

The Application of the Typeface in the Signage System

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Abstract: *Due to the expansion of the highway system and the continuous growth of traffic, the safety issues associated with the dissemination of traffic information have become more important. This study reviews the literature on the legibility of typeface used in highway signage systems and the types of fonts used in highway systems, focusing on the most significant findings on the characteristics of typefaces and the features that most affect legibility. The findings of this research identified the humanity typeface can help to satisfy the need for people to navigate from one place to another, then to create a clear and concise wayfinding system.*

1. INSTRUCTION

Nowadays in modern societies, urban environments surround residents with visual signs that are a part of their everyday experience. While these messages can take many different forms, they generally include typeface, images, or a combination of the two. These are collectively referred to as part of the linguistic landscape. Public signs are the main part of the linguistic landscape. They are embedded in a social environment, and their meaning is socially constructed, serving both an informative and a symbolic function (Landry and Bourhis, 1997, pp.25-27). The informative function aims at providing information to the public, while the symbolic function requires observation of the ideological and social organization in the environment. From this point of view, on the one hand, the fonts used in public signage systems are a key tool in the facilitation of information communication, especially in public spaces in areas where people of diverse backgrounds live together. On the other hand, they can be seen as an indication of cultural differences, as well as the era in which they are introduced. There is considerable variation between different countries in the typography of these signs, which can reflect the characteristics of individual cultures. For example, the signs that greet a traveller at an airport or on the roads after a border crossing all aim to provide people with information, but the typeface can also represent a 'welcome to our country' message, such as 'I'm very friendly' or 'I am modern'. Thus, it's necessary to explore How do the linguistic, cultural, and visual aspects influence the design of multiscript typefaces to build the identity of a modern society? How to establish common principles that can be applied consistently across Latin letters and Chinese characters?

2. SIGNAGE SYSTEMS IN DIFFERENT COUNTRIES

2.1 Single script signage

This study is mainly focused on the application of signage fonts in urban transit systems. Components of an urban transit system usually include various systems such as the Metro (subway) system, Bus system, Pedestrian system. However, road signage systems in transit systems such as motorways are one of the areas in which informational typography has been examined and developed systematically for multiple locations. Because of this, this study by studying signage systems in transit systems from different countries, including both single, dual and multi-script fonts, and cases where different existing fonts were used in combination.

In the early 1960s, Jock Kinneir was commissioned to design the British road signage system. Assisted by Margaret Calvert, he created the Motorway typeface and two variants: Transport Medium and Transport Heavy, which incorporated their own spacing system that set the specifications for the positioning of each letter in relation to the next. They chose white letters on a blue or green background, yellow for road numbers, as well as black letters on a white or yellow background. Since then, Transport has been used for motorways and other kinds of roads. It marked a new turn in British typography, which for the first time considered the integration of 'visual' and 'functional' (Kinross, 1992, p.167). In addition, this design of Transport also influenced other countries, such as Ireland and Greece, even Hongkong, who also use Transport as their standard typeface for road signs.



Figure 1: Signs in London (Baines and Dixon, 2003, p.27)

In Switzerland, the transit system's official signage typeface is ASTRA-Frutiger. Frutiger was designed by Adrian Frutiger in 1976 and is a humanist sans-serif typeface designed to be clear and legible when read at a distance. ASTRA-Frutiger is a variation of Frutiger used by ASTRA (an abbreviation for the Swiss Federal Road Office), which replaced VSS (VSS is a sans-serif typeface that is used on traffic signs throughout Europe) as the official typeface used for traffic signals in 2003. Compared with VSS, ASTRA-Frutiger has a more even stroke width and a higher x-height and open counters (Kobayashi, 2011, p.65). Frutiger was able to give clarity while still maintaining a fluid non-mechanical structure, and this attribute allows it to be personable, friendly and modernist. It has been widely used in different areas, such as Charles de Gaulle airport in Paris.



Figure 2: Signs in Switzerland (Kobayashi, 2011, p.64)

In Austria, the road signage font is TERN (Trans European Road Network). It was developed by a European research programme on transport infrastructure and safety between 2005 and 2008. TERN was designed by Ralph du Carrois and Erik Spiekermann, and it was made the official road sign typeface in 2010 (Tovey, 2012, p.94). The TERN has a version used for VMS (variable message signs): displays that employ LED technology to provide up-to-date information about traffic conditions. It has to be legible from a distance while moving quickly and needs to be consistent with the various LED resolutions used in VMS throughout Europe. "To make optimal use of the restricted space available on VMS display boards led to the adoption of a slightly condensed design for the letterforms, but with a clear appearance." (Tovey, 2012, p.94.) A further version of TERN was created for use on conventional road signs that was consistent with the VMS version to ensure maximum similarity. Because VMS and traditional road signs are part of the same signage system, they must match when placed next to one other or close together. The design of the TERN illustrates how new technology can influence the design of signage fonts. Different from traditional road signs, in this design process the signage font overcame the complexities of designing for a new technology by fulfilling the requirements of the new technologies and then applying them to the traditional system. It emphasises the challenge of developing a typeface for a system based on modern technology, which is now used on Austrian motorways and is also the standard typeface for all VMS systems on Dutch motorways.

ABCDEFGH ABCDEFG
 abcdefghij abcdefgh
 012345678 01234567



Figure 3: TERN in Austria (Ramos, 2014, p.8)

In Ireland, the signage font used is the Transport typeface. Irish (Gaelic) uses 18 of the same Latin letters as English, and there are no specifically Irish letters (though there are variants and diacritics). Thus, on the signs, in order to distinguish them, italics are used for the Irish names and upright capitals for the English names. When compared with the use of Transport in the UK, the italic form and uneven letter spacing have impaired the legibility of the typeface.



Figure 4: Signs in Ireland (Baines and Dixon, 2003, p.34)

In Greece, road signs are written in both Greek and Latin text. On road signs in Greece, the place names in both languages are set in upper and lower case causing the Latin words to be visually similar to the Greek words, since Latin and Greek scripts employ similar variations in the proportions and construction of letters. Thus, in order to enhance the difference between them, colour is used as the main method of differentiation. The signage font used is the Transport typeface, but it was especially expanded at the request of the Greek authorities, creating a Greek extension of the Latin font (Ramos, 2014, p.8). Though Greece does use Transport, the design guidelines originally specified for Transport appear to have been ignored and the legibility has been impaired by crowded spacing and condensed letterforms. This contradicts Kinneir’s system, in which size and spacing were consistent and the word-lengths determined the size of the signage.

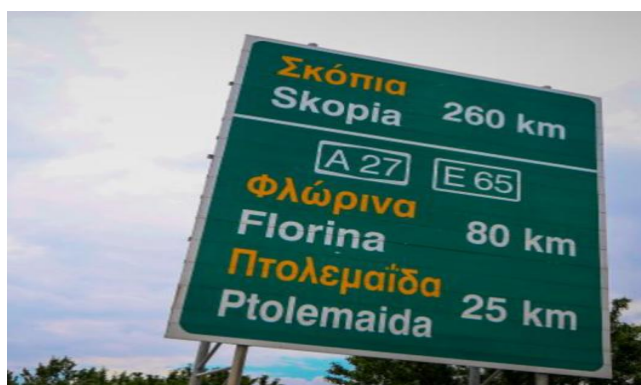


Figure 5: Signs in Greece (Baines and Dixon, 2003, p.34)

The font on signage in a transport system plays a key role in giving directions and identifying routes. “A typeface has the power to unify the visual language and the way of the communication across a location. It builds an identity, both in making strangers relate to a place when they pass by and for the person who lives there” (Maag, Richings and De Franceschi, 2021). Thus, harmonisation is a particularly important quality for a signage typeface. The visual character of a signage font can reflect and enhance the visual characteristics of an area, creating a seamless, fully integrated image (Calori and Vanden-Eynden, 2015, p.13), fostering a sense of identity and sending signals such as ‘I am safe’ or ‘I am official’.

In this sense, harmonised typeface design is not only important for message communication but can also play a place-making role by establishing a unique identity and sense of place, thus creating brand identity in the urban environment.

2.2 Multi - script signage

In environments influenced by economic globalisation, it is increasingly important to meet the needs of multiple cultures. Single-script signage cannot satisfy the needs of the various people who live together, especially in a multinational country, such as the United Arab Emirates or Thailand, and different languages have been required for use on their signage. The development of multi-script typefaces further influenced the informative and symbolic function of signage.

In Japan, since 1991, the Japanese authorities have had to adapt to the needs of a minority of the population, such as foreign residents, businessmen and tourists, to accommodate ‘internationalization’ (Backhaus, 2006, p.55). This resulted in a policy whereby all public signs were bilingual, displaying English alongside Japanese. The Latin typeface used is Helvetica, and the Japanese typeface used is Yuanti. Both of these two typefaces have low contrast in stroke width, and Helvetica has a high x-height, meaning it can retain high legibility even with a small font size. According to Backhaus’ research (2006, p.58), in order to assert their own country’s identity, Japanese, as the dominant language, was to be written first or higher on the signs and with a font double the size of English. The multi-script signs in Japan present the ideology of accepting an international stance, while still retaining the identity of their own culture. In environments influenced by economic globalisation, it is increasingly important to meet the needs of multiple cultures. Single-script signage cannot satisfy the needs of the various people who live together, especially in a multinational country, such as the United Arab Emirates or Thailand, and different languages have been required for use on their signage. The development of multi-script typefaces further influenced the informative and symbolic function of signage. In Japan, since 1991, the Japanese authorities have had to adapt to the needs of a minority of the population, such as foreign residents, businessmen and tourists, to accommodate ‘internationalization’ (Backhaus, 2006, p.55). This resulted in a policy whereby all public signs were bilingual, displaying English alongside Japanese. The Latin typeface used is Helvetica, and the Japanese typeface used is Yuanti. Both of these two typefaces have low contrast in stroke width, and Helvetica has a high x-height, meaning it can retain high legibility even with a small font size. According to Backhaus’ research (2006, p.58), in order to assert their own country’s identity, Japanese, as the dominant language, was to be written first or higher on the signs and with a font double the size of English. The multi-script signs in Japan present the ideology of accepting an international stance, while still retaining the identity of their own culture.



Figure 6: Signs in Japan (Kobayashi, 2011, pp.22)

In Hongkong, the bilingual transport signs also display English and Chinese words. The Latin letters adopt the Transport typeface from the UK. But, unlike those of the mainland, the signs in Hongkong use a Chinese font in the traditional style to reference an authentic Chinese national identity and culture.



Figure 7: Signs in Hongkong (PantherMedia,2021)

One example of a bilingual signage system using Latin and Arabic script was designed by Dalton Maag (Dalton Maag is a typeface design studio founded in 1991).for the Dubai Metro, which opened in 2009. This project was a pioneer in developing a system in which two entirely different scripts coexist in unison and harmony. It allows a typeface to be visually translated across different systems so that readers of the different languages have the same user experience (Maag, Richings and De Franceschi, 2021). Dubai is in fact racially, culturally, and religiously a diverse city. Hall, et al. (1980, pp.24-26), encourage understanding and re-inventing identity from traditions, history, language and culture. They take the view that it is necessary to directly link national and cultural identity through the visual script of a culture, stating that only language and history define national identity. Thus, the signage design of the Dubai Metro is seen as playing an essential role in visually representing the identity of the culture.



Figure 8: Dubai Metro signage (Dalton Maag, 2009)

In Thailand, the signage includes Thai, English and Chinese, reflecting multicultural conditions. The primary language is Thai and is set above Chinese and English. English and Thai are set in matching low stroke contrast typefaces, while the Chinese characters are identified by their more modulated design.



Figure 9: Signs in Thailand (Zhang, 2017)

In Israel, they use three different scripts on their transport signage: English, Arabic and Hebrew. This is described as a strategy for facilitating communication by lowering language barriers as well as by consolidating cultural identity (Alkhatib and Sabbah, 2008, p.37). These examples of multi-script signage in Thailand and Israel reflect not only the practical need to support different languages, but also a recognition of different cultures.



Figure 10: Signs in Israel (Ramos,2014, p.8)

The multi-script signage font influences the social environment in which it is situated, and the nature of the languages found on signs is connected to human geography and the area's population. These facts are attributed to "the symbolic construction of the public space" (Ben-Rafael, et al., 2006, p.10). In view of this, on the one hand, a multi-script signage system needs attention to more than simply incorporating two or more languages. Different scripts with different proportions require very different treatments in the design of a signage font. On the other hand, harmonised multi-scripts play an important role in creating a city's identity and can be used as a technique to influence the public perception of a country. So, harmonisation between different writing systems is not only important for providing better reading experiences for the public, but, more critically, it should be appreciated for the possibilities it offers in terms of culture and communication.

3. THE SIGNAGE SYSTEM IN CHINA

China is a multi-ethnic country. Due to the development of the global economy, China's national culture has been enriched and expanded. For the Chinese signage system, how to improve the visual harmonisation between the Latin and Chinese writing systems, and reduce the visual conflict between these two systems when they coexist in public signage is an important problem. Improving the harmonisation of Latin and Chinese within dual-script typefaces would have positive value for Chinese transit systems. From the viewpoint of informative function, visual harmonisation can be seen as an important contributing factor in the effectiveness of urban transit information systems. From the viewpoint of symbolic function, the harmonised typeface contributes to build the image of an all-encompassing attitude of one country, demonstrating unity in a friendly, and powerful national brand.

Despite these benefits, public information signage in China's transit systems does not consistently address problems in the coexistence of multi-lingual scripts. For example, when incorporated alongside Chinese, Latin letters may be more difficult to recognise. In addition, there is no consistent typeface used for The Chinese transport system. In 1984, China's Ministry of Transport began to develop a transportation network in the country. The infrastructure was built very quickly in recent decades, but the design level remains in the 1980s (Lan and Wang, 2018, p.107). Even though the GB5768-1999 road traffic signs and marking standards 2 (1999) resulted in the standardisation of signs used in China's urban information system, the Ministry of Transport did not enforce these standards and there are no specific requirements for the typeface that should be used on signs (Jiang, 2018, p.17). The only font guidelines are: "sans-serif typeface, wide character; stroke thickness equal to 1/10 of the height of the character" and the following number guidelines: "the number width is equal to 6/10 of the character height, thick stroke is equal to 1/6 of the character height" (GB5768-1999, p.107). Most designers use an existing Chinese typeface and then find Latin letters to match it. Sign designers or manufacturers can differ in their understanding of how type should be applied in signage. This leads to different versions of signs in different areas, thereby affecting the uniformity of transit signs in Chinese information signage.



Figure 11: Signs in China (Zhang, 2019)

One could say that China's use of signage typefaces is in a state of confusion. The country is geographically vast, so changing all the signage would require a large amount of money, and the government would need a long time to consider investing in the necessary manpower, materials and financial resources. This is why this problem remains unsolved. However, the Chinese government has introduced control policies to rectify this chaotic situation. There is a special regulation department, all kind of road signs are under the supervision of this department, including irregular patrol, random inspection and handling of public's complaints. If they find unauthorised road signage in some cities, they have asked to have it changed. Thus, it is necessary to provide a method for designing a modern signage font that represents multicultural integration, enhancing the public image of the modern Chinese city, showing the wider implications for cultural awareness in typeface design and ensuring a consistent legibility for Latin letters and Chinese characters used in combination.

4. CONCLUSION

The application of multi-script public signs is becoming a new trend in China's urban information systems. The design of dual Latin-Chinese typefaces is an emerging field, and the harmonisation between the Latin and Chinese writing systems is currently an issue of concern. To improve the possibility of harmonisation between the Latin writing system and the Chinese writing system, requires not only the study of aesthetics and the theory of design but also draws on the field of psychology, in order to examine the reading behaviours associated with both writing systems. In order to solve these problems, designers need to investigate some commonalities shared by the Latin and Chinese writing systems to explore the proposition of accommodating the structures of both Latin letters and Chinese characters, and then reflect on how to combine the Latin and Chinese writing systems effectively. Especially how to arrange the strokes while maintaining structure and proportion of these two different writing systems. As long as respect the difference of the Latin writing system and the Chinese writing system and discovered their difference, then can contribute to improving multilingual typeface design.

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