

PROJECTING CAPITALISM

A History of the
Internationalization of
the Construction Industry

Marc Linder

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PART I

THEORETICAL FRAMEWORK

The profitable effect of capital, directed to a given object in the hope of profit, is...a main element of the subject on which the modern Engineer has to exert his skill and judgment. It may, indeed, be termed...as much a part of the whole, to be dealt with by practical science, as the method of construction, or the choice of materials. ...

The practical science of our day, as enlisted in the service of monied enterprise, must indeed confess itself at fault, if, by any defect of its own, that enterprise were defrauded of its fair reward. ... For it is obvious that, when the employment of science by wealth is mainly actuated by the stimulus of gain, the spur being withdrawn, the occupation must cease. [C]apital seeks its harvest elsewhere.... [T]he financial result of their joint operation is not their least important feature...and the appreciation of this side of the question really concerns the Engineer no less than the Statesman, or the Capitalist.

Joseph Locke, "Address of the President," in
*17 Minutes of the Proceedings of the
Institution of Civil Engineers* 128, 151 (1858)

The Paradox of International Construction: A New World Market Within “The New International Division of Labor”

The so exceedingly favorable situation of the construction industry is explained by the fact that the construction industry does not work for the world market, but rather exclusively for the local market; it does not have foreign competition to fear and it is not threatened by the stamp “Made in Germany.”¹

Unlike manufacturing processes of production, in which the final products are in motion while the instruments of production are stationary, in construction the relationship is reversed: the products become fixed while the ambulatory fixed capital and the hypermobile construction worker, “who must be prepared to be a nomad,” are moved or find their way to new sites.² As early as the 1850s and 1860s, British railway construction contractors were shipping “the vast mass of dead weight” of machines and materials as well as workers around the world to Canada, India, Argentina, and Australia.³ Tens of thousands of Chinese coolies were pressed into service on railroads in Africa, South America, and North America in the nineteenth century.⁴ By the 1880s, the huge excavation and dredging machinery that Ferdinand de Lesseps’ Compagnie Universelle du Canal Interocéanique sent to the Isthmus of Panama, some of which had been used to dig the Suez Canal two decades earlier, “was computed by engineers as capable of performing the labor of half a million men.”⁵ The even more advanced labor-saving equipment, such as steam shovels and derricks, sent by the U.S. Isthmian Canal Commission shortly after the turn of the century to Panama, was then dispatched by congressional order in 1915 to Alaska for use in railway and dock construction.⁶ At the beginning of the twentieth century, British and U.S. bridge-

¹Michael von Tugan-Baranowsky, *Studien zur Theorie und Geschichte der Handelskrisen in England* 414 (1901).

²International Labour Organisation, Building, Civil Engineering & Public Works Committee, 7th Sess., Report II: *Technological Changes in the Construction Industry and Their Socio-Economic Consequences* 8 (1964). See also *idem*, 6th Sess., Report II: *International Migration of Labour in the Construction Industry* (1959); Gertrude Bancroft & Stuart Garfinkle, “Job Mobility in 1961,” 86 *MLR* 897, 904 (1963). The developer of Levittowns described his process as “‘a reversal of the Detroit assembly line...: In the case of our houses, it was the workers who moved, doing the same jobs at different locations.’” Richard Pérez-Peña, “William Levitt, 86, Suburb Maker, Dies,” *NYT*, Jan. 29, 1994, at 11, col. 1.

³*Report from the Select Committee on East India (Railways) v* (14 PP 1857-58); see also chapter 4 below. In the 1840s, the American engineer, George Washington Whistler, whom Tsar Nicholas I invited to Russia to direct construction of the railway from St. Petersburg to Moscow, took a steam excavator, pile driver, and engine along on the ship. J. Allhands, *Tools of the Earth Mover: Yesterday and Today Preserved in Pictures* 180 (1951); Albert Parry, *Whistler’s Father* (1939).

⁴See Persia Campbell, *Chinese Coolie Emigration to Countries Within the British Empire* (1923); Pierre Berton, *The Impossible Railway: The Building of the Canadian Pacific* 373-81 (1972 [1970]).

⁵David Wells, *Recent Economic Changes* 50 (1890); Allhands, *Tools of the Earth Mover* at 224.

⁶Joseph Bishop, *The Panama Gateway* 330, 335-41, 447-49 (1913); Ira Bennett, *History of the Panama*

building firms were also sending thousands of tons of pre-assembled bridge sections to Africa.⁷ And at the end of twentieth century, multinational construction firms still ship their own equipment from project to project around the world while importing workers from great distances.⁸

Yet despite this built-in “technical-economic peculiarity”⁹ of mobility, it has long been a commonplace that the domestic construction industry is both sheltered from international competition and prevented from exporting.¹⁰ Hence the paradox of international construction. On the one hand, the shape of the industry seems to be determined by local factors, primarily sites, labor, raw materials and, at least to some degree, heavy equipment. On the other hand, the larger, more profitable firms in the industry operate on a global scale. Does this mean that the portable factors of construction, such as financing, engineering design, site management, and know-how are scarce or less prone to competition, that they outweigh local factors as a source of project profitability?

Associated with and reinforcing this view has been the similarly exceptionalist thesis that the construction industry, as the paradigm of perfect competition prevailing among numerous small firms, could not fruitfully be analyzed as subject to the structural restraints of capital accumulation that apply to capital-intensive oligopolized manufacturing industries. Moreover, according to the received wisdom, before the post-World War II period, “construction companies rarely operated outside their own country.”¹¹

Developments in the last quarter of the twentieth century have eroded the plausibility of these images of an economically and technologically aberrant construction industry.¹² In particular the windfall of petrodollar-generated large-scale involvement of multinational firms in Middle Eastern construction projects in the mid-1970s—as late as 1970, the major study of the prospects for construction exports prepared by the U.S. Department of Commerce did not even mention Saudi Arabia among attractive Near Eastern markets—finally forced observers to acknowledge that the industry had been catapulted beyond what they had regarded as desultory overseas forays superadded to traditional national domestic patterns.¹³ Yet they continued to ignore the significance and to some extent even the existence of that prehistory.

Historically, two trends in transnational construction projects have been observed. One has been associated with extraction, which has led to building projects at the sites of raw materials, such as mines and oil wells, as well as to

Canal: Its Construction and Builders 365-71 (1915); Ulrich Keller, *The Building of the Panama Canal in Historical Photographs*, photographs no. 5-10 (1983); S. Res. 169, 63d Cong., 1st Sess., 49 CR 3651 (1913); S. Doc. No. 258: *Panama Canal Equipment*, 63d Cong., 2d Sess. (1914); Act of Mar. 12, 1914, ch. 37, 38 Stat. 305, 306; Harold Williamson & Kenneth Myers, *Designed for Digging: The First 75 Years of Bucyrus-Erie Company* 92-99 (1955); Edwin Fitch, *The Alaskan Railroad* 53 (1967).

⁷See e.g. “The Zambesi River Bridge, Victoria Falls, Rhodesia,” 52 ER 346-47. (1905).

⁸*Facts About Bechtel* 11 [no pagination] (n.d. [ca. 1968]); see also chapters 8-10 below.

⁹P. Podshivalko et al., *Ekonomika stroitel'stva: Uchebnik* 10 (1962).

¹⁰See e.g., Herbert Robinson, *The Economics of Building* 4, 12 (1939); *National Interests in an Age of Global Technology* 31 (Thomas Lee & Proctor Reid ed., 1991).

¹¹E. Stallworthy & O. Kharbanda, *International Construction* 11 (1986).

¹²For examples of exceptionalist theses, see Colin Clark, *The Conditions of Economic Progress* 381-82 (3d ed. 1957 [1940]); Peter Cassimatis, “The Performance of the Construction Industry” 40-67 (Diss., New School for Social Research, 1967); *idem*, *Economics of the Construction Industry* 57-59 (Nat. Indus. Conf. Bd., Studies in Business Economics, No. 111, 1969); Alain Lipietz, “Building and the Crisis of Fordism: The Case of France,” 6 PBE 1-13, 1-16 (1984). H. Wiedmann, *Hochtief: Aktiengesellschaft für Hoch- und Tiefbauten vorm. Gebr. Helfmann* 7-15, 27 (1931), offers a comprehensive catalog of peculiarities of the construction industry but nevertheless stresses that the significant capital investment embodied in machinery and the technical-scientific administrative apparatus requires constant full utilization.

¹³U.S. National Export Expansion Council, *Report of the Industry Committee on Engineering and Construction Services* 88-90 (1970).

constructing an infrastructure to service those sites, ranging from rail lines, canals, pipelines, and telegraph and telephone lines to electrical or other power sources. The other involves local production and economic development ventures. Construction of this type is designed to be integrative at various levels: of infrastructure, national productive capacity, and capital accumulation. Construction projects, in terms of what is built and how it is built, have the potential for fostering or inhibiting overall national economic growth. If, for instance, construction projects develop a local economy in highly specialized ways and through foreign control of the construction itself, it may be more vulnerable to outside influence than a more self-sustaining economy.

In short, this potential for inhibiting economic development in the petroleum-producing countries and other dependently industrializing societies through specialization is bound up with broader questions about the formation of the so-called new international division of labor, which has permitted a worldwide dispersion of production locations.¹⁴ Here history has repeated itself. For this new-new international division of labor has a precursor in the new division of labor that emerged in the nineteenth century. Late-twentieth-century multinational construction firms also find their forerunners in the nineteenth-century English, French, and German railway construction and civil engineering firms that were integrated into a world market that they helped forge. By means of the international projection of European construction-engineering they contributed crucially to the imposition of a dependent political-economic role on colonized regions by making possible the extraction and expedition of mineral and agricultural resources back to Europe.

Projects reminiscent of the nineteenth-century international division of labor still abound. Bechtel Corporation, for example, completed in the 1970s a technically challenging assignment for a U.S. firm, Freeport Minerals, by building a pipeline in a spectacularly inaccessible part of the Indonesian province of West Irian in order to "open" a thirty-three million ton copper deposit "to international markets." Because the central government in Jakarta devoted almost none of the proceeds to developing the local economy, "a minor civil war" erupted among the local population.¹⁵

Typically, however, First World construction firms operating in the Third World¹⁶ in the late twentieth century have become the agents of a more complex process. Rooted in the availability in the Third World of an inexhaustible supply of state-disciplined cheap labor, a fragmentation of industrial processes amenable to the employment of unskilled workers, and the development of more efficient and cheaper transportation and communication technologies, the rise of dependent and yet competitive industries in a number of countries outside Europe, North America, and Japan has required the construction of industrial and extractive facilities and infrastructure that mimic those of their First World progenitors.¹⁷ In those

¹⁴For a not entirely persuasive effort to conceptualize the differences between the positions of the wealthy OPEC countries and other underdeveloped countries, see Jacqueline Ismael, *Kuwait: Social Change in Historical Perspective* 115-16, 154-60 (1982).

¹⁵*Compressed Air*, Nov. 1975, at 10-121 (Westlaw-Dialog); "Papuan Power," *Economist*, Jan. 1978, at 60 (Nexis). On the extraordinarily profitable mine operations, see Freeport-McMoRan, *1992 Annual Report* 1, 10-15, 48-49 (1993).

¹⁶No term has yet emerged to replace this obsolete one. See Nigel Harris, *The End of the Third World: Newly Industrializing Countries and the Decline of an Ideology* (1986). "Third World" is used here throughout interchangeably with "underdeveloped," "developing," and "peripheral" although they too are hopelessly ideologically freighted.

¹⁷Folker Fröbel, Jürgen Heinrichs, & Otto Kreye, *Die neue internationale Arbeitsteilung* 30 (1977); *idem*, *Umbruch in der Weltwirtschaft* 438-79 (1986); Brian O'Reilly, "Your New Global Work Force," *Fortune*, Dec. 14, 1992, at 52. For a critical evaluation the New International Division of Labor approach emphasizing the limited scope and depth of industrialization in most of the Third World and its concentration in a few Newly Industrializing Countries, see Roger Southall, "Introduction," in *Trade*

countries, such as South Korea, Taiwan, and Brazil, in which the intense development of autochthonous world-market-oriented industrial capital has initiated a process of de-peripherilization,¹⁸ the role of international construction firms has become contested as domestic firms have begun to acquire the capital, engineering knowledge, and technology to carry out their own complex projects.

This book pursues three interrelated objectives. First, it uses the development of a world market to show how the construction industry more closely resembles other industries with respect to the structural imperatives and constraints of capital accumulation and concentration than has traditionally been recognized. Building on the journalistic and trade literature on the recent internationalization of construction, this is the first scholarly work to emphasize the growth of the general world market as a factor in forcing the construction industries of the advanced economies into a world construction market.

Second, by focusing on the concrete role that construction firms—which form “the nation’s primary capital goods industry”¹⁹—play in producing and implanting other industries’ fixed capital across national boundaries, this book emphasizes the crucial but neglected historically changing role that multinational construction firms have played as creators of the physical skeleton of the international economy and as agents of the incorporation of the economic periphery into internationalized capital circuits. Examination of the micro-histories, beginning with the 1830s, of individual companies and the construction industries of Western Europe, the United States, and Japan, brings to light the pioneering contributions that multinational construction firms have made to the projection of metropolitan political-economic power to Africa, Asia, and Latin America. Despite the vast literatures on world systems, multinational firms, and the effect of “development” on the environment, this is the first work to place the internationalization process in the context of the construction industry’s contribution to the creation of a world market for commodities and capital.

More than any other group of entrepreneurs, construction engineering firms have historically understood the transnational interests of capital as their personal opportunities for enterprise. In their role as designers and managers of transnational construction projects, they have been crucial to the expansion and shaping of capitalism—in the development of global industries and international divisions of labor. Their imagination of projects that could and could not feasibly be completed in economically undeveloped territories has been a leading determinant of capital decisions at the metropolitan cores. Understanding the secondary role of engineering in capital-allocation decisions helps explain why Third World industrial capacities do not readily transform Third World economies into less dependent competitors—why, for example, metropolitan oil companies charged construction firms with building oil wells, pipelines, and ports rather than local refineries in the Third World.

And third, although scholars have written case studies of the impact of individual construction projects on the environment, this book provides a comprehensive historical view of the physical transformation and reconstruction of

Unions and the New Industrialization of the Third World 1, 4-20 (Roger Southall ed., 1988); James Petras & Dennis Engbarth, “Third World Industrialization and Trade Union Struggles,” in *id.* at 81-99.

¹⁸Stephen Haggard, *Paths from the Periphery: The Politics of Growth in the Newly Industrializing Countries* (1990); Scott McMurray & James McGregor, “Asia Targets Chemicals for the Next Assault on Western Industry,” *WSJ*, Aug. 4, 1993, at A1, col. 6. For a skeptical view of the long-term prospects of industrialization in the Third World, see Elmar Altvater, *Sachzwang Weltmarkt: Verschuldungskrise, blockierte Industrialisierung und ökologische Gefährdung: Der Fall Brasilien* (1987).

¹⁹U.S. Bureau of Labor Statistics, *Construction During Five Decades* iii (Bull. No. 1146, 1954). See also Simon Kuznets, *Capital in the American Economy: Its Formation and Financing*, tab. 14 at 146-50 (1961).

the Third World's second nature wrought by the transfer of First World construction-engineering technology in the service of world-market-oriented natural resource exploitation. The monopolies that First World manufacturing and construction firms have held on the underlying technologies of the built environment in large part explain the peculiarities of the development and structure of the world construction market.

The remainder of the theoretical framework sketched in part I begins with an examination of the applicability to construction of the distinction, common to other industries, between exports and direct investment abroad. Of particular salience here is the role played by exports of prefabricated buildings and structures as physical analogs to that of manufactured commodities. An analysis of the micro- and macro-political-economic bases of construction firms' decisions to build beyond national boundaries forms the concluding section of chapter 2.

Part II explores the history of the course of transnational construction activities of European and U.S. firms prior to World War II. The rise of large British railway construction firms in the 1830s and 1840s is explained by reference to the separation of engineering from contracting and the use of labor subcontracting as the most profitable form of managing the labor force (chapter 3). In the nineteenth and early twentieth century these British firms built railroads and other infrastructure designed to facilitate the incorporation of the primary commodities of Africa, Asia, and Latin America into Britain's circuits of capital (chapter 4). The role of the state in the nineteenth century in Britain and, secondarily in other European countries, in transforming the colonies into unequal participants in the world market then provides the background for the overseas expansion of European construction firms (chapter 5). The counterpart competitive processes in the German and French colonial empires and elsewhere are evaluated in chapter 6. The emergence of internationally oriented U.S. construction firms in response to the rise of U.S. imperialist aspirations at the end of the nineteenth century and to the country's new role as a capital exporter during World War I forms the focus of chapter 7.

Part III is devoted to the evolution of a world market for construction. Chapter 8 accounts for the post-World War II ascendancy of U.S. multinational construction firms. Worldwide exploitation of petroleum resources beginning in the 1930s and far-flung military construction performed by U.S. firms during World War II furnished the latter with the technology, capital, and private economic and state networks to occupy a privileged international position in the postwar years. The absolute political-economic and military dominance of the United States as a whole during the early postwar period and the massive preemptive demands that reconstruction in Europe and Japan made on the capacities of each domestic construction industry initially left U.S. construction firms without significant international competition. Chapter 9 then reconstructs the erosion of the dominant U.S. position since the Vietnam War against the background of the OPEC building boom. The unprecedented volume of transnational construction made possible by the enormous revenues flowing to the Middle Eastern OPEC states in the mid-1970s created a world market for construction by broadening and deepening the participation of producers and consuming firms and states. In responding to this expanded demand for specialized engineering technology, construction firms from advanced capitalist countries unwittingly helped institutionalize new pressures on their capital investment that initiated a profound process of internationalization. Although U.S. firms in particular profited immensely from this integration into the world market, it eventually deprived them of the hegemony that their manufacturing counterparts had lost earlier in the postwar period.

After delineating the unparalleled international mobilization of construction

labor occasioned by the huge increase in Middle Eastern building, which has enabled multinational firms to engage in worldwide sourcing for a factor of production theretofore kept immobile by transportation costs and legal restrictions (chapter 10), this book presents the available quantitative indicators of the internationalization of construction firms in the United States and in the entire world during the postwar period (chapter 11). The concluding analyses are devoted to the collapse of the OPEC boom in the early 1980s, which compelled multinational firms to seek means to counteract the decline in profitability associated with their overaccumulation of capital. The most salient strategies are the competitive interpenetration of First World markets (chapter 12) and the dependent industrialization of the Third World with its concomitant consequences for the global environment (chapter 13).