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TRAIN STATIONS: ICONOGRAPHY, WAYFINDING, AND THE EVOLUTION OF A TYPE

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Abstract

The first train stations were built more than 150 years ago. Their floor plans both developed from and were informed by circulation requirements arising from the need to move passengers and trains safely and efficiently. While the prominent route of movement through stations was largely determined by their layout, certain architectural elements appeared in many stations regardless of their plans. Many of these features first appeared in response to functional needs but later acquired symbolic significance, transforming them into railway iconography. The resulting iconography not only helped distinguish train stations from other types of architecture but enhanced the legibility of the spaces within the stations, making wayfinding easier for its users.

Introduction

The particular activities supported by train stations—the coordination of arriving and departing individuals and track-dependent vehicles, as well as the services required to support both people and trains—have created unique design challenges, challenges that are further complicated by the urban context in which many stations have been erected. This study seeks to explore how the train station as a building type has evolved to allow for the efficient navigation of its occupants in increasingly complex buildings.

For their users, train stations are generally temporary spaces, frequented by arriving or departing visitors who often have no prior knowledge of the premises. Despite a lack of familiarity with a station, it seems that people generally find their way, a fact which raises an interesting question: how do people negotiate a station they have never before visited?

When the first stations were built in 1830, there was neither an architectural precedent for their construction nor the behavioral sciences to describe navigating in them. Despite a lack of precedents or a codified understanding of how to find one’s way in them, train stations evolved into very complex spaces that generally work very efficiently in enabling passengers to circulate safely and freely. One goal of this study, therefore, was to examine the development of the train station as an architectural type during its 178-year history.

An examination of the development of the station as an architectural type, however, does not adequately answer the question: how do people find their way in a station? Psychology, particularly studies pertaining to cognition and perception, helps answer the question. However, architects of the early stations did not have the discipline of psychology as a reference point. Absent scientific-based discourse on how people best navigate in complex spaces, the architects and engineers of the early stations provided meaningful cues such as clear axes and striking landmarks within an architectural context that proved helpful to wayfinding. These architectural cues were repeated with regularity from station to station and to such a large extent that they themselves became icons of stations, symbols of the buildings in which they appeared. While such features contributed to making stations unique in comparison with other types of architecture, subsequent research in the field of wayfinding supports a hypothesis that such features also made navigating through them more efficient.

I. Principles of Wayfinding


Passengers whose train delivers them to a station for the first time typically have no knowledge of the building design so retracing their steps is not an option. How do such travelers know how to exit a station they have never before visited and for which they have no previous experiences stored in memory?

Cognitive maps involve mental compilations relative to one’s perception of the environment. They allow people to determine their positions within a setting because they make it possible for individuals to organize perceived parts of the environment into a meaningful entity, permitting them to orient themselves spatially within the context of the cognitive map and, consequently, within the setting itself (Passini, 1984, p.35). Unlike physical maps, cognitive maps change as new information about the surroundings is acquired. Shemyakin found that cognitive maps are organized in one of two ways—linear or sequential and spatial or survey (Passini, 1984, p. 37). When information is encoded via a linear cognitive map, routes are ordered sequentially and temporally relative to a person’s movement through space in time; the cognitive map resembles a AAA TripTik where the route alone is revealed sequentially, page to page. On the other hand, when information is encoded through the use of a spatial or survey cognitive map, the environment is perceived as a spatial entity, much like a floor plan.
Cognitive maps can be viewed as both product (a map) and process (mapping). Thus these maps influence not only the type of environmental data perceived but also the preferred manner of acquiring such data, creating a link between perception and behavior. Those who favor a linear approach structure the environment in terms of routes where directional signs are most helpful (Passini, 1984, p. 76). Others, who favor a spatial style, rely on topographical relationships and understand the setting as a spatial ensemble (Arthur & Passini, 1992, p. 38).

Schemata help people form cognitive maps. A schema is an abstraction of an object or of a situation but it is not specific to any particular object from within a particular classification of objects; a schema of a train station encompasses that which is generally characteristic of train stations. Earlier experiences of stations, whether first- or second-hand, are stored in memory and can be retrieved at a later time. Schemata facilitate the perception of the environment and provide a procedural basis for reacting to environmental stimuli; they are cognitive building blocks that play an integral role in the formation of cognitive maps (Passini, 1984, p. 55).

In The Image of the City, Lynch seeks a synthesis among the identity, the structure, and the meaning of an urban environment within an urban context. He uses the city as his model and identifies five elements common to all cities: paths, landmarks, nodes, edges, and districts. Paths are the routes along which one moves. Landmarks are “points of reference” (Lynch, 1960, p. 48). Nodes are the intersections along circulation routes. Edges are linear boundaries that separate areas. Districts have a two-dimensional extent and “are recognizable as having some common, identifying character” (Lynch, 1960, p. 47). Lynch believes that people can “structure the whole” by identifying the parts (1960, p. 13). Passini adapts these elements to an architectural model—the building. Paths are corridors, nodes are intersections between hallways, landmarks are significant spaces or objects within a building or visible from within, edges are the perimeters of the building, and districts are major zones in the building usually related by a common function.

A critical stage between orientation in space and successful navigation through it is the planning process. This stage links the cognitive map to the behavior once the appropriate script has been retrieved from memory (Passini, 1984, p. 46). During this phase of wayfinding, decision-making skills allow people to structure a plan for locating their destinations. The task to enter or leave a station is broken down into a series of subtasks. The decision plan is sequential: there is a logical progression both in the perception of the environment and in the reaction to it in terms of formulating a decision plan and then executing it.

Passini identifies three types of environmental information: sensory, memory, and inferred (1984, p. 60). Sensory information is what people perceive through their senses. Memory information is the ability to retrieve information that involves similar events, places, decision plans, and schemata. Inferred environmental information requires the use of working memory and a manipulation of either sensory or memory information (Passini, 1984, p. 60). The strategies for obtaining environmental information correspond to the types of information (Passini, 1984, p. 70). The direct access tactic employs sensory information. The indirect access tactic relies on experience and memory. The inferred strategy is based on both sensory and memory tactics. When people arrive by train at a station the first time, an inference strategy enables them to integrate sensory and memory information to locate the exit. Upon disembarking from the train, they see the platform. Memory of similar experiences in other train stations tells them that the platform should be connected to the concourse. They have no first-hand sensory or memory information of this concourse but they can deduce this information using the inference tactic.

In order for people to reach their destination, the environment must be perceived, a decision plan must be formed, and then that decision plan must be executed. How, then, did the designers of early stations address these issues architecturally?

II. The Birth of a New Type (1830 - 1844)

The first railroad stations were erected in 1830, one in Liverpool, England, and the other in Baltimore, Maryland. Four conditions made the erection of such buildings possible: specialized tracks, the conveyance of freight, the conveyance of passengers, and mechanical traction (Meeks, 1956, p. 26). The Industrial Revolution set the stage for a new form of transportation, the railroad. There was, however, no direct precedent with respect to either the function or the design of railway stations. “Every solution had to be invented” (Meeks, 1956, iii).

In 1846, Daly, editor of the Revue Generale de l’Architecture, published the first classification of train station types and, in so doing, established important criteria for identifying the railroad station as a new type of building. He recognized four types, each based on the station’s parti or “basic scheme or concept for an architectural design, represented by a diagram” (Ching, 1996, p. 381). The four major types are the one-sided, the two-sided, the head type, and the L type (Figure 1). Daly identified each type on the basis of the major circulation routes of arriving and departing passengers, linking function to form and building parti to tracks. Without realizing it, Daly had also linked train stations to wayfinding, not only by identifying the major paths but by using those paths as the primary distinguishing feature among station types.

Figure 1. Left to right: Sketches of one-sided, two-sided, head house, and two-sided L stations. From Meeks, C.L.V. (1956). The Railroad Station. New Haven CT: Yale University Press. Image in public domain
One-sided stations are the simplest in terms of their floor plan. Passenger and baggage facilities appear on one side of the active train tracks. The Fayetteville (AR) Depot on Dickson Street is an example of this style of station (Figure 2). In the early years of the railway, this was the most common type and continues to be a very functional design for commuter stations.

However, as rail travel grew, both ridership and the number of tracks increased. Two-sided stations enabled departing passengers to make their way toward the tracks from one building, while arriving passengers disembarked through the another building. The first Euston Station in London, England, (Hardwick, 1839) is an example of a two-sided station.

The head house station proved to be the most versatile of stations “because it provided a pragmatic solution to the volumes of both train and passenger traffic” (Sheppard, 1996, p. 33). Functionally, the head house was important because it allowed for arriving and departing passengers to mix. The Gare de l’Est in Paris, France, (Duquesney, 1852) was the first head house station to be completed. The train platforms are connected to each other and to the ticketing and waiting areas by a cross-platform.

The architects of the early stations responded to the challenges created by the new technology using an established language. The vernacular architecture of ordinary houses and cottages proved to be a good marketing strategy for the developing industry because the public had to be persuaded that the railway was not “an object of terror” (Barman, 1950, p. 25). From the perspective of wayfinding, it makes sense that the early railroad companies articulated their stations in the comfortable vernacular because “an unpredictable, unknown, and mysterious path is not a sure path” (Passini, 1984, p. 11). If the language of the space is familiar even if the function within the space is not, a meaningful cognitive map can be formed. The passengers’ familiarity with the vernacular enhanced the formation of cognitive maps for the developing rail industry and its users.

In contrast to stations articulated in the vernacular, monumental stations that resembled temples, such as the first Euston Station were also built during the period from 1830 until 1844. While the vernacular stations assuaged fears over the new mode of transportation, the monumental ones proclaimed victory; “the early railway companies saw themselves as the standard-bearers of the new epoch” (Sheppard, 1996, p. 13). The monumental arch at Euston was iconic on two levels. From the standpoint of wayfinding, it clearly marked the entrance to the station. As an icon, the arch proved to be such a clear wayfinding device that it would be used in later stations to fulfill the same function. Some have argued that the station was to the modern city what the gate had been to the ancient city (Meeks, 1956, p. 39). Symbolically, it captured the spirit of leadership that the early railroad companies regarded as essential to building their railroad empires. Just as the Arc de Triomphe commemorated French victories, the Euston Station arch celebrated the conquests of the new technology as seen in the remnants of the arch (Figure 3).

III. Stations Find a Language (1844 – 1890)

By the mid-1840s, the railroad companies, architects, and engineers had overcome many of the initial fears raised by the new technology. Business was growing, ridership was increasing, and new stations had to be built economically and quickly. In addition, companies decided that stations should have the “right look” (Meeks, 1956, p. 39) Out of this milieu developed “the Railroad Style.” The Railroad Style was often based on the rural Italian villa and typically included a campanile that housed a bell and a clock, as well as arcaded
loggias that served as platforms (Meeks, 1956, p. 44). The Connolly Station in Dublin, Ireland (Butler, 1844) typifies this style (Figure 4). Central to Connolly Station is the tower which serves as a landmark in the urban setting. The tower alerts people to the significance of the structure. People knew that they had arrived at the station because it looked like a station; it looked like a station, in part, because the schemata of train station included such towers. The legibility of key architectural elements, like towers, makes the organization of spaces clearer. The Railroad Style helped solidify the concept of the station, both in terms of product recognition and cognitive map formation.

![Figure 4. Connolly Station, Dublin, Ireland. Personal photograph.](http://scholarworks.uark.edu/inquiry/vol9/iss1/16)

Towers frequently housed bells and clocks. Audible cues were important sources of environmental information in the earliest days of train travel because they signaled passengers to the trains. Before the advent of rail travel, nationwide timekeeping did not exist. The arrival and departure of trains was dependent on the context. In an urban context, where the lines of the shed merges with the architectural design of the terminal. At Paddington Station, Brunel and Wyatt go one step further by integrating the shed and the terminal into a unified space, using an ecclesiastical model borrowed from the Middle Ages (Barman, 1950, p. 10). With respect to wayfinding, sheds create a visual path that connects the train to the building. The shed and the platform work together to direct passengers to their destination, be it toward the train or toward the exit.

The physical act of wayfinding occurs in two contexts—urban and architectural. The building must first be located within the urban setting before navigation through it can begin. When the train shed is articulated on the face of a building in the form of a window, two distinct functions occur which are dependent on the context. In an urban context, where the lines of the train shed are inscribed on the external façade of the station to form a large arched window, the window functions as a landmark, in accordance with Lynch’s theory. The unique physical qualities render the landmark “memorable in the context” (Lynch, 1960, p. 78). Such large windows generally are unique to stations and help distinguish them from other buildings within the urban fabric. Once the station has been identified, this type of information is no longer needed. As the context changes from an urban to an architectural one, new environmental information is required in order to complete the wayfinding task. The shed that gave form to the window as a landmark on the exterior of the building now functions as a path which delineates the way from the concourse to the platform inside the building. In addition to the dual functionality of the arched window/train shed, this icon in both roles underscores the temporal and sequential quality of perceiving environmental data, formulating a decision plan, and then executing that plan; the path to the platform does not appear before the building is identified as a station.

The success of railways in the middle of the 19th century evolved from simple wooden lean-to sheds into magnificent spans of iron and glass—materials that were impervious to the soot and sulphurous steam that had deteriorated earlier wooden trusses. Engineers were largely responsible for the construction of the sheds; architects, for the head houses. Some have argued that, during this period of technological advancement in the design and construction of train sheds, it was the engineers who experimented with a new language and new materials, while the architects were content to dress the new type in old clothes. In the early days of standardization, there seemed to be a disconnection between shed and station, with two notable exceptions—King’s Cross (Cubitt, 1852) and Paddington (Brunel and Wyatt, 1854) Stations, both in London, England.

Before the functional but unaesthetic portico was added, King’s Cross’s façade clearly revealed the standard campanile and loggia seen in other stations. In a bold move, Cubitt expressed the “internal volumes” of the double train sheds (one for arrivals, the other for departures) onto the face of the building in the form of a pair of windows, simultaneously employing the iconic arch in the process (Sheppard, 1996, p. 18). Function is articulated in the form. The engineered design of the shed merges with the architectural design of the terminal. At Paddington Station, Brunel and Wyatt go one step further by integrating the shed and the terminal into a unified space, using an ecclesiastical model borrowed from the Middle Ages (Barman, 1950, p. 10). With respect to wayfinding, sheds create a visual path that connects the train to the building. The shed and the platform work together to direct passengers to their destination, be it toward the train or toward the exit.
created a serious problem for architects: how to provide for crowds. “Churches and theaters, the principal prototypes for a building serving large numbers of people at one time, were not much help to him [the architect]: in these, the worshippers and the audiences flowed inward at stipulated times and outward at others, so that the entrances could be used as exits” (Meeks, 1956, p. 92). Circulation was the key to linking the numerous platforms with the services offered by stations. The problem of circulation and the layout of the head house set the stage for the creation of the most iconic and significant feature of railway architecture, the concourse.

Vestibules were typically present in the earliest stations. Often they were combined with the booking office. Waiting rooms were separate from the vestibules and were originally arranged by class in Great Britain and Germany. Improvements in construction techniques made it possible to span larger areas where ticket services and waiting rooms could be consolidated. The first great hall of this sort was constructed at Euston Station during the 1840s. Once wider spaces could be spanned, it was possible to reconsider the problem of circulation.

The midway or cross-platform is the precursor to the concourse. This space allows people to move from one platform to another without having to cross the tracks. The area is perpendicular to the platforms, and gates mark the transition points between the cross-platform and the platforms. At either end of the midway are exits that allow direct egress to the street. Roma Termini (Calini, Mazzoni, Montuori, Castellazzi, Fadigati, Vitellozzi, and Pintonello, 1950) in Rome, Italy, contains a distinct midway.

The development of the concourse is significant with respect to wayfinding because it is so integrally tied to circulation. Arthur and Passini identify three kinds of primary routes: 1) main circulation between entrances and major destination zones; 2) circulation between one major destination zone and another; and 3) circulation within a major destination zone (1992, p. 48). The concourse is typical of the first kind of route. In addition, the authors find that “there is a direct link between the spatial organization of a setting with its related circulation system and the most appropriate decision plan” (Arthur & Passini, 1992, p. 49). The linear and axial nature of the concourse makes it a path; Arthur and Passini find the path the “dominating and controlling spatial element” (1992, p. 92). In Railway Stations: Planning, Design, and Management, Ross notes that “concourses are places where passengers stop to consider their next action” (2000, p. 120). Good design encourages the “free flow of passengers through public areas...in a logical order” (Ross, 2000, p. 111). Moreover, open planning allows for sight lines and open places where people can stop to orient themselves.

The years between 1844 and 1890 witnessed the standardization of railroad station architecture which included the acceptance of certain architectural conventions in the articulation of those stations. These conventions—the tower, the bell, the clock, the window, and the concourse—not only were symbolic of the stations they represented but served as valuable icons that proved useful to wayfinding.

IV. Monumentality, Mass, and Memory (1890 - 1935)

Innovations in station design had evolved to a high level of sophistication in the first 60 years of rail travel. By 1890, many of the conventions of railway architecture had been established—in particular, the plans and the iconography. Once the basic problems created by the new technology were addressed, railroad companies began to focus their resources on increased luxury, safety, speed, and size. The conceptual image of the station changed “during the 1890s from the easily recognized one of the previous period toward that of an ordinary monumental public building” (Meeks, 1956, p. 125).

What propelled station design into a “period of gigantism” (Meeks, 1956, p. 26)? Meeks attributes this development to the Columbian Exposition of 1893 and the City Beautiful Movement (1956, p. 126). Under the influences of the École des Beaux-Arts and the City Beautiful Movement, stations began to mimic the neoclassical language used to articulate other significant public buildings of the period. Melvin refers to this architecture as “monumental urbanism” (2006, p. 86). Monumental urbanism mirrored the message railroad companies wished to convey, one of power and success.

Like the adaptation of the triumphal arch, the colonnade was another feature borrowed from classical architecture for use in railroad station design. Colonnades had always been a part of the language of railway stations as exemplified in the second Gare du Nord in Paris and the Stazione Centrale in Naples. The most exuberant expression of monumental columns, however, was employed at the Pennsylvania Station in New York City (McKim, Mead, & White, 1910). Numerous massive columns lined the façades of this station. Ironically, the preponderance of columns virtually obscured the function of the building; the neoclassical language made it more difficult to read the building as a station.

The marquee and its larger version, the portico, have been important features of railroad architecture from the early days. Like the train shed, marquees and porticoes afford protection against the elements. They also provide environmental information with respect to wayfinding because they draw attention to the organization and give significance to the entrances (Arthur and Passini, 1992, p. 121). Perhaps the most spectacular portico is found at Pittsburgh’s Union Station (Burnham, 1903). The station’s rotunda or “carriage concourse” resembles the interior of the Pantheon in Rome; its skylight is reminiscent of the lunette at the Gare de l’Est. Its spacious opening pulls the visitor into the entrance and, in the process, converts the urban scale into an architectural one. On a smaller scale, the marquee performs the same function as a portico. Cincinnati’s Union Terminal (Fellheimer, Wagner, Wank, & Cret, 1933) includes not only the iconic marquee, but also the arched window, the clock, and modified towers (Figure 5).

Arthur and Passini find that a building’s layout is implied by its entrance; thus, the exterior is linked to the interior. Because the entrance is vital to understanding the space within, important environmental information is gained while
physically approaching a building. Buildings, according to them, can be approached in one of three ways—through a frontal approach, an oblique approach, or an indirect approach, and “the legibility of an entrance varies with the angle of approach” (1992, p. 117). A frontal approach is one in which the approach is perpendicular to the building. Cincinnati’s station is blessed with a generous, axial, frontal approach. Many urban stations lack such a site. Their façades are flush with the sidewalks that lead to them, and such stations must rely, instead, on marquees to signify their entrances. Arthur and Passini refer to this approach as an oblique approach. An indirect approach occurs when the entrance is obscured from view by a corner.

The increase in size during this period was directly related to the increase in function. Hotels had long been a staple of railroad architecture but now office space and terminals for other forms of transportation were included in the program. Philadelphia’s Reading Station (Kimball, 1893) was the first to include an office building. As the size of these stations grew, wayfinding through them became more difficult. The cross-section of New York’s Grand Central Station (Reed & Stem, Warren & Wetmore, 1913) hints at the complex layout of the station. (Fig. 6) The station provides access not only to standard heavy rail but to suburban and subway trains, as well.

John Ruskin, 19th century social critic, is credited with saying that buildings are society’s memories. What is it, then, that makes a building memorable? Arthur and Passini suggest that form and size, visibility and access, frequency of use, and symbolic significance are contributing factors. By the 1890s, the period of experimentation was complete. Stations and the iconography representing them were well established. The iconography had served to provide stations with a recognizable identity. Arguably, there was less need for the iconography in the 20th century than before because, by the 20th century, a schema of a train station had formed in the minds of most people. Still, the icons long associated with stations continued to be used during the early days of modernism. Why would architects continue to employ such details at a time when many of the conventions of more traditional architecture were being eliminated from the language?
V. Transparency and Volume (1935 – present)

After World War I, Modernism affected and transformed railway architecture, as well as other forms of architecture. New materials, such as reinforced concrete, structural steel, and walls of glass, enabled architects to design spaces where transparency and volume replaced enclosures and mass. Modernism changed the form of architecture because new materials made such changes possible. Modernism also changed the discussion of architecture, as well. Form and function became distinct components of the built environment. Ross views Modernism as a rejection of architectural antecedents, a view which strips Modernism of both precedents and continuity. Meeks differentiates modern architecture from earlier periods on the basis of a distinction between form and function. He finds that there was an emphasis on the exterior (form) during the industrial era and that modern theory “gives primacy to functionalism” (1956, p. 4).

However, railway stations from the earliest days had developed in direct response to the functional needs of moving both people and trains. Meeks’s distinction between modern architecture and earlier styles is, at best, a weak one with respect to train stations. Unlike Meeks, who relates functionalism to Modernism, Thorne recognizes the functionalism of the earlier stations: “Whereas stations in the past may have been more sensitive to solving their functional requirements or reflecting, through their architecture, their mission as a transport center, today there is greater sensitivity to the role of the station in its context” (2001, p. 22). Because the issue of function had been addressed by station designers from the outset, stations today can focus on their role in the urban context. Both Meeks and Thorne emphasize the differences between the modern station and its antecedent, although for different reasons. Meeks does so on the basis of function; Thorne on the basis of context.

Transparency and volume were characteristic of the great train sheds of the 19th century, but not of the stations themselves. One of the hallmarks of 20th century rail station design is that transparency and volume replace the lithic and massive language of the monumental stations. As the language of station design continued to evolve, did the change in both aesthetic and materials really strip railroad architecture of its antecedents, as Ross suggests? Or, is there an enduring quality to the icons—the towers, arched windows, clocks, marquees, and concourses?

There are numerous examples of railroad iconography in 20th century stations. The entrance to Florence, Italy’s Stazione Santa Maria Novella (Michelucci, 1936) is marked by a long cantilevered marquee. In newer stations, tensile membrane roofing materials are used for marquees, porte-cochères, and platform canopies. While the form for such roofing is a 20th century innovation, the function remains the same.

The triumphal arch continues to figure prominently in modern station design. Stations at Chur, Switzerland (Brose & Obrist, 1992), Kowloon, Hong Kong (Farrell, 1997), Lyons, France, (Calatrava, 1994) and Rotterdam, The Netherlands (Reijnders, 1993), preserve the arch. Reijnders, the architect of the Rotterdam Blaak Station (1993), incorporates both a marquee and an arch in a radical way; the marquee is a transparent disc that is suspended from a huge arch which spans not only the entrance but a bicycle path, as well.

The clock tower at Tampere Station in Finland (Flodin and Seppälä, 1938) rises in stark contrast against the horizontal planes of the head house. In Amsterdam’s Duivendrecht Station (Kilsdonk, 1993), the tower is an open, red equilateral triangle instead of a closed, four-walled structure. The expression of the tower has changed, but the function has not. In both of these instances, the tower functions as a beacon.

The concourse continues to be an integral part of stations in the modern and post-modern period. While a comparison of rail and airport terminals seems inevitable, site context generates significant differences between the two. Railway stations are generally erected in an urban setting while airport terminals exist in relative isolation from urban structures. The correlation between the legibility of a building from its exterior and the functionality of its interior is crucial to railway stations. Both the covered walkway and marquee that lead to Roma Termini provide a direct path to the station’s main entrance and to its services, as well; the connection between exterior legibility and interior function is unbroken (Figure 7).

Figure 7. Stazione Termini di Roma, Rome, Italy. Personal photograph.

As previously noted, wayfinding is based on perceiving environmental information, forming a decision plan based on that information, and then executing the plan. Towers, marquees, arches, and concourses are important landmarks. However, as the decision process becomes more refined, signs become more important. It is not enough to know that the concourse leads to the tracks; passengers must also be able to distinguish one track from another, and the most efficient way to do that is through signs. There is, however, little accessible documentation of signage strategies in the early days of rail travel.

Signage refers collectively to signs and includes both branding (promotion of a product or service) and informational
signs. The global economy has led to multi-lingual signs. Language barriers affect the readability of signs or how well they can be understood. In order for them to be understood, they must also be legible; "legibility is the ease with which information is able to be perceived" (Arthur & Passini, 1992, p. 50).

A variety of factors can affect the legibility of signs, particularly in train stations. Typically, people move through stations in groups, especially when exiting trains. This makes it more difficult not only to find signs among a busy crush of people but also to read them once they are located. Since passengers may be unfamiliar with the layout of a train station, it is very important not only that signs be placed where they can be perceived but also that they be placed within the proximity of decision points. The Waterloo Station vestibule crystallizes the importance of proximity in decision-making (Figure 8). At the time the photograph was taken, Waterloo Station in London, England, erected in 1848, served as the station for the international Eurostar, the national rail, and the London underground. In this picture, the navy blue sign, closest to the camera position, provides directional language for the various intermodal rail lines and for tickets. Also legible from this vantage point is the clock. The information contained in this sign and the clock enables visitors to begin to make their decision plans (ultimate destination: Eurostar or metro?) within a temporal context (how much time is there to make the connection?).

![Figure 8. Waterloo Station. London, England. Personal photograph.](image)

There is insufficient architectural information from this camera position in the vestibule for an inference tactic to be of any immediate use in forming a cognitive map. The inference tactic, however, draws one further into the space, since through memory one recalls that proximity improves focus and, therefore, legibility. While the four-sided informational marquee suspended from the ceiling is not yet legible, its visual presence alerts visitors to the existence of additional information, information that may (or may not) prove useful in formulating their decision plans. The third layer of information visible from the vestibule is the train schedule. The concept of train schedule boards is likely recorded as part of the schema of train station even if one has never before visited this station. Passini finds that there is a direct correlation between the hierarchy of decision-making in wayfinding and the perception of messages on signs.

Too much signage and branding can lead to stimulation overload. When this occurs, people resort to coping mechanisms which result in either ignoring some of the stimuli or regrouping individual units of information into larger but fewer chunks of information. When people encounter a setting with which they are unfamiliar, they scan the environment, relying on glances, to search for usable information. If the information is to be retained, then it has to be organized into a memory of longer duration. Since one of the goals of railroad architecture is to provide an environment where people can move efficiently toward their destinations, functionality is enhanced when environmental information is arranged accordingly.

There are several ways to present environmental information so that its effect is maximized. When environmental information is arranged sequentially in conjunction with the decision-making process, wayfinding is enhanced. Proper contrast between the foreground and background in signs and the way in which data are organized on them, improve the perception of the information contained in signs. Pictorial representations — arrows and pictograms — also render the space more legible. If pictorial representations in signage improve one’s ability to commit the information to memory, then it is logical to infer that pictorial representations in architecture do the same. These pictorial representations in railroad architecture are the icons long associated with stations — the arched windows, the clocks, the towers, the concourse, and so forth. The iconography of rail stations has not disappeared with the advent of Modernism; rather it continues to manifest itself in the form of landmarks, paths, and edges. In a global society where stations are part of intermodal hubs, the iconography of railroad stations may be more important than ever.

**In Conclusion**

"There was no functional precedent for the depot, every solution had to be invented" (Meeks, 1956, p. iii). The significance of the railway station and its contribution to the built environment has been largely overlooked in an age when the heights of skyscrapers and the plasticity of form define the criteria by which buildings are judged. Nevertheless, the genesis and the evolution of the railroad station embody the vision, the development, and the expression of a unique and complex architectural type. While railroads link cities, rail stations connect interior space and exterior context, ingress and egress, time and space, language and syntax, and, most of all, form and function.

Train stations are unique in that interior spaces and site context are dependent on each other in order to move both people and trains efficiently. Interior spaces, largely in the form of circulation routes, are integrally tied to the tracks outside the station. Beyond the tracks, stations are part of an urban
context where they must be distinguishable from other types of buildings. Consequently, stations must be legible both from the inside and from the outside. Very early in the development of railway stations, it was determined that a station ought to look like a station. Out of this decision arose a corpus of iconography that contributes to the recognition of stations, both in the formation of schema and in the formulation of cognitive maps. Iconography such as towers, arched windows, concourses, train sheds, clocks, etc., contributes to the imageability of stations, features that make stations visually distinct from other types of buildings.

Ingress and egress are the primary programmatic requirements of stations. Unlike other large-scale architectural types, such as churches or auditoriums where people generally arrive together at one time and depart in the same manner, the proximity of simultaneously arriving and departing trains requires a greater and more complex accommodation of circulation needs. Stations have always adapted to this challenge as demonstrated by their layouts. Midways, concourses, train sheds, head houses, and one- and two-sided stations are evidence of their meeting programmatic requirements in a flexible manner.

Not since the medieval cathedrals marked the time for prayer has there been a need to architecturally connect time and space. Train schedules organize the arrival and departure of trains which, in turn, affect the movement of passengers through stations. The temporal quality of stations is also reflected by the way in which people navigate through stations. Decision plans are sequentially formulated and executed. Effective wayfinding in stations must be timely; anything less than that is useless.

The language and syntax of stations must be synthetic in order to provide seamless navigation through stations. The language manifests itself in two ways—in architectural features and in signage. Architectural components—landmarks, nodes, paths, districts, and edges—constitute the language of architecture. In general, buildings are made legible through these elements. In particular, it is the language that distinguishes one type of architecture from another. Regardless of the period styles in which stations have been built over the years, stations are stations because their language is derived from recurring iconography. While the origins of the iconography may have had their roots in other architectural types, the concentration and preponderance of such forms in railroad architecture render them unique to station design. The syntax of the station is the arrangement of these forms: the tower leads to the arched window that leads to the marquee that leads to the concourse that leads to the sign that points to the platform, etc. Both the language and the syntax are intentional and significant. Environmental information is the perception of the language; moreover, the ability to form cognitive maps, to devise a decision plan, and to execute such a plan are enhanced when the syntax is coherently and logically ordered. The language and syntax of rail stations work together to facilitate wayfinding.

The function of the rail station distinguishes it from other types of architecture. Throughout its history, station design has always addressed function. While there was no functional precedent, architects and engineers identified the programmatic requirements and designed stations accordingly. The function of stations has always been supported by their form. Stations function more efficiently because the architectural forms, the iconography, work on many different levels. On a cognitive and perceptive level, the form helps people read the function of the station. On a symbolic level, the form of the iconography conveys a station’s mission. On a literal level, the form is a physical anchor that helps one find his or her way through stations. Together, form and function separate rail stations from other architectural types.

Despite the lack of a clear precedent, train stations have become very efficient spaces for moving people and trains. While the genesis of the railway station predates the study of wayfinding, station design has always responded pragmatically to the wayfinding needs of its users. The particular relationships between interior space and exterior context, ingress and egress, time and space, language and syntax, and form and function not only contribute to the evolution of the railroad station as an architectural type but serve as a model through which the principles of wayfinding and design complement each other. The manifestation of this union is the iconography which unites wayfinding and design in train stations. The iconography embodies the essential qualities of train stations, both defining the architectural type from the perspective of public recognition while simultaneously informing the personal schema. From exterior to interior and from external to internal, the study of the history of the train station provides a valuable model for understanding the practical design responses to wayfinding needs.

Works Cited and Consulted


Mentor Comments

Catherine Wallack draws attention to the interdisciplinary nature of Tricia Quinn’s work and the originality of her research, characteristics also noted by another member of her thesis committee.

I was delighted to serve as Ms. Tricia Quinn’s advisor and as her mentor for her Honors Thesis. Her thesis entitled Train Stations: Iconography, Wayfinding and the Evolution of a Type is a remarkable effort. Her work is highly original and represents a synthesis of several of Ms. Quinn’s related interests: architecture, interior design and train stations.

Ms. Quinn brings tenacity and rigor to both writing and research. She worked with great independence on the creation of this undergraduate thesis. Her thesis committee merely provided feedback and general guidance on the document in process. The idea for studying train stations in a manner that was highly relevant to her own discipline was wholly Ms. Quinn’s idea. Rather than rely on secondary sources, she took the initiative to personally document a number of critical exemplars used in the thesis.

Ms. Quinn’s thesis is an impressive interdisciplinary work. While train stations have been researched from an architectural and historical perspective, Ms. Quinn’s work brings a new viewpoint to the study of this building type. By considering these buildings in terms of phenomenology, she articulates the particular roles specific architectural elements play in navigating these complex spaces. By documenting and exploring these relationships, Tricia brings forward important material that is applicable to a number of fields. Her work will be relevant to those involved in all aspects of environmental design, including urban design, architecture, interior design, and related social sciences.

This thesis brings together a thoroughness and originality rarely found in undergraduate work. This unique document well represents the high quality of work capable by students in the University of Arkansas, and is highly deserving of publication in Inquiry.