A Vision of Future Railway Stations

Takashi Suzuki

Perspectives of railway stations

Many people in different fields at different times have discussed what a railway station should be like. I strongly feel that there are great gaps in people's opinions depending on their perspectives, and that how railway stations look has undergone various changes according to the country and period of history.

The parties holding conflicting perspectives in such debates have typically been users and railway operators. More recently, city planners and critics as well as citizens, architects and designers are participating in the discussion. I used to have the limited perspective of a railway architect, but now that I work for design offices, I have more opportunity to talk to new participants in the debate with different perspectives. This allowed me to discover unexpected opinions and mutual misunderstandings, which I find sometimes bewildering and sometimes pleasing.

Early station buildings

It is a rough generalization to view the histories of advanced railway countries in terms of a pattern of change: birth, development, maturity, stagnation, decline and recovery. But such generalization helps provide an overview. When this pattern is applied to the history of urban railways in Japan, it would be appropriate to replace the second half of the pattern with maturity, maintenance and recovery.

Citizens of big cities in Europe take great pride in their railway stations, which still rise with dignity, and enjoy vast popularity both as a cultural heritage and as a tourist attraction. However, it is noteworthy that Euston Station in London, was completely different from such stations mentioned above in terms of shape and image.

The station had a huge gate standing by itself in a vast open space located far from the urban area. Passengers, when they came from the city, looked first for this gate to find the right direction. Contemporary pictures show that they would then head for the station building of relatively moderate size, where they prepared to depart via departure halls from simple platforms built next to the building. Arriving passengers also went through similar platforms and arrival halls.

There are a number ideas about how this strange-looking station came about, but the point I would like to make is that it must have been the result of compromise during a turning point in the history of civilization. In other words, no matter how convenient railway services were, trains, spewing fire and smoke and running at incredible speeds with deafening noise, were regarded as something completely alien and difficult to comprehend by society at that time. Just as people built walls and gates around a castle to defend themselves, in an effort to get along with this new 'monster' that was completely alien to them, people first located the station away from the city and then built a gate that reminds one of a palace. This must have been the social and psychological backdrop to the station construction. Compared to the gate, however, the departure and arrival halls look slightly subdued and the platforms are simply treated as functional attachments.

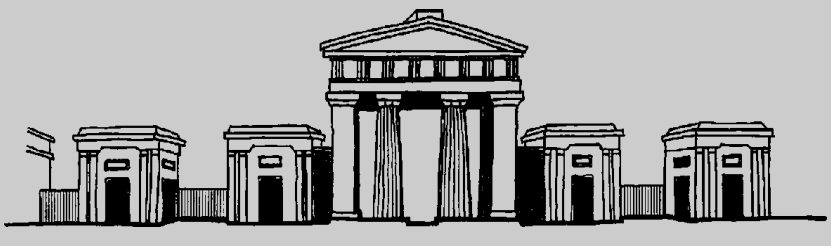
I suspect this station was a typical product symbolizing the concept of periphery as opposed to center, manifested in the contemporary thought.

Large stations in Europe

Railway services, although alien, provided so much greater convenience than horse-drawn carriages that the industry grew rapidly. Tempted investors put their money in the railway to reap big profits. New lines opened one after another, while increasing services on existing lines led to increasing numbers of platforms. Naturally, the slow-paced, distributed arrangement seen at Euston Station could not cope with such developments, and gave way to a centralized one where the gate, which once stood as a symbol, was integrated with platforms and halls.

However, at this point, there was a totally unexpected change in terms of form. And in a sense this was exactly when the 'railway station' was born, since, from the historical standpoint, the form created at that time has provided the basic image for construction of large stations in the years that followed.

Euston Station (1838)



■ Gare du Nord, Paris *(M. Uemura)*

To summarize the stations in those days, they were architectural structures whose form could best be called a combination of palace and factory. Dubbed "...a new cathedral for mankind....", "...the most beautiful churches in the world.", "...palaces of modern industry where the religion of the century is displayed...", and "...the nucleus of a huge stars...", new stations attempted to maintain harmony with the city by facing it with a symbolic but familiar image of church or palace. On the other hand, at the back, by covering the platforms, the stations hid the alien part while presenting the image of factory architecture as a symbol of technologies emerging during the industrial revolution. In other words, stations were a carefully-designed product based on wisdom.

The factory part of the architecture is more interesting to me personally than the palace, which had already reached technological perfection. After the Industrial Revolution improved the quality of steel and glass, London's Crystal Palace, created as an extension of greenhouse construction, exerted its influence on landscape gardening, and the progress made in the structural technology was reflected in bridges. These were all contributing greatly to station construction at that time. In short, railway architecture was responsively reflecting the huge changes in technological civilization taking place in society as a whole.

Furthermore, the clock tower, decorating the front of the building accommodating the halls, had a practical purpose of showing passengers railway time, necessary to operate the unified train services, as opposed to the inconsistent times used in people's daily lives in each region. The clock was significant in cultural history because it facilitated the eventual adoption of standard time in each country.

However, we should not forget the severe competition between capitalists then, which explains why later stations were larger, taller and more luxurious.

In any event, the ingenious creation of space gradually succeeded in neutralizing the alienness, which, with improved rolling stock, tracks, and customer services, led to a great progress in the railway industry.

Large early stations in Japan

The first train service in Japan was opened between Shiodome (Tokyo) and Sakuragicho (Yokohama) in 1872, when the European railway industry had already reached maturity. This was when Japanese railway station buildings were born. The four *enroute* stations between both termini were all extremely simple, one-story wooden structures. However, the termini at Shinbashi and Yokohama were more elaborate structures designed by an American architect.

Although the two termini—two-storied, wooden structures faced with stone—were located in places matching large cities in Europe and the United States, and were designed by a Western architect, they lacked the kind of artistic features or the sense of huge scale evident in large stations in Western countries. The platform facilities were of minimum size, creating a completely different image from the half palace and half factory in the West. The reason for the design could not have been because there was nothing in Japan to model; the country has a long history of shrines and temples as well as large castles. So what was the reason behind the emergence of large stations of such simple structure?

First, there was a gap between Japan and Western countries in the degree of progress in industrial revolution, as well as in capital buildup. Another major reason must have been the difference in willingness to invest between the national government and private investors. But I suspect there may have been other reasons related to difference in cultural tradition. To be more specific, one way to interpret this is that Westerners have a mindset of aggressively accommodating new discoveries and inventions while Japanese are passive and cautious in accepting things new.

But since opening its doors to the rest of the world, Japan endeavoured to create and promote industry by quickly adopting Westernization policies. Consequently, by the end of the Meiji era (1868 - 1912), some 30-40 years later, the country had developed a robust national strength which

■ Shinbashi Station *(Transportation Museum)*

■ Yokohama Station *(Transportation Museum)*

would have been unthinkable during the period of its isolation. And in 1914, the construction of the splendid Tokyo Station, a long-cherished dream, was completed as a symbol of such national strength.

Although some foreign engineers proposed that Tokyo Station should be built in Japanese style, using the unique Japanese architectural form, the finished work by Professor Kingo Tatsuno was a three-storied, steel-frame, brick building in Renaissance style—a complete reproduction of a European structure. The magnificent new station 300-m long must have been a landmark to the Japanese in those days and splendid enough for them to flaunt their national power and dignity both at home and abroad.

However, if one goes inside the building and looks more closely, one sees that the departure and arrival halls covered by two round domes close to both ends are simple in design and not large, which is very different from big stations in Western countries. Walking from the halls through a corridor and climbing up the platforms, one finds the same old style of separate platform roofs.

■ Ochanomizu Station in the late 1960's *(S. Ohta)*

These coexistent similarities and differences are an example of the social trend prevailing at that time, which can be called a combination of "Japanese spirit and Western learning". The station does look like a Western *etude* superficially, but was very different in its internal structure. Other full-scale, large stations constructed at about the same time as Tokyo Station also shared this feature. In fact, Japan never saw construction of stations combining half palace and half factory, and all its stations ended up only one-third to one-fifth the scale of their Western counterparts.

I believe that the Japanese was pursuing the restriction on excessive space or excessive decoration. Both in Europe and Japan, articles criticizing this effect underscore this point. In different terms, I would say this is a question of what is emphasized more, symbolism or realism.

Anyway, the archetype space in Japanese urban stations was to keep a low profile and emphasize realistic aspects compared to the overwhelming and luxurious large stations in Western countries.

At the end of the 19th century, secessionist movements arose in European architecture. This was an epoch-making effort for change, expressing reflection over and departure from the architectural style that went too far in pursuing splendour and magnificence, while endeavouring to reconsider the way to view architecture from the standpoint of 'usage'. The movements generated an 'international style' and gave rise to Le Corbusier's famous comment that a house is a machine to live in, thus pos-

■ Pre-war Tokyo Central Station *(Transportation Museum)*

ing a serious challenge to the existing cultural system. Since this was exactly the time when progress in science and technology began to provide specific dreams and hopes in people's lives, the movement rapidly spread into industrialized countries.

The second Ochanomizu Station, completed in 1932, was a typical example. Dr Shigeru Ito, the father of Japanese railway architecture who later became the president of the Architectural Institute of Japan, designed it on the concept that station buildings are not something to stay in, but part of a highway.

Urbanization and railway stations

Most nations have seen the movement of the labour force from farming villages to cities with industrial progress. As far as the railway industry is concerned, Western countries and Japan followed different paths. One reason is related to competition between trains and automobiles beginning in the early 20th century. Another factor is topographical, with Japan being a mountainous, island country and the other countries mostly continental nations. In Europe and the USA, road and car transport were far more advantageous than railway services as a network to cover the vast continents, the latter requiring substantial equipment to accomplish that goal. Therefore, in Western nations, road transportation experienced remarkable technological development while railway services declined dramatically.

Meanwhile, in Japan, railways running along the coast proved an effective means of transportation linking villages along the way. In addition, the uneven development and destruction of industry from region-to-region caused by WWII, greatly delayed development of car transportation and construction of highways. For these reasons, the railways have not seen a marked decline in Japan. In an effort to make the railway a more reliable and useful means of passenger and cargo transportation, measures to step up the transportation capacity were implemented, including construction of double-track lines, electrification and increases in speed.

Many station buildings in Japanese cities have undergone reconstruction more than once in response to urbanization. It is not uncommon to see third- or fourth-generation stations. The mostly wooden structures facilitated such repeated reconstruction, which might have been more difficult for the stone or brick structures seen in Western stations.

The typical pattern of transformation in accordance with urbanization is use of vertical structures, such as stations on bridges, stations below elevated railroad tracks and underground stations. The railway station, which was marginalized to the edge of the cities in its initial stages, finally got recognized and became a new centre where people would meet and part, and where products were collected and distributed. New urban areas began to emerge near stations, and then spread across the track, making the station face the contradiction that it was an obstacle dividing the town it helped develop.

Consequently, the building work was concentrated at the rear of the station. But that was not enough. Eventually, railway operators had to choose between elevating the station, elevating the track, or putting the track underground. From a different perspective, this means that the railway station, which until then had been treated in a totally different dimension, became a central theme in city planning and was recognized as a component of urban facilities. In Japan, vertically-structured stations have totaled 500 over the past 35 years and many others are still under construction.

Changes in services at stations

The way that stations operate differs between cases where conductors working on trains play a central role in customer interactions and cases where stations take a core role. In Japan, where service management is conducted in principle by installing ticket barriers, most customer service facilities are located in the stations.

The basic framework of a station was based on the main flow of passengers; the ticketing area, waiting rooms, barriers, passageways and platforms. Other elements of a station included toilets, shops, restaurants and other supplementary facilities, signs, public announcement equipment and lighting to guide passengers, and administrative facilities such as the station master's office, station clerks' offices, and signal boxes.

Japanese facilities to process cargo, which used to be accommodated in the station in early periods, were sepa-

■ Tokyo Central Station Automatic Barriers *(JR East Design Corporation)*

rated and moved to the suburbs as modernization proceeded. The luggage service to luggage was entirely abolished, partly because demand decreased as luggage became increasingly smaller and lighter, and secondly, because the service lost the competition to the truck delivery services created 20 years ago. Meanwhile, in the area of signalling, which constitute the management core of train operations, gradual progress has been made in automation, electrification, and use of remote control systems, thus reducing the workload at each station and integrating all operations into control centres for each block of the railway.

I have already mentioned that rapid urbanization promoted remodelling of many station buildings in cities. But still more have been undergoing continuous minor improvements. In these cases, the expansion of space devoted to passenger services has been achieved by either reducing or eliminating facilities related to cargo transport and signalling that I referred to earlier, resulting in cost saving.

What has changed most markedly about passenger services is that waiting rooms, which constituted one of the basic elements of services from early days, have been reduced or abolished and that toilets have been relocated inside the ticket gate. As the number of trains increased in response to the rise in the number of passengers, ticket barriers were left open and the platforms bacame part of the waiting space along with the waiting rooms and station concourse. Consequently, so-called waiting corners were installed in an attempt to use the limited space in different ways at different hours of the day. During the rush hours, the partitions for waiting corners were removed to make more room for passengers getting on and off the train in order to alleviate crowding. The partitions were reinstated when there were fewer passengers. More recently, as the number of passengers has further increased, there are no complaints even if the space for waiting is entirely eliminated. Thus, in this aspect alone, we can see how station operators have adapted space for service activities according to changing needs of the times.

Moreover, lately, in response largely to calls for rationalization triggered by a decline in profitability, progress in automation and increased use of electronics has been achieved in the fare management system including ticketing, ticket inspection, and ticket collection as well as in passenger signs and public announcements. As unmanned services expand rapidly in this manner, the arrangement and appearance of the related facilities have also been exposed to great changes. Furthermore, a growing number of computers and other electronic devices are being installed in station clerks' offices and other administrative facilities. In other words, station systems are experiencing changes that a station master could have never imagined only 10 years ago.

Automation is not the only change that has occurred recently. Ashtrays have disappeared as smoking and non-smoking sections have become more clearly distinguished and smoke-free space expands. For litter collection, new litter boxes specially designed for each category have been introduced to make it easier to separate litter according to type. Escalators and other devices to aid handicapped and elderly people have increased. Furthermore, water fountains have been removed altogether and wall clocks reduced. Overall, stations have been transformed into much leaner and neater places than they were 30 years ago.

In this manner, station buildings in Japanese cities are undergoing repeated 'surgery' throughout their life cycles to meet the changing needs. No other buildings have changed so frequently and at such a fast rate. In that sense, station buildings are the architectural structure that must be most flexible in space formation.

■ Oimachi Station *(M. Uemura)*

Supplementary facilities

Currently, there are two distinct trends in supplementary facilities to stations. First, urban station buildings are increasingly taking the form of what is called a station complex. The second trend is that regional stations are being constructed together with local public facilities.

Those supplementary facilities—restaurants, bars, hotels, newspaper and magazine stands, post and telephone services, money exchange counters, souvenir shops, pharmacies, etc., found in the vast concourses of large stations in Europe since their early days, were a necessity rather than a supplement, considering the kind of ideas people had about travelling in those days. Station buildings

were designed to provide a place where travellers could prepare for their trip, with the same kind of expectation and tension as when travelling by horse-drawn carriage. In fact the main sections of the station site were arranged solely for departure. By contrast, passengers leaving the train on the platform were supposed to simply walk to the end, step out into a passageway linking all the ends of the platforms, and go directly out to the roads on both sides. Therefore, stations provided a space where passengers would get excited or nervous about their departure but not necessarily for their arrival. In Japan, departure and arrival areas remained separate for a long period, but in the 1960s, the sudden increase in passengers and trains necessitated securing of large areas handling passenger flow. Within 10 years, all stations nationwide changed to joint-use arrival and departure areas. Even today, new stations in developing countries tend to be designed with separate arrival and departures, but to plan for future growth, it is necessary to consider future conversion to joint areas.

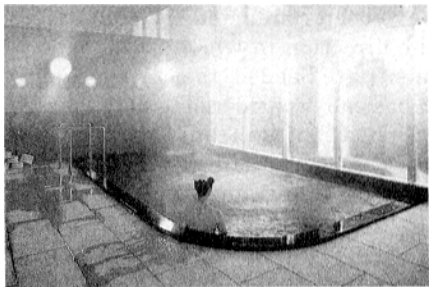
On the other hand, few Japanese stations had hotels built in them in the early stages. Rather than directly inheriting the trend prevalent among Western stations, Japanese stations took the path of having department stores, other shops and dining facilities. Owners of private railway companies, who anticipated the concentration of population in urban areas, purchased land around the stations at low prices before the line was opened. As the number of residents along the line increased, the companies built retail facilities adjacent to the urban terminal stations to meet the purchasing demand from commuters on the way home and housewives living in the neighborhood. This strategy has been a great success and is implemented by most private railway lines running through the suburbs of big cities.

The former JNR was strictly restricted in its business activities by law. But in 1950, JNR started a similar project. At that time, in war-damaged cities, citizens' movements to reconstruct the stations were gaining momentum, so in this project, outsiders would bear part of the cost to reconstruct the station on condition that they could use some parts of it. This was a joint endeavour between JNR, who could not afford to spend money on anything else but increasing the transportation capacity at that time, and citizens, who wanted to have the station reconstructed as soon as possible. During the following 30 years, as many as 50 stations were rebuilt on these lines, and the idea spread as an approach perfectly suited to the situation at the time. Another funding mechanism of issuing national railway bonds was implemented later.

Furthermore, after JNR received permission to invest its own capital in 1971, so-called station complexes were built in cities across the country. These complexes centered on shops, restaurants and hotels and now it counts 112 stations. The privatization of JNR in 1987 has further opened the opportunities for the company to do business in supplementary facilities with more flexibility and choice. Various services are already being provided including those related to company offices and leisure.

Regional stations built with local public facilities

In Japan, just as in Europe and the USA, regional railway lines are faced with the challenge of a shrinking population and a greater advantage enjoyed by cars. There are a number of lines that attract very few passengers. However, despite this basic trend, citizens in some regions do seem to maintain their affection for station buildings. While on one hand railway operators reduce workers assigned to each station to zero or entrust the operation to outside parties, on the other, they try to invite local governments to team up with them and combine construction of the station and local public facilities. One municipal government after another has signed up and a total of about 50 such buildings were completed in 10 years, including town halls, specialty product halls, and exhibition halls, as well as even libraries and hot springs.



■ Takahata Station with Hot Spring Baths
(M. Uemura)

Naturally, most of the funds to finance the construction comes from the local government, which means that railway companies have less and less to do with the whole project. Then why do local governments keep fussing about tie-ups with stations? The only possible interpretation is that local citizens take a continued interest in the meaning and geographical location of a railway station.

The completed facilities suggest that it is the station that rents part of the facilities from the local government and not the other way around. In this situation, assimilation of the station into the town is evidently seen in the sense that the station is enclosed in the town. This clearly indicates the departure from the concept of center and periphery. Obviously, the commemorative and symbolic aspects of station buildings continue to be important in Japan (as elsewhere) although in rural areas, the railway has lost the competition to other transport.

History of station squares

Since stations were initially built at the periphery of cities, early station squares were merely an open space in front of the station, which is what photographs of those days show. However, as later urbanization triggered the formation of new areas around stations and as various means of transportation including automobiles developed, the station square came to form a vital part of urban facilities.

Nowadays, station squares are becoming increasingly important, unlike in their initial stages, when they had little significance. In Japan, a number of pioneering experiments

have been conducted. To summarize the direction in which those experiments are headed, the station square is basically considered to play the role of a node in the transportation network. Also attracting attention is the square's significance and role as one of the footholds of a city or as a precious open space. And in the future, the station square is expected to provide a creative space that will generate new culture and community.

The underlying idea here is that the station square should not be regarded just as playing a passive role of simply processing flows of traffic concentrated in front of the station. It is a place where information, intellect, and emotions come together. This is an important viewpoint that can also be applied to station buildings themselves.

This is not directly related to station squares, but railway stations at airports have recently changed dramatically as transportation network nodes. The clear and explicit flow of people and goods and substantial improvements in comfort provided at these stations should give us many hints when discussing future station buildings and squares.

Symbolism and realism

Many Japanese tourists returning from a trip to Europe where they are impressed to see old large stations complain that there is nothing romantic about Japanese railway stations. This is a natural and spontaneous reaction. Even those involved in the railway business often find themselves with similar feelings. It is even more natural that people in architecture dream of having an opportunity to undertake the task of creating such a space just once in their lifetime. In fact, such an endeavour is currently under way at Kyoto Station by Mr Hiroshi Hara, who won an international competition, to make his dream come true through contemporary interpretation. Another project of similar nature is also under way at Nagoya Station.

However, for all operators of railway services, the first and foremost issue is always to maintain and improve the transportation system. And naturally, investment should be focussed in that area. Therefore, any consideration of station buildings is destined to be secondary. No matter how many times people argue that the times are shifting from material to spiritual civilization, that alone will never change the reality of stations.

Where can we possibly search for clues to solve this contradiction? Or would it be fundamentally wrong to schematize the whole matter into the two mutually-conflicting concepts? In any event, what are the essential factors in envisioning future railway stations?

Design mind

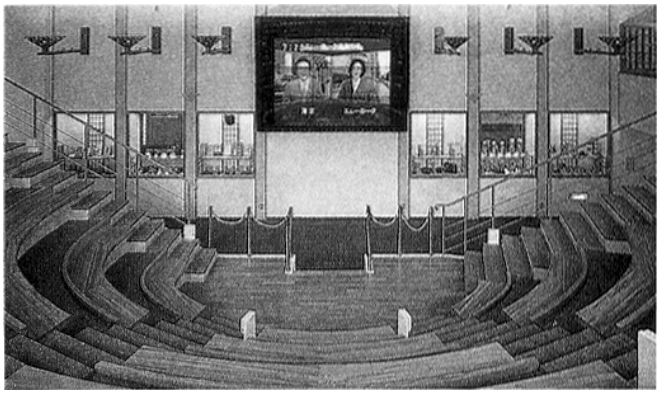
The first theme pursued by each of the JR companies spun off from the state-run JNR 8 years ago was the principle of putting customers first, which coincidentally was incorporated in such efforts as enhancing the cleanliness and comfort of station buildings and rolling stock, and improving the service spirit of employees. Specifically, in station buildings, the first thing they worked on was to make toilets cleaner, since dirty toilets had been one of the major causes for the railway's negative image. While they initially tried to enhance the brightness and cleanliness of the buildings as a whole, they gradually shifted their focus to creating and utilizing space in a way that allows passengers to relax and enjoy themselves. During the process, the railway operators finally realized the importance of including design sensitivity as part of their business strategies.

The World Railway Design Conference in Tokyo in 1989 organized by JR East was the world's first such conference. Representatives from around the world gave presentations on management and design, each of which was full of important suggestions. Particularly impressive was a lecture on design management theory by Ms Jane Priestman from Britain, in which she discussed design theory not merely of individual objects but of the whole entity that those individual objects comprise.

Against such backdrop, station buildings based on designs that take into consideration the sensitivity of the users and local citizens or physiological and psychological aspects of human beings, have been constructed. This is quite different from conventional Japanese station buildings, which tended to be uniform, over-restricted and placing too much emphasis on function. With the synergistic effect of the post-modern trend, a wide variety of station buildings that could never have been found in the past have been built across the nation.

One typical example is a group of six new station buildings constructed along the recently-opened Yamagata shinkansen. The emphasis was placed on staging a series of station buildings, each with unique features that are pleasant and eye-catching, rather than having each station building separately aim to achieve its own standard of design. Consequently, passengers and local citizens evaluated the stations from a new stand-

■ Kaminoyama Station *(M. Uemura)*



■ Amphitheatre at Narugo Station *(M. Uemura)*

■ Library inside Iwaki-Hanawa Station *(M. Mashima)*

point. In other words, the construction of a station has come to take on a new meaning; it is not just designing a station but producing the image of a new JR company as well as the identity of the local town. Similar examples are also found in other JR companies.

Clues to future stations

Coming back to the issue of contradiction between symbolism and realism I mentioned earlier, the most realistic investment approach for railway operators owning a number of stations would be to pursue symbolism only when building an extremely limited number of terminal stations while generally putting priority on economy for the rest of the stations. In fact, this very approach was applied to non-terminal stations in Western countries in their early days, which were built in a fairly simple manner.

In the meantime, when we envision 'future stations', we should not forget that railway services should remain useful in coming years. In some industrialized nations and many of the developing countries, it is important to devise more flexible stations by fully understanding the different conditions and different rhythms of development in each country.

In a special case like Japan, where the usefulness of railway services is still maintained, 'future stations' could fall under a totally unprecedented and unknown category. However, key words would include multifunctional, people-friendly, enjoyable, community centre, and information base. It will be necessary to look to increasingly broader sources for funds and, in the case of projects of a highly public nature, to aggressively advocate the rationality of using public funds.

Various attempts have already been made, although with little success, to turn stations into bases in information networks. However, in the coming multimedia age, current station buildings distributed across the country, are good potential candidates for future bases in information networks. Various developments in this direction are anticipated since the idea has already been included in the government's recommendation packages.

Furthermore, some people argue that stations should be helpful in local residents' daily lives. As part of the efforts to make this a reality, the government took the initiative in providing child-care services in stations. It is possible that expectations will be further increased for stations to take a direct role in the daily needs of citizens.

As stations become increasingly assimilated and integrated into local communities in both urban and rural areas, critics complain that stations do not look like stations any longer. Therefore, a new task facing us now is to find ways to accomplish the kind of 'station-like' features that are most appropriate to each society. Some people point out we should reconsider the policy of thinking that the more new things are introduced, the better.

In looking back at the history of stations that have undergone transformations over a long period of time, and considering future prognoses, I feel the course of change in abstract terms has been symbol, function and environment, and, in terms of space, appearance, container and place. In this respect, Japanese stations seem to be characteristic in that they have become part of the 'city ecology'.

While expressions like 'city gate', 'water gate' and 'nucleus' were used to describe stations in their early days in Europe, in Japan, frequently-used expressions are 'front door of the town', 'face of the town', and 'life centre of the town', indicating that stations have been incorporated into the town in the real sense of the word. Thus modern Japanese stations have departed from the philosophical concept of center and periphery. ■

Takashi Suzuki

Mr Suzuki graduated from Tokyo University in architectural engineering and joined JNR in 1956, where he held the posts of Chief Architect (1977) and General Manager of Fukuchiyama Region (1982). After retiring from JNR in 1985, he joined Traffic Architectural Design Inc. becoming President in 1987. He has been President of JR East Architectural Design Inc. since 1989.