

A Comparison of Tokyo's Oedo Line & London's Jubilee Line Extension

Masayuki Fuchigami

Tokyo's 6-shaped 40.8-km Oedo Line was fully opened on 12 December 2000. But the new subway line was a hot topic even before construction was completed because it finally links areas of Tokyo with poor transport connections to the extensive public transport network. For example, Akabanebashi, which used to be thought of as an isolated 'island' in south central Tokyo, is now just a 15-minute ride to the Shinjuku subcentre. However, much of the interest comes from the unique designs of the line's stations. The designs were decided by an architectural competition in which suggestions were invited from a wide range of contestants. According to popular rumour, the Tokyo Metropolitan Government (TMG) set the architects and builders a target of building high-quality underground facilities at low cost, which led to significant challenges and sharpened abilities.

Interestingly, London Underground, the world's first subway system, also recently completed a project in which various architects worked together to design fabulous new stations. It is fascinating to note the similarities between the two projects, which occurred at almost exactly the same time in both east and west, both of which are large scale, and both of which involved the participation of architects.

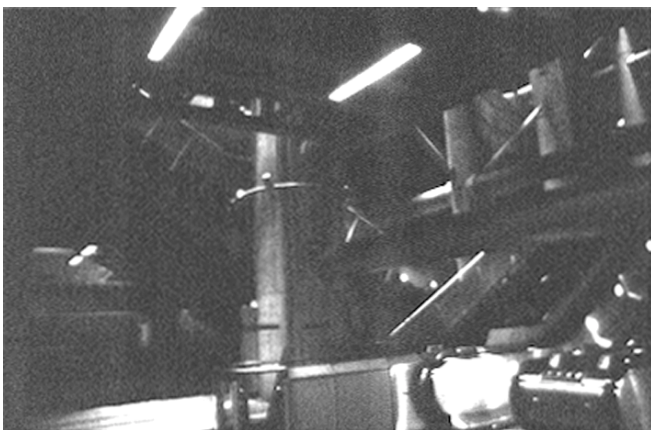
London's first 'Tube' opened in 1863 when Japan's Edo period (1603–1867) was coming to an end and before any railways had been built in Japan.

The progressiveness of the British system was truly remarkable. The earliest underground trains were hauled by steam locomotive on the Metropolitan Railway running some 4 miles (about 6 km) between Paddington Station and Farringdon Street. The current Tube network runs a total of over 400 km on 12 lines with 270 stations. Japan was 64 years behind Britain in opening its first subway, which ran 2.2 km between Asakusa and Ueno (see *A History of Japanese Railways, 1872–1999*, published by EJRCF). Today, including the Oedo Line, the Tokyo system covers 280.5 km with 264 stations. In terms of stations, the two networks are similar, but the Tokyo network is still about 30% shorter.

Like Tokyo, some parts of London were transport-isolated islands and the issue of linking south London with the East End was first raised in 1949. However, it was not until the redevelopment of the derelict docklands into new financial and residential centres during the late 1980s and 1990s that an acute need for improved transport links was really felt. The deteriorating finances of the huge Canary Wharf redevelopment motivated the Conservative government of the time

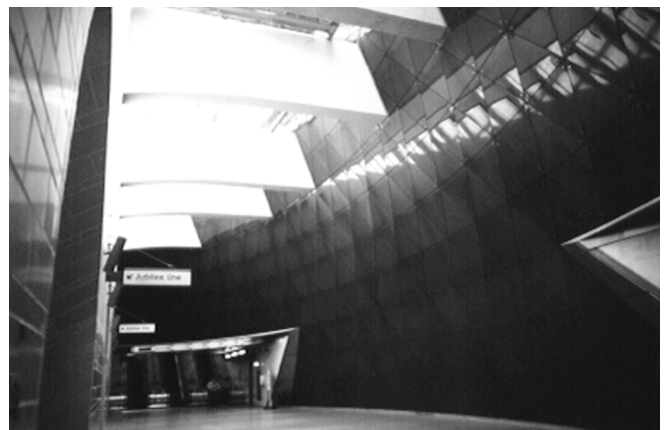
to approve government funding for the Jubilee Line Extension (JLE), making the redeveloped areas much more accessible. The plan involved an eastward extension of the existing (completed in 1977) Jubilee Line linking Charing Cross in central London with Stanmore in the northwest suburbs. The new extension begins at Green Park in London's West End, and runs out through the Isle of Dogs to Stratford in the east, providing a revolutionary high-speed, high-capacity link bringing many benefits to London's citizens. Areas with no previous Tube access, such as North Greenwich and Bermondsey, are now on the map. People living in south-east London and Kent can use Park and Ride (a system of leaving one's car at a suburban station and taking the train) to commute to work, contributing to reduced traffic congestion in central London. International connections from Stratford and Waterloo have also become much easier.

Unlike suburban railways in Britain, Japan's Oedo Line does not have a Park and Ride system, because the Oedo Line runs mainly through crowded central Tokyo in a loop with a 13-km tail running out to the northwest suburbs. By comparison, the JLE is a truly urban underground extending



Westminster Station

(Y. Uchiyama)



Southwark Station

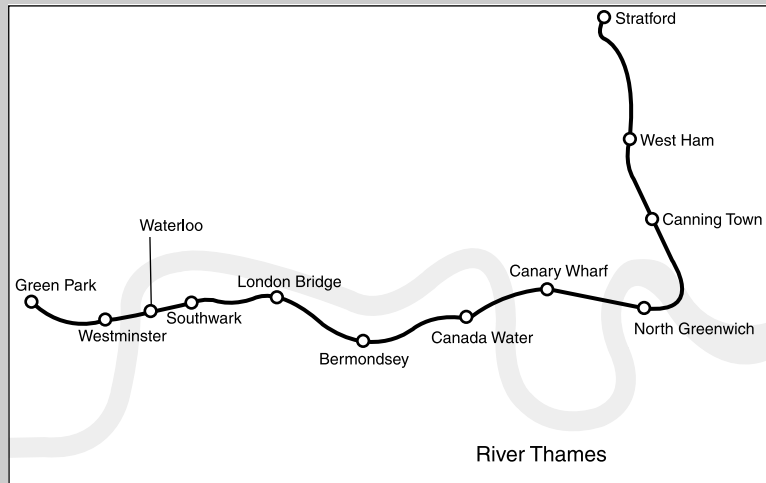
(Y. Uchiyama)

from the centre of London to the suburbs.

The JLE is composed of twin tunnels running for 12.2 km with 12 (11 new) stations. It is relatively deep at -15 to -30 m, partly because it runs under heavily developed areas of London, but mostly because it runs under the River Thames four times. In comparison, the 40.8-km Oedo Line is about three times longer than the JLE and has 38 stations. It passes under the River Sumida three times and since it is a central loop line under a heavily developed city with many underground structures, it has been constructed even deeper than the Jubilee Line at between -15 and -48 m.

Roland Paoletti, the chief architect for the JLE project, was very influential in

Figure1 Jubilee Line Extension (JLE)



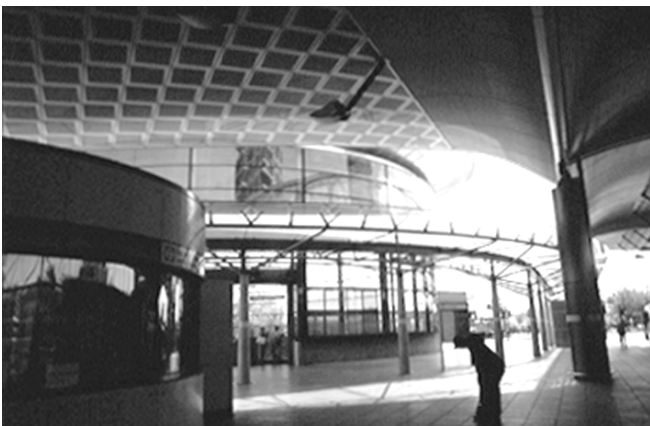
London Bridge Station

(Y. Uchiyama)



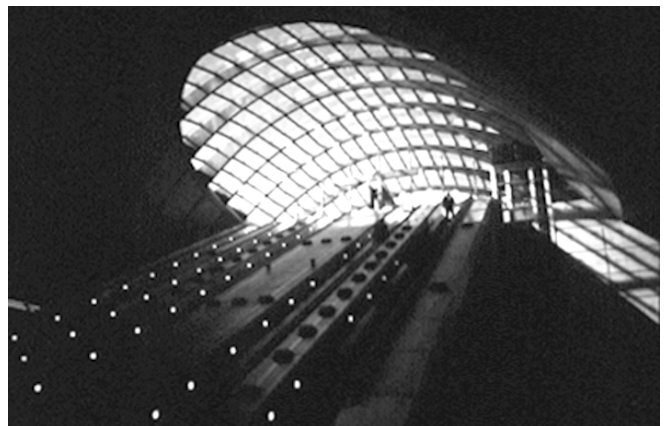
Bermondsey Station

(Synectics Inc.)



Canada Water Station

(Y. Uchiyama)



Canary Wharf Station

(Synectics Inc.)

Table 1 Eleven New Stations and Architects of JLE

Stations	Architects
Westminster	Sir Michael Hopkins
Waterloo	JLE Team
Southwark	MacCormac Jamieson Pritchard
London Bridge	Weston Williamson
Bermondsey	Ian Ritchie
Canada Water	JLE Team
Canary Wharf	Sir Norman Foster
North Greenwich	Alsop, Lyall and Stormer
Canning Town	John McAslan
West Ham	Van Heyningen & Haward
Stratford	Chris Wilkinson

The JLE was the largest project of its type to have been undertaken in Europe and involved the most complex and difficult tunnelling ever done in London. As a result, the initial estimated completion date of spring 1998 was too optimistic and the line eventually opened in late 1999. Initial cost forecasts of ¥420 billion increased to ¥552 billion. By comparison, the Oedo Line cost a total of ¥988.6 billion. The project architects (Table 1) are all famous within British architecture. The last three eastbound stations including Canning Town are above ground. Six of the 11 stations are entirely new, while the other five involved the challenge of extensions and repairs to existing stations.

Although the JLE and Oedo Line incorporate 'design' stations by well-known architects, it is the JLE stations that really demonstrate each architect's individual touch more strongly. This is principally because of different site conditions. The JLE extends out from the centre of London so most of its stations have their entrance halls above ground. In comparison, the location of the Oedo Line in the centre of Tokyo has compelled the designers to put most of the facilities underground with only entrances and exits opening to ground level. Therefore, the JLE station

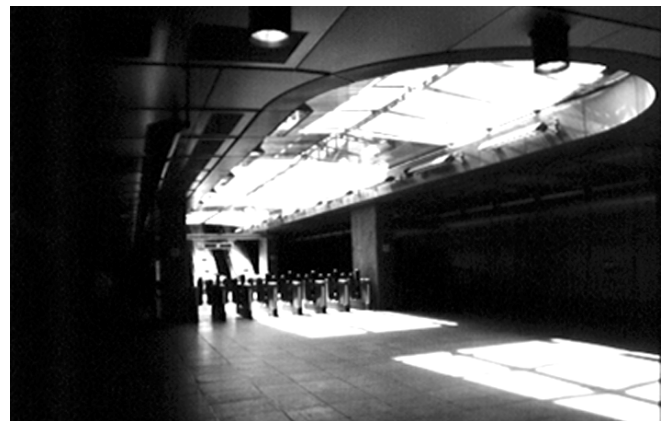
the design of the new stations, recruiting well-known modern architects to oversee the design of nine stations. The remaining two—Waterloo and Canada Water—were handled by his own JLE design team. Commissioning stations designs in this way is extremely rare in Britain. Paoletti considered the overall balance of the station designs and specified some details regarding components—the floors of concourses, the escalators, the glass platform doors and the signs—but other than this, he gave no

particularly strict design guidelines. Instead, the architects he selected were encouraged to design very individual proposals, while paying close attention to civil engineering issues. As a result, each station is a fusion of architecture and engineering, giving birth to an austere elegance, through which all the stations share a common vocabulary of high technology and hard-edged functionality. This trend also reflects a previous tradition of English subway station design by leading architects in the 1930s.



North Greenwich Station

(Synectics Inc.)



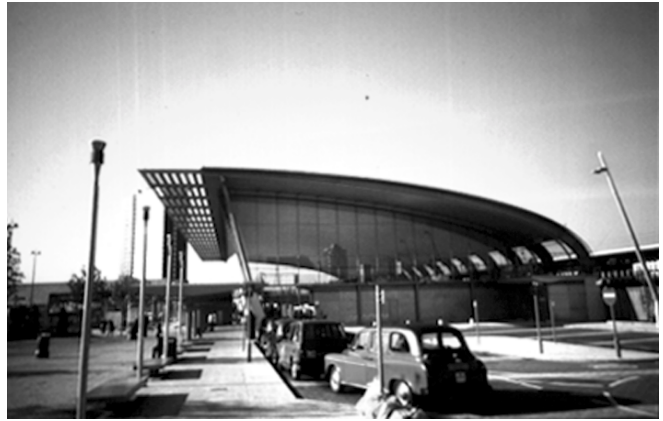
Canning Town Station

(Synectics Inc.)



West Ham Station

(Y. Uchiyama)



Stratford Station

(Synectics Inc.)

architects could consider the total station design, from platforms, through to escalators and stairs, and out to station concourses and ticket barriers. By comparison, when viewed from the JLE perspective, the Oedo Line stations only seem to slightly reflect the tastes of their designers, leaving a sense that something is missing. It would have been nicer if facilities that are used by hundreds of thousands to millions of people each day could have been designed in a more memorable way with clearer individual touches. Hopefully, future public works in urban infrastructure will express more of the individual talents of the architects who design them.

There is good precedent for involvement of independent architects in designing public transport facilities. Notable examples are Genoa's subway by Renzo Piano, Bilbao's subways stations by Norman Foster, the Wilhelmena Plain Station by Schwarz and Jansma, and Blaak Station by C. H. Reijnders. The widespread inclusion of architectural design in new underground stations has helped transcend traditional station design and is an important sign that the gap that has existed for so long between architecture and civil engineering may be closing. I cannot be the only person



Staircase at Iidabashi Station on Oedo Line

(TMG)

who hopes that these projects represent a significant step towards a new millennium in which the marriage of architecture and civil engineering brings great results. ■

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