

Railway Landscape Design and Relationship with Form, Function and Aesthetic

Ewa Maria Kido

'Railway landscape design' refers to the landscape of railway stations and their facilities. This article describes the importance of the landscape of railway stations, which includes as its elements both the agreeability of the station (an element depending largely on the form, functions, and aesthetic of the station) as well as the safety and accessibility (convenience) of the station. The landscape of a railway includes as its basic elements such visual images as space, lighting, scale, and detail of the railway. It also embraces the landmarks, railway, brand design of the operator and even public art, commercial activity, advertising, etc.

The conclusion is that modern railway operators in Europe and Japan give careful consideration to the landscape of their new high-speed trains and modern stations while striving to enhance the agreeability of their stations by including barrier-free and universal design. Through various improvements, modern railway stations are becoming still more modern and offer more aesthetic public space. The landscape of railway stations is also

becoming an important consideration in urban redevelopment projects and sustainable development of communities. In Japan of the past, the 'quality of places' was not as widely recognized as in Europe and was seldom discussed in earnest. However, in recent years, it is being recognized increasingly due to changing social conditions and growing public interest in a better living environment.

Landscape and Design

The term 'landscape' generally refers to the aesthetic and refined elegance of a specific object. The quality of a landscape is evaluated based on its design and overall impression. The concept of landscape embraces many different elements. These elements include size, form, feel, colour, etc., evaluated in terms of visible qualities by stereotyped analysis. They also include subjective factors, such as utility, designer's intention, visual and psychological impressions, surrounding conditions (background), uniqueness of structure, atmosphere, etc. Landscape

depends on its relationships with form, function and aesthetic. With changing times, these relationships have changed according to contemporary architectural styles. For engineers, function is always most important and structures they design and build always have defined functions. Railway stations are constructed as the major facility for railway passengers and have various purposes. In the past, railway stations in Europe and the USA influenced the quality of contemporary architectural styles and remained standard structures until the station buildings were revolutionized in terms of structure, form and function.

The landscape characteristic of a specific object is influenced by design. The word 'design' has two meanings: 'to hammer out an idea' and 'to express an idea as a specific form.' Therefore, design not only means ornamentation but also incorporates the creative process of expressing a designer's intention by a specific form.

In the 1980s, civil engineering began to deal with landscape design and the aesthetic of structures became a subject of long discussion. Landscape was recognized first in bridge and dam construction projects. With the economic growth in the 1980s, design also came to be recognized in the fashion world and then spread to consumer products. The 'brand design' phenomenon represents the consumer's recognition of products that can be achieved by a collection of refined products, including effective advertising. At railway stations, the application of design to the interior of a restaurant can be cited as an example of fashion or style. Specific examples include the New York-style restaurant at atré Shinagawa mall in Shinagawa Station on JR East's Tokaido main line and the Starbucks Coffee shop, sushi bar, etc., in Paddington Station in London and other railway stations in Europe. In the past, design was related to architecture, structure, product, landscape,



Canary Wharf Station on Jubilee Line Extension in London

(Author)

and urban design. In the last 15 years, it has become a term of wide comprehension—barrier-free design, universal design, information design, computer design. These new concepts can now be seen on trains and in stations too.

Basic Factors in Landscaped Railway Station

The 'landscape of a railway' means the aesthetics of the stations and other facilities. The railway station and its facilities constitute a station building with concourses for railway users, tracks, platforms, and even space for commercial hotels, shopping areas, etc., that are not basic functions of the railway station. The landscape of a railway station can be defined as the total balance of the station interior and exterior, the building's architectural style, the engineering structure, the facilities for movement of railway passengers, etc., that are all considered in the planning, layout, detailing and design of the building. An aesthetic station should be easily identifiable, friendly to people and easy to use. At the same time, it should provide a nice and rich environment. The basic aesthetic factors in the design of a railway station are space, lighting, scale, and detail. Aesthetic factors may also be found in the image-related design background, characteristics of nearby symbolic buildings, image of the railway, brand of the operator, etc. In any case, the aesthetic factors are related to the distribution of functions and the commercial roles of the station, such as offering a space for advertising. Space is an important factor. Every station must provide adequate space for the many people using it. The station space is where people freely move through, spend time between trains, buy railway tickets, rest before and after their journey, etc. Every railway space that is designed nicely and appropriately, like Frankfurt/Main

Flughafen Fernbahnhof—a railway station designed by the architects Bothe-Richter-Teherani—offers a high degree of safety and well-being. For example, the glass lift helps reduce users' uneasy feelings of confinement, and the universal design offers disabled people easy access. Glass used for lifts, floors, staircases, handrails, etc., like at Koln-Bonn Flughafen Bahnhof, also helps make the space seem wider by enhancing transparency of facilities. This is especially important in underground concourses of subway stations. Canary Wharf Station on the Jubilee Line Extension in London, and new stations on Minatomirai Line in Yokohama have both used glass effectively. A well-planned station is one that allows free movement of users not only through the station building but also in the public spaces, including neighbourhood shopping areas and streets. In Japanese cities, many urban railway stations are used by millions of passengers every day. However, due to their locations, it is difficult for these stations to secure adequate station space compared to modern railway stations in Europe. Huge terminals in Europe are

utilized by hundreds of thousands of passengers every day. For example, the terminals at Victoria, Waterloo and Liverpool Street—the busiest thoroughfares in London—are used by some 200,000 people, while Frankfurt/Main Flughafen Fernbahnhof is used by about 300,000 passengers. Contrast these figures with Japan where the biggest railway stations are used by millions of people every day. According to a 2002 traffic survey, the average number of passengers per day was 3,224,490 through Shinjuku Station on Yamanote Line in Tokyo, 2,643,063 through Ikebukuro Station on the Yamanote Line in Tokyo, 2,352,255 through Umeda Station on the Hashin Electric, Hankyu Electric and Osaka Municipal Subway lines in Osaka and 2,136,011 through Shibuya Station on the Yamanote Line in Tokyo. Although the ideal station space should provide a safe comfortable place, in Japan, the spaces of streets and plazas in front of railway stations are inadequate for the numbers of station users. At chronically congested stations like Seibu Ikebukuro Station, which serves 186 million



Minatomirai Station on Minatomirai Line in Yokohama

(Author)



Ikebukuro Station on Yamanote Line in Tokyo

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Hammersmith Station in London

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passengers per year, there are not even any small benches for sitting and it is difficult to offer a safe, comfortable space. A suitable railway space permits building a system for smoothly guiding passengers from station entrances to waiting rooms

to platforms, by using signs with easy-to-understand routes as well as design of timetables, ticket vending machines, notice boards, etc.

Lighting is another important station function. At very large stations, the roles

that architecture and structure play in lighting are among the most important considerations. A characteristic lighting structure such as that at Lyon-Satolas Station on the TGV line improves the impression of the station space. The best lighting uses natural light admitted to the station interior through glass in the roof and walls. The visual linkage between the platform and concourse improves as the amount of natural light passing through the platform increases as at Lille-Europe Station on the TGV line. Sophisticated lighting from the entrance of a subway station intensifies the architectural impression of the station and makes the station layout clearer. At Canary Wharf Station designed by Sir Norman Foster, the natural light admitted into the station interior helps passengers easily recognize the entrances and exits. The ceiling illumination helps create a safe environment and intensifies the architectural characteristics of the station interior. Illumination also has an information communication function; well-designed electronic information displays like those at Magenta Station on the RER in Paris designed by Jean-Marie Duthilleul make it possible to guide each passenger in the right direction easily and safely. Although coordination of architectural style, illumination, and space has been achieved at many stations, it is hard to achieve interesting illumination in subway structures, which hardly admit natural light.

The scale factor should be determined based on how many passengers use the station. Huge railway terminals in Europe, such as St Pancras Station and Paddington Station in London, are designed not only to provide passengers with suitable space but also give a good impression. These grandiose stations, which resemble Gothic-style cathedrals, have had various political and social meanings over their lives. On the other hand, smaller stations have been designed based on a more

human scale with lighting helping to make the space seem wider. For example, modest-scale local stations generally use glass in roofs and walls to admit plenty of natural light. However, some recent big stations in Europe have achieved a touch of this human scale by creating wide spaces filled with natural light and equipping them with diverse functions allowing seamless movement. Although the scale of Lyon-Satolas Station is comparable to that of an airport, the large station hall designed by Santiago Calatrava is characterized by a unique combination of spatial structure and light representing the fusion of advanced structural engineering technology and superb architectural style.

Detail should be designed so the station both meets specific purposes and performs the many different station functions. Well-harmonized details that are easy to recognize and understand are integrated using structure, space, and light and are discriminated by colour and material. Duivendrecht Station in Amsterdam, designed by Peter Kilsdonk is a good example. All the information and details of the station are easily understood even by vision-impaired people and are friendly to both domestic and foreign tourists.

Landscape design at Heron Quays Station on the Docklands Light Railway in London using guide lamps on platforms and in concourses helps control passenger flows. Using glass and colours for lift details is a means of designing attractive interiors that has become part of recent universal design. Similarly, escalators offer potential for exceptionally artistic design. For example, in Japan and Europe, universal design is being applied positively to new railway, subway and LRT stations that are being equipped with lifts, escalators, and toilets with fixtures installed at heights for physically disabled people. Likewise, the station pavement uses an embossed finish that is safer to walk on. In addition,



Lighting from impressive structure at Lyon-Satolas Station

(Author)



Heron Quays Station in London

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there are various other measures to facilitate movement by physically disabled people, such as eliminating level differences between platforms and car floors and providing slopes and indications to facilitate movement. Although it is difficult to immediately make all station facilities barrier-free,

high priority is being given to barrier-free facilities at especially important stations, such as Nippori Station on JR East's Yamanote Line in Tokyo, which is a transfer for the Keisei Electric's *Skyliner* connecting Ueno Station and New Tokyo International Airport (Narita).

Although the comfort of passengers can be

improved by installing well-designed benches, waiting rooms, snack bars, notice boards, etc., it means that the 'landscape of a station' requires concurrent design of station functions and aesthetics. If the landscape can be regarded as the aesthetic of form, the function is the efficient continuation of activities performed at modern stations.

Basic Image of 'Landscape Railway Station'

The image of a station has much to do with its design. The design of—which can be a landmark in its locality—is influenced by the historical and social backgrounds of the locality, as well as the station location. The symbol of the railway and its operator is

the landscape factor creating a specific image of the railway.

The station is understood as a landmark in its locality and the elements constituting the image have much to do with the historical, cultural and social backgrounds of the locality. Railway stations in Europe historically faced a thoroughfare with a plaza at the front. Due to its impressive façade and spacious plaza, the station was seen both as a gateway to the local city and a landmark. The symbolic position was often reinforced by a conspicuous clock tower, like that at Amsterdam Central Station, and impressive depot. However, most historic stations in Japan are not very impressive in terms of scale or form but some stations, like Tokyo Station and Den'enchofu Station on Tokyu's Den'en Toshi Line have become landmarks. Modern stations in Europe have been designed as important urban facilities, and some are so grandiose that they have become city symbols. In Japan, the stations in Kyoto, Nagoya, Tokyo and Kokura as well the new shinkansen stations have become symbolic structures because of their unique design, position as city symbol or important role they play in their local community.

The elements constituting the image of a station include the station design expressing the image of the railway or operator. For example, to express the image of the Paris Metro, the unique station entrance symbol was modelled on the Art Deco entrance designed by Hector Guimard at Abbesses Station in Paris. The London 'Tube' sign and London Underground Limited logo are also easy to identify and the round Tube sign is widely recognized as a transport brand. Company logos are part of the concept of corporate activities and are being re-evaluated by many transport operators in Europe. For example, the Deutsche Bahn AG (DB AG) logo has been changed to improve public recognition through a simpler modern design. The Tokyo Metro



Iidabashi Station on Oedo Line in Tokyo

(Author)



Tsukuba Express Akihabara Station in Tokyo

(Author)

is another example of dramatic change after rebranding from its predecessor Teito Rapid Transit Authority (TRTA) in 2004 when the former logo was replaced by a blue M representing the company name better and offering easier understanding for both Japanese and foreigners. Some subway entrances stress the M sign but more are now emphasizing the unique atmosphere of their buildings, such as the brick-walled Bashamichi Station on the Yokohama Minatomirai Line designed by Hiroshi Naito.

However, the image of a railway operator is influenced not only by the company logo but also by the design and colour of its signs, its traditions, its attitude toward public art, etc. Public art can play an important role in improving the image of a railway. In view of the importance of introducing culture and art to stations, many railway operators have come to appreciate public art and art is becoming part of the individual railway culture. It is well known that a well-designed station has a comfortable waiting space and improves the satisfaction of passengers by using clear information signs, exhibiting art, holding cultural and local events, implementing other activities that enrich the travelling experience, etc. Several European operators even have an art ratio policy in which a fixed ratio (0.5% to 1%) of the budget is appropriated for art in any new development project. Artworks were part of projects to renew the Paris Metro, London Underground, and the Strasbourg LRT. When introducing art in renewing the Paris Metro, the operator RATP explained that it represented 'support for aesthetics,' meaning that the transportation network was the 'scenario' for building urban culture. Urban cultural stages have been created at major stations like Louvre-Rivoli Station and St. Germain de Pres Station in Paris. In addition, live art events and live music have become familiar at subway stations in Paris and London. Public art can be expressed as

murals using many materials, colored glass in windows and lighting fixtures, floor and paving patterns, sculptures, station gardens in plazas, etc. As an example, at Embankment Station in London, strips of ribbon are laid out on a white background of glassy enamel,

alongside commercial advertisements. Public art like the murals at Victoria Station in London can also help passengers confirm where they are. In Europe, public art projects are supported by the government. For example, the art programme in Brussels was inaugurated



Subway entrance at Omotesando Station in fashionable quarter of Tokyo with new Tokyo Metro logo (Author)



Embankment Station of London Underground (Author)



Mural at Victoria Station in London

(Author)

in 1990 by the Public Works Ministry backed financially by the Belgian government. Art has been introduced to railway stations in Japan too. Good examples include sculptural elements at stations on the Tokyo Metropolitan Government's Oedo Line, artworks at

stations on the Yokohama Minatomirai Line, and the open-air art and artistic landscape (by Peter Walker) at Marugame Station on JR Shikoku's Yoson Line in Kagawa Prefecture where the station plaza with steel fountain in a frame reminds us of the *torii* gate to a shrine and symbolizes



Bashamichi Station on Minatomirai Line in Yokohama

(Author)

the main entrance to the town. Although most of the plaza is paved with asphalt, the other part is covered with pebbles like many traditional Japanese gardens. Fiberglass 'stones' that shine brightly when the evening comes are arranged neatly on the pebbles. Exhibition of public art in Japan is gaining support from local governments and private organizations and Tokyo Metro received a 100% subsidy for its art exhibition at Tameike-Sanno Station on the Namboku Line.

Commercial Role of Station and 'Landscape of Railway'

The functions of a railway station include commercial functions influenced by the form and functions of the station. The traditional model station has the principal transport functions plus travel-related functions, such as restaurants and hotels. However, in the course of their development, stations have come to perform many other functions too and many now serve as interchanges linking the railway to an airport, other railways, buses, commercial centres, hotels, shopping centres, etc. In other words, railway stations have become key hubs offering various attractions and new experiences. As part of its activities, each operator is improving its products to enhance its image. However, commercial functions at some stations in Japan outweigh transportation functions, causing confusion. Personally, I think retailing at a station should be done in a reasonable manner while meeting the needs of users, because performing transportation and commercial functions concurrently is extremely difficult, especially in historic stations that need modernizing. DB AG's Leipzig Central Station succeeded in this respect by arranging shopping malls at three different levels. The commercial space with a total floor area of some 400,000 m² was lowered by excavating the station to allow

direct access from the street to the platforms and the modernization of Leipzig Central Station is cited as the most successful achievement in DB AG's station renewal policy.

Commercial development of a station can be achieved by creating an 'integrated' shopping mall merged with the public space of the station, supplying passengers with non-transportation services, and establishing a 'retail store line' formed by a passage lined with stores, etc. A good example is the modern retail stores lining a glass-walled corridor in the central part of Liverpool Street Station in London.

Separating different levels of functions is effective in managing passengers and non-passengers. However, at some huge stations in Japan like Ikebukuro Station, retail stores are installed in the station space as far as possible and some even occupy part of the space reserved for the principal transportation function. Such an inconsistent approach to the commercialization of stations has caused a number of undesirable results, including confusion and overcrowding of station space, conflict between interior design and architectural style, and poor passenger flows.

The response to advertising at railway stations is reflected in the recognition of landscape of public space. In Japan, the landscape of public facilities has not been fully recognized ever since the demolition of historic structures started in the 1970s. Most stations built in the 1970s were lacking structural aesthetics and to paraphrase Ashihara, 'despite their highly public nature, ... were filled with commercial advertisements so much that it was difficult to determine whether they were railway facilities or commercial facilities.' However, as long as station advertisements are filled with design concepts of cultural and healthy lifestyles and help enhance the station image, they can be part of the landscape design. Advertisements in the Paris Metro



Marugame Station Plaza in Kagawa Prefecture

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Mural facing platform doors Tameike-Sanno Station in Tokyo

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constitute an integral part of the station walls. In Japan, due care should be taken in handling station advertisements, especially in historic terminals. At London's Paddington Station in London, advertising was planned in the renewal

project and advertisements now form part of the design concept and are nicely fused with the building structure. Today, various advertising media are available, including traditional, spotlit and backlit posters, moving displays, TVs, plasma displays,

messages on staircase and escalator walls, advertising in and on rolling stock, 'blitzing' the entire station with advertising by a sponsor, implementing various sales promotional campaigns, etc. It is important to establish a reasonable relationship between architectural style, corporate design and advertising media, and give due consideration to the balance of station space and advertising size and amount. As one extreme, many stations in Japan are literally covered with advertising and even Shibuya Station designed by Kengo Sumi and subsequently highly modernized is overly decorated with advertising.

Conclusion

The importance of the railway landscape is due not only to the direct influence of railway users but also to the visual effect of the surrounding environment. In recent years, more operators are beginning to recognize the importance of landscaping in their railway renewal policies aimed at improving their corporate design and enhancing various amenities. In Europe, the involvement of architects in railway landscape design is decided by competition. In Japan, architects, city planners, and researchers are nominated by a design committee and discuss their design. In Europe, the importance of the railway landscape is widely recognized in the context that good design as a marketing resource appeals to railway users and that a well-designed station helps improve the image of the railway and its operator. Since the general public is not attracted by stereotyped stations, due consideration should be given both to the quality and to the diversity of design. In this context, it is necessary to take a consistent approach and systematize indications, assuring visual recognition of the 'brand design' of the railway company and design diversities influencing the

design, colour, etc., of furniture and other fixtures. The aesthetic factors in landscape not only afford comfort to the passengers but also help improve safety of the general public. It is especially important to increase the transparency of the station through use of a wide space and glass roof and walls and thereby permit easy access to the station. Concerning the relationship between form and function, due consideration should be given to balance. Ideally, station development should ensure that the architectural coordination of station building, platforms and streets forms part of an urban design that matches the city environment. Landscape also has to do with economy. Securing a budget for landscaping and additional budget for enhancing the value of landscape has become engineering common sense. More often than not, landscaping and economy are seen as contradictory. The fusion between architecture and engineering is becoming clear looking at complex problems in recent railway stations in Europe. New stations that are designed to attract many passengers are influencing the architectural style applicable to new railways. Namely, an architectural structure balancing form, function and aesthetic is called for.

Today, local governments are also managing urban transportation development projects along with urban redevelopment projects. Traditionally, the roles of stations in rail transport have been shaped by time and money and transportation facilities were seen as a means of promoting urban economic activities. However, today, the task of

achieving sustainable development in Europe is pressing ahead based on the concept that 'environmental quality' helps promote economic growth.

The landscape of transport facilities can be used positively as a means of rebuilding space by various methods. In Europe, many modern metro and light rail transit systems are contributing to a better urban life. The modernization of railways that accompanies urban redevelopment has a similar favourable effect. In Japan, the approach to landscape involves everything, from the railway operator's philosophy about landscape to its managerial stance on achieving optimum balance between landscape and cost. It depends heavily on the degree of the general public's recognition of the public role of stations in improving the agreeability of railways. ■

Further Reading

Holgate 1992

2005 Statistics of Railway Users by Station

Kaminagai 2001

Ashihara 1998



Ewa Maria Kido

Dr Kido is Researcher at Research Center For Sustainable Communities (RESCO) of CTI Engineering Co., Ltd. She specialized in architectural and landscape design, landscape design of transportation infrastructure, such as bridges, streets, station plazas, aesthetic design of civil engineering structures, such as dams, water barriers and planning.