, see Devey, *Life of Joseph Locke* at 157-58; *Memoirs of Sir Edward Blount* 51-58 (Stuart Reid ed., 1902). On Brassey's partner in this project, William Mackenzie, see the obituary in 11 *MPICE* 102-105 (1852).

¹⁸See Locke, "Address of the President," 17 *MPICE* 128, 129-39 (1858).

Portugal, Denmark, and Norway. Brassey's operations accounted for almost one-tenth of the total length of continental European tracks laid between 1840 and 1860.¹⁹

By the latter half of the 1850s, French, German, and Belgian companies had begun building railways throughout Europe. The Pereire brothers, for example, through their *Crédit Mobilier*, which rested on stock speculation, constructed railways in Spain and Russia, although the Russian government strove to build its system as domestic enterprises aided by Western European and American engineers.²⁰ In some instances English firms complained of being ousted by French firms, whereas on other lines the *Crédit Mobilier* employed English engineers and contractors or at least bought English rolling stock.²¹ And Baron Maurice Hirsch's organization, supported by the German and Austrian governments, which were interested in trade routes to the East outside the control of Britain and France, built long sections of the railways in the European part of the Ottoman Empire between 1869 and 1872.²²

In the aftermath of the world economic crisis at the end of the 1850s, British capital turned away from what the depression had turned into unprofitable investments in Western Europe and the United States and toward new capitalist settlements and peripheral areas. Once capitalist industrialization had forged ahead in Western Europe, its agents sought to take hold of its raw materials base: "It was only by putting steam to the task of persuading farm produce to seek a market that equilibrium could be maintained, and...profits. The effects of the Industrial Revolution were thus communicated to countries in which railways needed to be operated as well as built by aliens."²³

Systemic needs meshed here with the contractors' pursuit of profit. Driven by the goal of escaping from the aforementioned Continental competition which had undermined the British building firms' quasi-monopoly profits, Brassey, Peto & Betts, and others, aiding and in turn abetted by British investment capital, undertook the proto-imperialist construction of railroads in Eastern Europe, Russia, Algeria, India, Canada, Australia, and South America in the search for higher profits.²⁴ By migrating to such "frontiers of economic civilization," they "helped to push these frontiers farther back."²⁵ Where, as in yet undeveloped areas such as Argentina in the 1860s, Brassey and his partners, who also became major investors in the railroads they were building, were in part paid in land

¹⁹Helps, *Life and Labours of Mr. Brassey* at 52-71, 161-277; *Sir Morton Peto*; 3 *HS* 573, 578 (J. Conrad et al. ed., 2d ed. 1900) (s.v. "Eisenbahnstatistik"); Jenks, *Migration*, at 136-52, 168, 196, 419-20; Hobson, *Export of Capital* at 119-20; Middlemas, *Master Builders* at 33-45, 61-69; Girard, "Transport" at 236; Walker, *Thomas Brassey* at 34-173; 9 *DNB* 972, 973 (1968) (s.v. "Peto"). His obituary stated that between 1848 and 1861 Brassey built or participated in the building of 2,374 miles of railway for £27,998,224. *Times*, Dec. 10, 1870, at 12, col. 1.

²⁰See e.g. Cameron, *France and the Economic Development of Europe* at 248-52, 276-83; J. Westwood, *A History of Russian Railways* 29-45 (1964); William Blackwell, *The Beginnings of Russian Industrialization 1800-1860*, at 270-302 (1968); G. Kurgan-van Hentenryk, *Rail, finance et politique: Les Entreprises Philippart (1865-1890)*, at 114-48 (1982); D. Platt, *Foreign Finance in Continental Europe and the United States, 1815-1870: Quantities, Origins, Functions and Distribution* 46-54 (1984). See also Karl Marx, "The French *Crédit Mobilier*," in Karl Marx & Frederick Engels, 15 *CollW* 8 (1986 [1856]); "Crédit Mobilier," *id.* at 270 (1857).

²¹"Annual Report Session 1858-59," in 18 *MPICE* 165, 166-68 (1859) (contractor Thomas Jackson and engineer John Hawkshaw built Riga & Dunaburg line); "Annual Report Session 1859-60," in 19 *MPICE* 133, 148 (1860).

²²Kurt Grunwald, *Turkenhirsch: A Study of Baron Maurice Hirsch Entrepreneur and Philanthropist* 28-62 (1966).

²³Jenks, *The Migration of British Capital* at 195-96.

²⁴Hans Rosenberg, *Die Weltwirtschaftskrise 1857-1859*, at 151-52 (1974 [1934]); Middlemas, *Master Builders* at 79; J. Jensen & Gerhard Rosegger, "British Railway Builders Along the Lower Danube, 1856-1869," 46 *SEER* 105 (1968).

²⁵Girard, "Transport" at 241.

running along the line, they became colonizers as well.²⁶

The same economic logic of capital accumulation that compelled these contractors to operate overseas caused them to build “contractors’ lines” by accepting the railroad companies’ securities in lieu of cash or even assuming the initiative of financing, constructing, and at times operating both domestic and foreign railways, looking for buyers only afterwards.²⁷ Thus from 1852 to 1866, the implacable financial weight of the contractors’ growing fixed capital caused a reversal of “the original relation between the contractor and the promoters and proprietors.” A contemporary of Brassey and Peto explained this point with all imaginable clarity:

So long as he remains in business, he cannot for any considerable period permit his capital to lie idle, for his plant is so enormous that were it long to remain idle, it would eat away very much of the profits of even his most successful ventures. Hundreds of earth-waggons and horses, scores of miles of rails and sleepers for “temporary way,” several locomotive and several stationary engines, tools of countless numbers and endless variety—these in addition to enormous accumulations of timber, brick, stone, rails, and a host of other materials, all vociferously call for more employment. And although the mere “hands”—the Titanic navvies—...involve no eating of capital when the work is done, the contractor must have a very large staff of scientific, commercial, and skilled *employés*, whom he must keep in permanent employ, else the whole work of superior organization and drill would have to be re-undertaken when every new enterprise was undertaken. This, of course, would be as impossible as it would be...costly, and hence it is that contractors are constantly pressing forward new undertakings; being willing frequently, so long as they can only secure employment for their brains, capital, and staff, to accept in very large proportion shares of new enterprises in part repayment of their services and expenditures.²⁸

In the next stage, the largest contractors made the transition from passive risk-takers to promoters of new railway lines, contributing more to the financing than “the private capitalists.”²⁹ To that end they “use[d] parliamentary influence to have them legalized, and employ[ed] their private influence among their own circles of connections and dependents to have sufficient shares taken up to induce Parliament to pass bills.” Ultimately, then, the contractors’ own “insatiate and...inevitable, craving for contracts...precipitated many enterprises prematurely....”³⁰ This speculative railway investment mania, which became international at mid-century, eventually resulted in the crash of 1866, which bankrupted many contractors, including Peto, and their finance companies.³¹

These British contractors also created a civil engineer corps during the Crimean War. Shipping all the required materials and navvies from Britain, Peto and Brassey built the Balaklava Railway to the trenches, the first military railroad,

²⁶Helps, *Life and Labours of Mr. Brassey* at 246; H.S. Ferns, *Britain and Argentina in the Nineteenth Century* 337 (1960).

²⁷*BSG for 1855: A Hand-Book for Companies and Shareholders* 332-33, 339 (1855) (detailing the financial involvement of Peto and Brassey as directors of the Norwegian Grand Trunk Railway and of Peto, Betts, and Brassey in the Royal Danish Railway); Helps, *Life and Labours of Mr. Brassey* at 167-69, 177; Harold Pollins, “Railway Contractors and the Finance of Railway Development in Britain—I,” 3 *JTH* 41 (1957); Harold Pollins, “Railway Contractors and the Finance of Railway Development in Britain—II,” 3 *JTH* 103 (1957); Middlemas, *Master Builders* at 70-92.

²⁸William Galt, *Railway Reform: Its Importance and Practicability* 350, 349 (1865). For a virtually identical passage, see Anon., “Railway Morality and Railway Policy,” *ERev.* Oct. 1854, at 420, 434-35.

²⁹Platt, *Foreign Finance in Continental Europe and the United States* at 182.

³⁰Galt, *Railway Reform* at 349-50. Betts’ obituary fondly recalled that, as chairman of the Eastern Counties Railway Company, Betts in the early 1850s had crushed an engine-drivers’ strike. 36 *MPICE* at 286-87.

³¹P. Cottrell, “Railway Finance and the Crisis of 1866: Contractors’ Bills of Exchange, and the Finance Companies,” 3 *JTH* (n.s.) 20 (1975).

in 1855. The British government conferred a baronetcy on Peto for this project ("Taking Sebastopol by Contract"),³² which he purported to have carried on without profit although the claim was later disputed.³³ Peto became a prominent Liberal member of Parliament from 1847 to 1855 and 1859 to 1868. There he vigorously advocated antitruck legislation requiring wage payments in money, calling attention to his employment practices with regard to his own employees—an exception to the regime of *laissez-faire* that, to be sure, even Lord Palmerston was constrained to accept as necessary.³⁴

Overreaching Overseas

Englishmen are interested in gaining rapid means of transit to almost every part of the known world.... India and Australia...we have every interest in communicating with directly. The constantly developing products of those plains of plenty and those mines of wealth are becoming so important that we ought...to reduce the time inevitably lost going to and fro; and as time represents money, why should we lose the interest upon gold, and silver, and precious stones, and costly fabrics, and expensive spices, and silks, and teas, and light goods of untold value, by going a roundabout way to those lands...?³⁵

Such was Brassey's and Peto's worldwide renown that in the 1860s the legislature in New South Wales offered a resolution inviting Peto "or some other eminent contractor" to prepare estimates for a new railway.³⁶ To be sure, Peto soon disillusioned the government by "not proceeding at the rapid rate that was anticipated from the engagement of so eminent a firm."³⁷ The fact, however, that overseas Brassey's "profits were, of course, enormous,"³⁸ created difficulties for his organization in undeveloped countries where fledgling local contractors were ostensibly able to build more cheaply.

Thus as early as 1848, when the East Indian Railway Company asked Brassey and other leading British contractors to submit bids, because "no English contractors would send or go out except on the certainty of very large profits," they refused on the ground that overly exacting government supervision would lead to penny-wise and pound-foolish economizing.³⁹ The colonial government's refusal to accommodate them was reflected in the rhetorical question posed ten

³²"Taking Sebastopol by Contract," 12 *Builder* 634 (1854).

³³See *Sir Morton Peto* at 33; "Balaklava Railway," 12 *Engineer* 392 (1861) (Peto responding to election campaign charge that he had overcharged the government for the rails); Michael Robbins, "The Balaklava Railway," 1 *JTH* 28 (1953); David Brooke, *The Railway Navy: 'That Despicable Race of Men'* 123-31 (1984). After the war Peto & Betts used the rails to build the Smyrna-Aidin railway in Turkey. Jenks, *Migration of British Capital* at 404 n.11.

³⁴*Dod's Parliamentary Companion: New Parliament* 268 (33d ed. 1865); 130 *PD* (3d ser.) 761 (1854). Palmerston, using a revealing code, conceded that "from the artificial arrangements of society, cases will arise in which some of the parties are more or less dependent on the others, and unable therefore to take proper care of their own interests and concerns. ... It is perfectly notorious that at times when the masters had a pull on the men, in consequence of the state of trade, they compelled them, on pain of dismissal, to accept things which were given them at prices far beyond their value, and for which they had no use whatever... as part of their wages." *Id.* at 767. Peto and other contractors testified in favor of payment in cash in *Report from the Select Committee on Railway Labourers*.

³⁵"From London to Calcutta," 1 *Engineer* 243 (1866) (letter from W.H. Villiers Sankey, civil engineer).

³⁶*BSG for 1864*, at 362 (1864).

³⁷"Railways in New South Wales," 11 *Engineer* 3 (1861).

³⁸4 *Encyclopaedia Britannica* 435 (11th ed. 1910) (s.v. "Brassey"). According to Brassey's contemporary biographer, "He laid out about seventy-eight millions of other people's money, and upon that outlay retained about two millions and a-half. The rest of his fortune consisted of accumulations." *Helps, Life and Labours of Mr. Brassey* at 158. See also *DNB* at 974.

³⁹*Report from the Select Committee on East India (Railways)* Q. 3993 at 281 (quote); Q. 3565 at 251 (14 *PP* 1857-58 [161]) (testimony of Macdonald Stephenson, director of the East India[Railway] Co.).

years later by the chairman of the parliamentary committee investigating the railways in India: "I presume, that the Government had a certain jealousy or fear that the profits of these contractors would be too large...?"⁴⁰ Under Governor-General Dalhousie, the colonial government began in 1853 to promote construction on a guarantee basis, which became very expensive for the Indian taxpayer.⁴¹ Nevertheless, when, in the aftermath of the parliamentary inquiry, Brassey's organization finally did undertake construction of the Eastern Bengal Railway, the impact of inflation on the contractually fixed price schedules meant that Brassey's "usual good fortune did not attend him..."⁴²

Similarly, Peto's and Brassey's profit-maximizing overreaching and blatant deployment of political and international banking influence in securing the contract in the 1850s to build the Grand Trunk Railway in Canada raised doubts about the periphery's alleged need to rely on the center's building firms. Even Canadians conceded that they lacked the capital to build what was then the world's longest railway line "and could not borrow in London on terms half as favorable as could the English promoters—especially if the latter blocked their efforts."⁴³ Yet the reputations of Brassey and Peto, which had already been tarnished by their failure to mobilize the capital to build railways in New Brunswick and Nova Scotia in 1852-53, suffered further when their methods and antiquated plant, developed in relatively low-wage countries, turned out not to be adapted to North American needs for labor-saving machinery. Dispute therefore erupted over whether Canadian firms possessed the experience and capacity to execute such work.⁴⁴

The Grand Trunk, which was designed to enable its owners to control the U.S. midwestern grain trade from the Great Lakes to the Atlantic, was one of the "contractors' roads," on which the builders were required to spend large sums before they began construction. "What wonder," then, that Peto and Brassey "should drive a somewhat hard bargain with the company of their own creating, should protect themselves by a rather one-sided contract against the loss of their previous expenditure, and...should include a profit which in ordinary risks would be deemed too exorbitant."⁴⁵ The political ill will that Brassey and Peto's practices—for example, increasing the line's trackage merely in order to increase their profit—engendered in tandem with their organization's inferior construction, which was in part intended to economize on their costs so that they would not suffer losses as a result of being paid in watered-down stock that was selling for less than its par value, put an end to their construction activities in Canada.⁴⁶

Brassey reputedly suffered a loss on the Grand Trunk, which was neither his first nor last. "In the disaster of 1866 Mr. Brassey was probably the largest individual sufferer," losing more than £1 million.⁴⁷ Although he was forced to go hat in hand to his banker, Glyn, for a mere £30,000, by 1869 he was "richer" than ever before, and his business flourished until his death in 1870, after which

⁴⁰*Id.* Q. 3567 at 251 (Chairman Henry George Liddell).

⁴¹See Jenks, *Migration of British Capital* at 206-30.

⁴²Helps, *Life and Labours of Mr. Brassey* at 273 (reproducing account of Charles Henfrey).

⁴³Oscar Skelton, *The Life and Times of Sir Alexander Tilloch Galt* 90 (1920).

⁴⁴Oscar Skelton, *The Railway Builders: A Chronicle of Overland Highways* 66-70 (1920); Skelton, *Life and Times of Sir Alexander Tilloch Galt* at 105.

⁴⁵"Railways of Canada—No. 1," *25 Engineering* 175, 175-76 (1878).

⁴⁶See Anthony Trollope, *North America* 61-62 (1951 [1862]); Helps, *Life and Labours of Mr. Brassey* at 183-213; H.A. Lovett, *Canada and the Grand Trunk 1829-1924*, at 25-62 (n.d. [1924]); A. Currie, *The Grand Trunk Railway of Canada* 3-70 (1957); Middlemas, *Master Builders* at 61-69. Brassey's firms performed a limited amount of work on the Northern Railway about 1860. See Currie, *Grand Trunk* at 265.

⁴⁷"The Late Mr. Thomas Brassey," *10 Engineering* 443 (1870). The engineer for the construction of the Bilbao Railway in Spain in 1858 stated that Brassey lost £200,000 on the fixed-sum contract. Olinthus Vignoles, *Life of Charles Blacker Vignoles: Soldier and Civil Engineer* 374 (1889).

his contracts gradually ran out. Toward the end of his career he confided to one of his financier associates that "the net profit which he had made, after deducting losses, was about 3 per cent. upon all he had done."⁴⁸ In light of the fact that by 1865 Brassey had in hand contracts amounting to £60 million, the contemporaneous claim becomes plausible that "[p]robably never in the history of the world has any one class of traders or manufacturers...so rapidly risen from such small beginnings to the possession of great wealth as the leading contractors of the world...."⁴⁹

Peto & Betts, in contrast, whom their bankers, Baring and Glyn, the chief mobilizers of capital for Canada in the mid-nineteenth century, had continued to finance on the Grand Trunk, despite their knowledge of the shoddy work, because their bankruptcy would probably have made completion of the work impossible and provoked even more disfavor,⁵⁰ failed during the crash of 1866, which was itself the culmination of a contractor-centered international railway speculation. Peto & Betts's last contract, for the London, Chatham, & Dover Railway, which, like the Grand Trunk, required them to be paid in shares in lieu of cash, drew them into the failure of the leading British bill-brokers, Overend, Gurney, whose suspension in May 1866 triggered the panic and crash. Peto had, the *Economist* noted in a financial obituary, "engaged in operations beyond the force even of his great capital, and in consequence he borrowed at rates of interest so high as to be injurious to his credit as well as destructive of his profit. Still the immense mass of his business was good, and some of it doubtless stupendously profitable."⁵¹

The international economic crisis of 1866 not only terminated Peto's business and parliamentary career,⁵² but also "put an end to the ascendancy of the Contractor." Not for another two decades would British contractors reemerge as international leaders. This account suggests that occasionally local competitors in the periphery could convince the public that the imperial entrepreneur was wearing no clothes. Such consciousness evolved early in Canada, where faster and cheaper North American firms had ousted British railway contractors by the 1860s. Even Brassey had to learn to accept the limits of effective control in conducting operations at a distance of 3,000 miles in an undeveloped country.⁵³

Mobilizing Free and Unfree Labor Abroad

England may remain the heart or vital centre, but the fever heat cannot be absorbed within herself, it must be subdued by an extent of circulation; the "geometrical progression of science" cannot go on without a corresponding extension of territory.⁵⁴

⁴⁸*Memoirs of Sir Edward Blount* at 96-97, 99; *Times*, Dec. 10, 1870, at 12, col. 1.

⁴⁹Galt, *Railway Reform* at 350, 349.

⁵⁰Philip Ziegler, *The Sixth Great Power: A History of One of the Greatest of All Banking Families, the House of Barings, 1769-1929*, at 223-27 (1988); Currie, *Grand Trunk* at 66-69.

⁵¹"Sir Morton Peto at Bristol," *The Times*, Oct. 25, 1866, at 7, col. 3; *Sir Morton Peto* at 47; P. Cottrell, "Sir Samuel Morton Peto," in 4 *DBB* 644, 649 (David Jeremy ed., 1985); "Messrs Peto, Betts, and Co.," *Economist*, June 16, 1866 at 698-99. In 1865 Peto & Betts agreed to take as part payment for building the Holland-Westphalia Railway all the preferred stock. "Holland-Westphalia Railway," 1 *Engineering* 187 (1866).

⁵²Between 1866 and 1872 Peto unsuccessfully sought contracts in Budapest and Russia and completed two minor railway projects in Britain. He also resigned his seat in Parliament, living on until 1889. *Times*, June 16, 1866, at 12, col. 4; *Sir Morton Peto* at 47-50, 113; Karl Marx, *Das Kapital: Kritik der politischen Ökonomie*, I: *Der Produktionsprozess des Kapitals* 226 n.40 (2d ed. 1872). Such was Peto's decline that a leading construction-engineering journal found it necessary to characterize him in an obituary as "a contractor very well known in his day." "The Late Sir Morton Peto," 48 *Engineering* 634 (1889).

⁵³Jenks, *Migration of British Capital* at 198-206, 240-62 (quotation at 262); Helps, *Life and Labours of Mr. Brassey* at 145; Middlemas, *Master Builders* at 29-32, 68-69; Joby, *The Railway Builders* at 77-78.

⁵⁴"Emigration," 1 *Builder* 177 (1843) (editorial).

The logistics of transporting the embodied technology of the capitalist world to the colonies were in themselves considerable. Thus when Brassey's firm undertook the construction of a railway in New South Wales in 1859, all the manufactured equipment and materials—including equipment, rails, ironwork, and rolling stock—had to be shipped to Australia from Britain.⁵⁵ Some of the raw materials that entered into the production of this capital may have previously been shipped from the colonies to Britain,⁵⁶ but as Rosa Luxemburg also noted: "English capital that flowed to Argentina into railway construction may previously have been Indian opium that was realized in China."⁵⁷

In the tow of this international circuit of productive capital in its commodity form followed the requisite embodied labor power, thousands of British navvies. Or as Locke, the first British railway engineer to build a line overseas, described his and Brassey's first project in France in his presidential address to the British Institution of Civil Engineers: "Amongst the 'appliances' carried there by these gentlemen, there were none more striking, or important, than the 'navvies'... [f]ollowing in the wake of their masters...."⁵⁸ The British railway construction firms were preeminent agents and organizers of the overseas migration of tens of thousands of British navvies whom they employed abroad and for whose families they in many instances paid travel advances. British firms organized such transports even to other capitalist countries. Thus Brassey sent 5,000 British navvies to France in the 1840s because he considered them superior to French workers; in the 1850s he sent 3,000 more to Canada to build the Grand Trunk because his recruiters failed to find sufficient laborers in French Canada, and another 2,000 to Australia. During the American Civil War, 5,000 laborers from England were among the 15,000 imported to build the Atlantic & Great Western Railway.⁵⁹ Overseas, by employing local peasants as navvies, Brassey was instrumental in transforming them into an industrial "proletariat."⁶⁰

Brassey's international comparative experience taught him that low wages were not the absolute precondition of high profits even in a labor-intensive industry. Testifying before Parliament in 1846, Brassey noted that although he paid English and Irish navvies, who constituted a third of his work force in France, about 30 per cent more than the French workers, their labor was worth the difference.⁶¹ More generally, he concluded, based more on primitive ergonomics than on transformations in cultural consciousness, that the higher productivity of well-paid and well-fed British workers made them at least as cheap as low-paid coolies: "With regard to unskilled labour men seem to be like machines: the work given out bears some relation to the food consumed."⁶²

⁵⁵Helps, *Life and Labours of Mr. Brassey* at 236.

⁵⁶Gilbert Herbert, *Pioneers of Prefabrication: The British Contribution in the Nineteenth Century* 25-26 (1978). On the circuit of productive capital, see Karl Marx, *Das Kapital: Kritik der politischen Ökonomie*, II: *Der Zirkulationsprozeß des Kapitals*, in Karl Marx [&] Friedrich Engels, *24 Werke* 69-87 (1963 [1885]).

⁵⁷Rosa Luxemburg, *Die Akkumulation des Kapitals: Ein Beitrag zur ökonomischen Erklärung des Imperialismus*, in *idem*, 6 *GW* 344 (1923 [1913]).

⁵⁸Locke, "Address of the President" at 143.

⁵⁹See *Report from the Select Committee on Railway Labourers*, Q. 377 at 23; Terry Coleman, *The Railway Navvies* 176-91 (1967 [1965]); Earl Brassey, *Work and Wages: The Reward of Labour and the Cost of Work* 9 (1916 [1872]); Helps, *Life and Labours of Mr. Brassey* at 74-96, 238-39; J. Clapham, *An Economic History of Modern Britain: The Early Railway Age 1820-1850*, at 406-12 (1926); *idem*, *An Economic History of Modern Britain: Free Trade and Steel 1850-1886*, at 235-38 (1932); Currie, *Grand Trunk* at 29; Middlemas, *Master Builders* at 39, 64, 94; Emerson Fite, *Social and Industrial Conditions in the North During the Civil War* 54-55 (1910).

⁶⁰Middlemas, *Master Builders* at 309.

⁶¹*Report from the Select Committee on Railway Enactments*, QQ. 854-61, 893 at 54, 56 (14 *PP* 1846 [590]).

⁶²Helps, *Life and Labours of Mr. Brassey* at 364 (reprinting letter from John Hawkshaw, one of

Such insight was not new—even in the midst of the mercantilist period's apotheosis of low wages some authors had argued that English workers' higher wages were associated with higher productivity and a higher standard of living.⁶³ Yet Brassey, "by making a virtue out of" the necessity of paying higher wages than those prevailing in agriculture in areas where "he was competing for labour anyway in a difficult market," was able to enhance his reputation.⁶⁴ For Marx, this profitable use of English workers to build railways in less capitalistic regions (including Eastern Europe and Asia) alongside indigenous workers—except, of course, where hot weather allegedly precluded work by Europeans⁶⁵—merely confirmed the theoretical point that higher wages were paired with a higher rate of exploitation because capitalist production enforced a higher intensity and productivity of labor which English workers must have internalized and taken with them overseas.⁶⁶

By the same token, international contractors were not above using slave and other forms of unfree labor. By the 1850s, the British, threatening imprisonment of the recalcitrant, exploited compulsory labor on "almost all the works that have been hitherto executed in India."⁶⁷ That the American Meiggs, universally held to have been unscrupulous, bought entire cargoes of Chinese coolies to build railways in Peru in the 1860s and 1870s is hardly surprising: much of Peru's labor at the time was performed by 90,000 coolies, and the guano exports that ultimately financed railway construction were also based on the slave, convict, and quasi-slave coolie labor that dug the bird manure off the coast of Peru for immediate shipment to Europe and the United States.⁶⁸

Even Brassey resorted to slaves in 1862 in building the Rio de Janeiro drainage system.⁶⁹ Nor was he the only British constructor to succumb to the temptation on Brazilian infrastructure projects. In spite of the prohibition on the use of slaves on public works projects and the British government's insistence that railway companies formed in Britain not use slaves in Brazil, firms continued both to purchase and to hire slaves.⁷⁰

Once slaves became less accessible, British engineers and contractors, for whom the massive existence of wage labor in Western Europe had become self-

Brassey's engineers, to Helps, Dec. 11, 1871). Brassey's views on this subject were systematized by his son, who was a member of Parliament. See Thomas Brassey, *Foreign Work and English Wages* 118-50, 157-96 (1879); *idem*, *Work and Wages* at iv, vi. U.S. firms reinvented this wheel in the post-World War II period by rediscovering that where Third World workers were malnourished, "productivity can be increased substantially by feeding the work force three times a day. The accompanying boost in production...can far offset the cost of this food." "Beating the Odds When Building Abroad," *ENR*, Mar. 27, 1958, at 31, 32.

⁶³See [Daniel Defoe], *A Plan of the English Commerce* 32-39 (especially at 37) (2d ed. 1967 [1730]); Eli Heckscher, 2 *Merkantilismen: Ett led i den ekonomiska politikens historia* 149-53 (1931).

⁶⁴Middlemas, *Master Builders* at 55. For an overview of the wage rates paid by Brassey at various times in various places, see Helps, *Life and Labours of Mr. Brassey* at 370-73.

⁶⁵*Report from the Select Committee on Eurphrates Valley Railway* QQ. 34-35 at 4 (9 PP 1872).

⁶⁶Karl Marx, 1 *Das Kapital*, in Karl Marx [&] Friedrich Engels, 23 *Werke*, 584-87 (1962).

⁶⁷*Report from the Select Committee on East India (Railways)*, QQ. 1128, 1133-40 at 74 (testimony of George Sibley, civil engineer). But see *id.* Q. 3381 at 238 Col. William Baker, Bengal Engineers, denying use of forced labor).

⁶⁸Watt Stewart, *Henry Meiggs: Yankee Pizzaro* 112, 160-64 (1968 [1946]); *idem*, *Chinese Bondage in Peru: A History of the Chinese Coolie in Peru, 1849-1874*, at 95-98 (1951); Jonathan Levin, *The Export Economies: Their Pattern of Development in Historical Perspective* 85-90, 99-108 (1960); Shane Hunt, "Growth and Guano in Nineteenth-Century Peru," in *The Latin American Economies: Growth and the Export Sector, 1880-1930*, at 255, 286-87 (1985); Richard Wines, *Fertilizer in America: From Waste Recycling to Resource Exploitation* 43-45 (1985).

⁶⁹Charles Walker, *Thomas Brassey: Railway Builder* 115, 152 (1969).

⁷⁰Edward Webb, "On the Means of Communication in the Empire of Brazil," 19 *MPICE* 240, 248, 251 (1860).

explanatory, began to complain in the 1850s of the practical difficulties inherent in forging a proletariat out of self-sufficient producers in the periphery.⁷¹ Vignoles, the engineer for the construction of the Bahia & San Francisco Railway, was frustrated by the fact that “where the slightest labour suffices to procure food from the fertile and abundant lands, and where there are few wants, it is difficult to get the ignorant to work....”⁷² Another engineer observed that “as they can maintain themselves, in their simple way of living, without work, they must first be persuaded, not only that it is to their advantage to work, but to leave their homes and families and to walk 200 or 300 miles to obtain employment.”⁷³ The non-work with which the proffered fossorial employment had to compete was described by a British engineer in these terms: “The poor native Brazilian is not inclined to work hard; necessity does not compel him to do more than...plant[] a few banana trees, clear[] a small patch of ground for the mandioca root, or for the cultivation of black beans and rice....”⁷⁴ Motivating such precapitalist producers “require[d] more tact, temper, and discretion, than [we]re ordinarily to be found in an English ganger, or foreman, to keep them on the work.”⁷⁵ Only for the fortunate construction firm operating in tropical paradises such as Ceylon did “famine,” resulting from the failure of the staple (rice) crop, “c[o]me to the rescue, and d[o] that which no inducement of high pay had been able to do, viz., prevent the coolies from the coffee estates returning as usual to India when the coffee season was over.”⁷⁶

An eminent engineer, George Bidder,⁷⁷ listening to a disquisition on the virtues of slave labor before the Institution of Civil Engineers, insisted on Brassey’s insight that such labor, despite its cheapness, was less valuable than higher-priced free labor: “in scarcely any country in the world, could the same amount of work be done at so small a cost, as in England.”⁷⁸ The theoretical point seemed to be lost on those whom British capital sent out to produce the transportation foundations of the world market in areas in which primitive accumulation had not yet created the classical doubly free proletariat—free of non-economic compulsion and of subsistence property.⁷⁹ Six decades later, the British contractor Sir John Norton-Griffiths, motivated by “labour troubles” and a labor shortage, was still using forced labor for railway construction in Kenya.⁸⁰

British constructors were not alone in their use of various forms of unfree labor abroad. The most notorious nineteenth-century example of the use of forced labor on an international construction project—the Suez Canal—sparked an Anglo-French debate over whether either country’s capitalists had sufficiently clean hands to justify attacking their competitors’ practices. The Egyptian government, which contractually specified that four-fifths of the canal laborers be Egyptian in order to diminish the possibility of foreign occupation, furnished Lesseps’ company with

⁷¹Capitalists seemed equally impatient of precapitalist nature in Brazil: “A large proportion of the empire of Brazil is uncultivated forest, notwithstanding the European value of the furniture and dye woods growing so abundantly in a state of nature. Railways will change all that by conveying the timber to market, clearing the land....” “The San Paulo (Brazilian) Railway,” 22 *Engineer* 332 (1866).

⁷²“Railway Labour in Brazil,” 8 *Engineer* 329 (1859).

⁷³William Peniston, “Public Works in Pernambuco, in the Empire of Brazil,” in 22 *MPICE* 385, 399 (1863). On the labor supply in Brazil at the time of emancipation, see Celso Furtado, *Formação econômica do Brasil* 117-41 (12th ed. 1974).

⁷⁴Webb, “On the Means of Communication in the Empire of Brazil” at 244.

⁷⁵Peniston, “Public Works in Pernambuco” at 399.

⁷⁶“The Ceylon Railway,” 22 *Engineer* 419 (1866).

⁷⁷See 57 *MPICE* 294-309 (1879) (obituary of Bidder).

⁷⁸Webb, “On the Means of Communication in the Empire of Brazil” at 262 (discussion contribution).

⁷⁹Marx, 1 *Das Kapital* at 132, 700.

⁸⁰Middlemas, *Master Builders* at 288-89.

20,000-25,000 corvée laborers. With equal contingents en route to and from the canal 60,000 workers were withdrawn from the agricultural labor force at any time.⁸¹

When British opponents of the Suez Canal fastened on Lesseps' use of the corvée as a pretext for opposing continued construction of the Canal, Lesseps forcefully reminded them that the British too had used forced labor to build the Cairo-Suez railway. Indeed in the 1850s the Egyptian viceroy, Abbas Pasha, had placed fellahs at the disposal of Robert Stephenson, who directed construction of that line.⁸² The viceroy's urgent need for fellahs on his newly acquired cotton lands during the boom created by the U.S. Civil War finally impelled him to accept Napoleon III's arbitration, which required Egypt to pay the Suez Company 38 million francs in compensation. The termination of corvée labor in 1864 and the failure of the Scottish contractor, William Alton, to perform satisfactorily, afforded the French contractor Couvreur and especially the firm of Borel-Lavalley et Cie. a strong impetus both to invent their own and to order from French factories large steam-driven dredging labor-saving machinery—the very symbols of European industrialization that propelled projects such as the Suez Canal.⁸³

Despite the availability of such labor-saving equipment in certain sub-branches of construction, by the turn of the century, contingents of various national proletariats were criss-crossing the globe to build railroads for other countries' capital in colonial areas. Chinese and Indian coolies were ubiquitous.⁸⁴ Italian laborers, too, were found with increasing frequency far from Europe. Much more unusual was the West-East transshipment of laborers from Barbados to the Belgian Congo in the 1890s to build the private line from Matadi to Léopoldville.⁸⁵ Together with British capital's own navvies, these multinational labor forces, recruited and retained by various means of economic and extra-economic compulsion, laid the foundation for metropolitan incorporation of the colonies into the world market.

⁸¹Voisin Bey, 1 *Le Canal de Suez: Histoire administratif et actes constitutifs de la Compagnie*, pt. I: *Période des études et de la construction 1854 à 1869*, at 205 (1902).

⁸²Lionel Wiener, *L'Égypte et ses chemins de fer* 71, 641-44 (1932).

⁸³"The Suez Canal Works," 18 *Engineer* 312 (1864); "The Suez Canal," *id.* at 315 (editorial); J. Clerk, "Suez Canal," 5 *FR* (n.s.) 80, 97-100 (1869); J. Nourse, *The Maritime Canal of Suez* 32 (1869); Percy Fitzgerald, 1 *The Great Canal at Suez: Its Political, Engineering, and Financial History* 200-212, 328 (1876); Voisin Bey, 1 *Le Canal de Suez* at 213, 219, 227 (reproducing Napoleon's arbitral decision); Voisin Bey, 5 *Le Canal de Suez*, II: *Description des travaux de premier établissement*, pt. II: *Exécution des travaux* (1904) (on Borel-Lavalley); Charles Hallberg, *The Suez Canal: Its History and Diplomatic Importance* 187-88, 201-202, 206-207, 213 (1931); David Landes, *Bankers and Pashas: International Finance and Economic Imperialism in Egypt* 179-81 (1979 [1958]); Herbert Bonin, *Suez: Du Canal à la finance (1858-1987)*, at 22-23 (1987). The original decree issued by Viceroy Mohammed-Said Pasha in 1856 on native workers provided for the use of laborers under the age of twelve at one-third of the adult rate. Reproduced in Fitzgerald, *The Great Canal at Suez* 307-308.

⁸⁴Most of the 22,000 workers who built the railway in Uganda at the turn of the century, for example, were brought from India. "The Uganda Railway," 48 *ER* 326 (1903).

⁸⁵*Die Eisenbahnen Afrikas: Grundlagen und Gesichtspunkte für eine koloniale Eisenbahnpolitik in Afrika*, in *SBVR*, 12th Legis. Per., 1st Sess., 241 *ASB*, Doc. No. 262, at 1596 (1907). On Italian workers in German South West Africa, see chapter 6 below.