



Transportation Research Forum

Book Review: [The Parking Garage: Design and Evolution of a Modern Urban Form](#)

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Book Review

McDonald, Shannon Sanders. The Parking Garage: Design and Evolution of a Modern Urban Form. Washington, DC: Urban Land Institute, 2007. ISBN 0874209986.

The Parking Garage

by Mazhar Ali Awan

While many engineers, architects, economists, and transportation planners/designers concern themselves with the various modes of transportation (rail, bus, automobile, motorcycle, or air) and the concomitant infrastructure to get from point A to point B, few pay attention to the start or end of the trip. While not as “sexy” as creating and improving the links connecting the nodes, links quickly become inefficient and unproductive without attention to the start and end points. Shannon Sanders McDonald’s *The Parking Garage: Design and Evolution of a Modern Urban Form* fills this gap directly while enlightening and entertaining the technical and lay reader.

McDonald takes the reader from the earliest parking needs of the early 1900s to the present day. She effortlessly melds architecture, engineering, and planning into a compelling story that addresses the evolution of parking garages (early elevator, ramp and self-park designs), congestion, urban sprawl and planning, quality of life and aesthetics, and larger issues. While there are other books on the design and development of parking facilities, McDonald’s presents not only a macro-level view of what needs consideration in the design and function of parking garages, but precise and specific micro-level suggestions and requirements for optimal design from an architectural and urban planning perspective. The 10-chapter, 350-plus picture, 300-plus-page tome would be perfectly at home on a coffee table and delight and inform many a guest, or equally at home at an office desk to advise and inspire transportation professionals implementing such projects.

McDonald begins the journey with the automobile’s place in the American city of the early 1900s. She notes that cars were a godsend to cities fighting problems such as pollution, diseases, and sanitation. She observes that electric vehicles were quite common and that drivers made use of charging stations at parking facilities of that time. McDonald explains that the primary difference between Europe and America in the introduction of the automobile and the concern over parking was that Europe had established cities and American cities were newer and had space for growth. McDonald cites that the earliest providers of parking for automobiles were horse stables converted to accommodate cars. These early providers grouped services under one roof, services such as upholstery, fuel, auto repair, and long-term storage. She notes seriously, yet humorously, that the first gas-powered car to drive down a street in the United States was in 1890 in Baltimore – and that the same car later burned down the building in which it was stored.

In the following chapter, McDonald covers the evolving early designs for this new type of building. She notes this as a fight between the ramp-based garage and the elevator-based garage. The elevator-based garage, which moved vehicles to floors and arranged them in an optimal manner, maximized the number of vehicles parked; however, it was slower than its rival ramp-based garage. McDonald, rightfully, makes short shrift of the elevator-based garage and notes its effective demise by 1925. She also notes that the ramp-based garage was less efficient (fewer cars per floor), but other features made it more attractive (reduced costs, faster ingress and egress, better fire protection, and improved visibility). The bulk of this chapter is about ramp-based garages—most notably, the D’Humy system, which increased the efficiency (cars per floor) of the ramp-based garage. She also comments on other ramp-based designs in this section.

The Parking Garage

In the subsequent chapter, McDonald writes:

The early garage was a living place, simultaneously supporting the automobile user, other buildings, and the larger transportation system of the city. Unlike the stable or the carriage house, the garage played multiple roles and incorporated multiple functions, enjoyed synergistic relationships with many other building types, and was crucial to the economic and geographic growth of developing cities and towns.

She addresses how the garage fit in with multimodal facilities and how it became part of the cityscape. She provides multiple examples of the synergies associated with garages and other types of buildings such as courthouse, malls, stadiums, maintenance facilities, sales and showrooms, theaters, office spaces, banks, hospitals, airports, and colleges. Photo examples are peppered throughout the book.

McDonald addresses the form and function of garages next. She observes that they originally served multiple functions. In terms of form, as self-parking became more prominent, light and safety became an important part of the design. Post-9/11 security and signage gained a renewed importance and requirement in the design and renovation of garages. Environmental concerns brought forth gasoline, oil, and other chemical capture systems incorporated into garage design and function. In newer garages, McDonald notes, the incorporation of garage monitoring systems, parking revenue systems, HVAC, safety, and security systems. McDonald also addresses in detail garage construction and the requisite financing of building efforts.

Chapters 5 and 6 cover mechanization and engineering. McDonald observes that Chicago is the first city to incorporate parking into its transportation plans. She also addresses the differing types of garages (automatic, semi-automatic, and stackers) that exist, along with their requisite strengths and weaknesses. She notes almost (not quite fully) to the point of exhaustion, the engineering of parking garages and the subsequent advances over time as techniques evolved and new ones emerged.

Next, McDonald approaches the questions of why garages should be studied and how social and environmental connections can be maintained. There are two types of structures – one that is connected and fully integrated and one that is a separate unit. She elucidates on the importance of mixed use developments that incorporate parking seamlessly. She remarks on two types of connections for garages – one that is a transition point and one that is part of a transportation system. She laments that grand designs envisioned by architects and engineers were often not executed because of disregard for the importance of the building type and its function within the whole.

Frank Lloyd Wright notes that a building is not just a place to be; it is a way to be. McDonald takes this cue and focuses on the aesthetics of the garage by looking at the Beaux-Arts, Art Deco, Streamline Moderne, and Modernist approaches to garage design. Next, McDonald focuses on the incorporation of screens, facades, ornament, stairs, entry and exit points, art on and in the garage, and preserving the aesthetic of the location.

In the penultimate chapter, McDonald turns to parking in the urban planning context. She notes that parking is *the* urban planning issue. She observes that parking is encroaching on public lands and parks and affecting urban living. She covers the early attempts at regulation and the introduction of time limits, parking times, and street parking meters. She addresses the importance of multimodal transportation centers for the urban environment, transit systems, and efficient road networks. The demand for parking is driven by growth and prosperity and has resulted in sprawl. She notes two approaches to parking – *protection* of the city by helping to advance transit and *integration* by allowing cars to come inside the city as opposed to traversing on the outskirts and bypassing the city altogether. In this sense, McDonald posits we should return to the early multi-use parking facility typology.

McDonald closes with, “When designed as a discrete object, the building type emphasizes separation and segregation, but when designed as a part of the whole, the garage celebrates and confirms relationships and connections.” She notes that the ultimate tension is between individualism and interdependence. She addresses sustainability, cars and the environment, parking

and community, and walking. In sum, the germ of the book is in promoting inclusion of the parking garage as part of a holistic approach to urban and transportation planning.

This reviewer believes that McDonald accomplishes the goals that she sets for herself in this book. She brings to the fore the reasons why parking in the planning context and the garage as a building type should be paid due deference in the overall overarching plans of city managers, transportation professionals, and those endeavoring to develop building projects within cities. Parking should not be an afterthought, nor should the garage be skimmed on in terms of design effort and attention and share of finance for the total project. Even if one doesn't sit down to consume the whole text, the boxes within titled "Movement of Facts," "Past Lessons for the Present and Future," and other boxes on varying points are interesting nuggets of information. My lone complaint was that some text elaborating on the particulars of buildings lacked accompanying pictures that would have helped the reader greatly, but this occurs less than a half dozen times. McDonald clearly has a passion for her subject matter that shines through in a well-researched and well-documented manner.

Mazhar Ali Awan is president and CEO of TEI, a consulting group founded in 2005. He previously served as an economist at the Surface Transportation Board and did graduate studies at George Mason University's School of Public Policy. Awan was formerly an economic adviser to the David Institute in Tustin, California, and worked as an engineer and project manager for various engineering consulting firms for over 12 years prior to entering the economics field. He holds a B.S. in economics and an M.A. in regional economic development and technology, cum laude, from George Mason University. Awan has published articles on various transportation-related issues and educational concerns.