

evidence for a nonstatist “inclusive habitus of inventive play” (131) depends on how one views the communities associated with such patronage. After all, the hierarchies of caste, status, wealth, and gender within Vaishnava devotional communities are well documented, and, as Ray’s work suggests, temple groves, like other contemporary architectural forms, were immersed within these complex and evolving political, social, and economic conditions. It is a pity that the insights Ray brings to his analyses of built space, geoaesthetics, and sacred cosmology do not extend to the social hierarchies of their production, although it is also perhaps unfair to expect a book that does so much to do even more.

Many of these practices of viewing, sacralization, and devotional connection with the materiality of sacred spaces continue into the fourth and final chapter, “Ether.” Here Ray addresses the traces of global, cosmopolitan styles at a colonial-era temple as expressions of devotional hydroaesthetics, performative traditions, and decorative arts that persisted into the modern period.

The high-quality color illustrations and maps in the book aid the reader in comprehending Ray’s complex analysis. This is a thought-provoking work whose greatest contribution is that it carves a path for new studies that may extend our understanding of the deep and complex interrelationships among geoaesthetics, ecology, spiritual practice, and the built environment in early modern India.

PURNIMA DHAVAN  
*University of Washington*

## Notes

1. Data available to scholars through dendrochronology and the study of lake sediments and stalagmites remain thin, but local variations in rainfall and temperature are well documented across the coastal, plain, and mountainous regions of South Asia. See Udaya Kuwar Thapa, Santosh K. Shah, Narayan Prasad Gaire, and Dinesh Raj Bhujju, “Spring Temperatures in the Far-Western Nepal Himalaya since AD 1640 Reconstructed from *Picea smithiana* Tree-Ring Widths,” *Climate Dynamics* 45, nos. 7–8 (2015), 2069–81; M. F. Quamar and M. S. Chauhan, “Signals of Medieval Warm Period and Little Ice Age from Southwestern Madhya Pradesh (India): A Pollen-Inferred Late-Holocene Vegetation and Climate Change,” *Quaternary International* 325 (Mar. 2014), 74–82; Stefan Polanski, Bijan Fallah, Daniel J. Befort, Sushma

Prasad, and Ulrich Cubasch, “Regional Moisture Change over India during the Past Millennium: A Comparison of Multi-proxy Reconstructions and Climate Model Simulations,” *Global and Planetary Change* 122 (Nov. 2014), 176–85.

2. Irfan Habib, *An Atlas of the Mughal Empire* (Delhi: Oxford University Press, 1986), 8B.

Robert J. Kapsch

### **Building Washington: Engineering and Construction of the New Federal City, 1790–1840**

Baltimore: Johns Hopkins University Press, 2018, 384 pp., 38 color and 83 b/w illus. \$69.95 (cloth), ISBN 9781421424873

Robert J. Kapsch’s detailed account of the difficult process of building Washington, D.C., focuses on the shift in American architecture from dependence on gentleman builders to the emergence of professional architect-engineers. *Building Washington* begins with a description of the political and financial problems that accompanied the creation of a capital city for a new, relatively poor, and not well-coordinated federation of states with diverse populations and interests. The vision was George Washington’s, the implementation Thomas Jefferson’s. Kapsch explains the evolution from Washington’s eighteenth-century amateur vision to nineteenth-century professionalization under Jefferson (16). In his introduction he ably lays out the tangle of difficulties these men faced when executing their ambitious plan in a virgin area, with little funding, political will, or professional expertise. He reviews the technical, political, financial, and planning problems they encountered along the tortuous path to the birth of the new city. Together, Washington and Jefferson achieved many successes, even though one significant aspect of their vision atrophied: the commercial development of the Georgetown harbor. That would prove impossible, given the silting of the Potomac caused by deforestation of surrounding lands and the competition the harbor faced from other ports—specifically, those in Galveston, New Orleans (not mentioned by Kapsch), and New York (12–13).

Kapsch’s account corrects many long-held misconceptions about the personalities and problems involved in the development of Washington, D.C. One of these is the familiar belief that the original, French-born city planner, Pierre Charles L’Enfant,

was unduly arrogant. Kapsch shows him to have been professionally competent and prescient in his assessment of problems to be avoided. L’Enfant may have been haughty, but his conflicts were with equally haughty and opinionated commissioners, amateurs all, who sought to protect their own interests and prerogatives (22–30). Kapsch’s argument here is convincing, supported as it is by detailed planning information and by the fact that these same commissioners later fought with L’Enfant’s successors. Another of Kapsch’s important observations comes with his reevaluation of William Thornton’s design for the Capitol building. He explains that funding difficulties arose because of Jefferson’s administrative inexperience, in particular his low estimate of construction costs and his shaky funding model, which was based on land sales (a model L’Enfant criticized to no avail). By 1801, when Jefferson became president, he had learned from his mistakes and the default of land speculators, so he was able to put the construction on a more solid financial footing.

In the book’s first part, Kapsch examines problems related to the recruitment of labor and the provision of materials to this largely unpopulated region. He describes the first infrastructure projects that required the transportation of materials to building sites, along with the projected development of the port of Georgetown. Here the reader might wish for a broader overview of that infrastructure. Kapsch could have brought greater clarity to his discussion by treating infrastructure as a separate topic and relating it to the need for transportation in bringing economy and speed to construction. He lays out the various projects and their designs, difficulties, and successes, but it would be useful to know exactly how those projects related to one another, as well as their comparative importance in the city’s overall development. Further, this part of the book would have benefited from tighter organization and the omission of irrelevant anecdotal information. As an example, the descriptions of fort building and critiques of design and construction around Washington are interspersed with battle accounts that, although entertaining, are not germane to the book’s arguments (120–23). Nevertheless, the well-documented information on construction contained here is of great value.

The second part of the book focuses on the construction of the city's two most important structures: the President's House and the Capitol building (built to house Congress and the Supreme Court). Considering the difficulties that plagued this process—from financial and political problems to personal conflicts—this section constitutes the most thoroughly researched and most interesting part of Kapsch's book. Here he documents in detail such problems as damage and deterioration of buildings resulting from the use of inappropriately prepared materials. Once the English-born architect Benjamin Henry Latrobe took over, the whole process stood on a more professional footing, and such issues abated. Still, the problems Latrobe inherited required great skill to resolve, and, as a result, he encountered much resistance and animosity. He eventually resigned his position during the project's third phase—the reconstruction required following the damage inflicted by British troops in 1814. After Latrobe, the Boston-based Charles Bulfinch took over the design for the Capitol.

This part of the book is exhaustively researched and tells an intriguing story. Kapsch documents every step of the building process, names virtually everyone involved, and explains every major decision. He provides an illuminating section on materials, including discussion of their availability and transport (51–59), and he demonstrates the complexity of the issues that the later, and often vilified, commissioners faced; this helps to alleviate some of their poor reputation as incompetent amateurs. Kapsch also illuminates the inherently systematic nature of the construction process, explaining that the commissioners initially neglected to establish primary transportation systems, such as canals and bridges, thereby seriously hampering the work and increasing the costs of bringing materials to the city. The result of Kapsch's efforts is a blow-by-blow account of a complex and messy process, including errors in judgment and the incompetence of the original governing body. Surprisingly, that body successfully set in motion the building of the new capital city, despite its rural location and its failure to develop as expected commercially.

The book's last chapter returns to infrastructure, primarily roads and canals. Also

discussed here are well-documented problems that arose in the building of the foundations and piers of the Potomac Aqueduct; these problems demonstrated the lack of professional knowledge endemic among the city's early builders.

Kapsch's study shows its weaknesses as soon as contextual issues enter the mix. If context is relevant to an argument, it must be just as well researched as everything else. When contextual details are imprecise, it will invariably occur to the reader that perhaps other, less easily verified information might also be inaccurate. For example, the encyclopedia that Jefferson referenced (56–57) appears to have been Denis Diderot and Jean le Rond d'Alembert's *Encyclopédie, ou dictionnaire raisonné des sciences, des arts et des métiers* (1751–72, with later supplements), not the *Encyclopédie méthodique*, as mentioned here. The volumes of the *Encyclopédie méthodique*, published by Charles Joseph Panckoucke, did not begin appearing until 1782, and they apparently did not include information on civil engineering, architecture, or construction. Such matters do not detract from the value of the originating concept of *Building Washington*, nor do they lessen the book's readability. But they should be corrected or explained with the same close attention that the author laudably displays elsewhere in the book.

Of this study's occasional errors and imprecise language, I will offer a few further examples. First, the distinction Kapsch makes between an engineer and a contractor derives from Latrobe's opinion (99–100), and it is neither useful nor historically apt. The issue is more complex than either Kapsch or Latrobe makes it seem. Latrobe was, arguably, the first professional architect in the United States. In England, he apprenticed under the autodidact John Smeaton, the first man to call himself a “civil engineer” (as opposed to a military engineer), and the neoclassical architect Samuel Pepys Cockerell. L'Enfant, meanwhile, was educated as a painter and landscape designer. He served under Lafayette in the military engineers, but it is unknown what engineering he may have learned there. He might therefore be considered a gifted landscape designer who ventured successfully into city planning. Neither Latrobe nor L'Enfant was an engineer in

the modern sense, as were the graduates of Jean-Rodolphe Perronet's *École Nationale des Ponts et Chaussées* (from 1747), with their rigorous science- and technology-based education. Some additional errors and oversights: James Finley was a farmer, politician, judge, and autodidact inventor, not an engineer (93); the Halle aux Blés (not “Halle au Blé”) in Paris was round, not octagonal (181); Franz Anton von Gerstner was not German but Bohemian, and therefore a subject of the Austrian Empire (241); the “Lieutenant Bartlett” mentioned was William Holms (or Holmes) Chambers Bartlett (1804–93), one of Sylvanus Thayer's first three students at West Point, and thus one of the best-trained academic engineers in America at the time (249).

These are admittedly minor details, but they do raise flags. The book's value to historians lies in those many parts that have been more carefully researched and are more clearly articulated. Its weakness lies mainly in the fact that the history of construction is a fledgling discipline still in the process of professionalization.

TOM F. PETERS  
*Lehigh University*

James D. Dilts

**The World the Trains Made: A Century of Great Railroad Architecture in the United States and Canada**

Lebanon, N.H.: University Press of New England, 2018, 304 pp., 230 color and 2 b/w illus. \$50 (cloth), ISBN 9781611688023

In *The World the Trains Made*, James D. Dilts offers a visually rich and evocative study of the railroad architecture that has survived the decline, collapse, abandonment, and bankruptcy of the railroads. In the nineteenth century, railroads were the largest and most prosperous businesses in North America, the very symbols of the Industrial Revolution. All along the right-of-way—what historian John Stilgoe calls the “metropolitan corridor” of tracks, stations, and associated buildings, from New York's magnificent Grand Central Terminal to the thousands of one-room stations in rural settings—“the railroad represented modernity.”<sup>1</sup> “Civilization literally followed the wave