

Signs as a Help in Public Spaces

A Comparative Study of Signage Systems for
Disadvantaged Groups in East and West

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ABSTRACT

DIVISION OF ART HISTORY AND VISUAL STUDIES / FILM STUDIES

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A Comparative Study of Signage Systems for Disadvantaged Groups in East and West

by CUI Yuzhu

Disadvantaged groups, defined in this study as senior citizens, illiterate persons, physically, mentally and culturally challenged individuals, are a concern for the whole society. Signage for disadvantaged groups is presented differently worldwide. They are indicating different kinds of information, presented in different ways, emphasizing different disadvantaged groups in different countries. This research attempts to answer the question how this kind of signage is designed and presented in a selection of Eastern and Western countries.

The research approach is mainly comparative. Different signage systems and signages for disadvantaged groups will be analyzed in the first two chapters separately. The comparison of signage in different countries will be analyzed in the last chapter.

Cultural diversity is the underpinning for the diversities of signage and disadvantaged group. For example, there is special toilet signage for the transgendered individuals, or *kathoey*, in Thailand; and the image of senior citizens represented differently due to cultural diversity. Cultural backgrounds, ethics, and even physiology influence signage representation.

In conclusion, signage is not only a shortcut to the information, but also a shortcut to the culture behind it.

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Introduction

Motivation

When I arrived in Sweden two years ago, I was shocked by two phenomena on the street here. First, the number of people with physical challenges in public is much larger than in my mother country, China. Second, senior citizens here are much more independent than those in China. They almost do everything by themselves without anyone's help. I've also seen some senior citizens falling down on the street which is seldom seen in China.

These two phenomena reflect the differences in public facilities and cultural backgrounds: in Sweden, public facilities take more considerations for people with physical challenges than we do in China, so in Sweden these type of people are more visible. In China, influenced by Confucian, filial piety is our basic principle in daily life. We always accompany and protect senior citizens whether they are in public or at home. What I found interesting is that these differences are presented by signage. In Sweden, we can see a lot of signages for "disability" but not many about helping senior citizens; however, the situation is quite different in China. I think it might be very helpful for disadvantaged groups, if we could learn from each other's signage.

Problem diagnosis

Public image signages are very accessible and helpful in our daily life. However, sometimes it is not accessible enough for the disadvantaged group, for example with senior citizens, people with physical challenges and foreigners. In particular, the number of these people is sizable: "there are some 600 million people with disabilities worldwide, or 10% of the world population, with 400 million of the estimated to live in the Asia and Pacific region. Taking into consideration of the impact on families, the lives and livelihood of more than 800 million people, or about 25% of the population,

are affected.”¹ In some area, the issue of aging of the population is very serious and urgent. In the estimation from the United Nations, in the year of 2050, 2 billion of the world’s population will be senior citizens over 60-years-old.² Thus, it is necessary and significant to improve the accessibility of public signages to provide these people more assistance. Because of the diversity in cultural backgrounds, signages in the East and West are presented in different ways. In addition, the information they are delivering can be quite varied sometimes.

Research questions

This research attempts to answer the following questions, by comparing signage design systems and analyzing signage case studies in semiotic and cross-cultural dimensions.

- ♦ How many different disadvantaged groups do we need to take into consideration in the design and placement of image signages?
- ♦ What is the demand for the disadvantaged groups from image signages?
- ♦ What are the special signages for disadvantaged groups?
- ♦ What kind of signage is more accessible for the disadvantaged groups?
- ♦ What is the difference between these signages in East and West? How does the culture background influence signage designs?

Relevance of the work and current state of research

Many scholars, such as Edo Smitshuijzen, Per Mollerup, Andreas Uebele, Karin Schmidt-Friderichs, Paul Arthur and Romedi Passini and associations, for instance, Canadian Standard Association (CSA), International Standard Organization (ISO), US Department of Transportation (DOT), European Economic Community (EEC) and so on have done in-depth studies in the field of signage design systems and signage standardizations. Some of them have mentioned signages for the

¹ Asian Development Bank, *Disability brief: identifying and addressing the needs of disabled people*, 2005, p1.

² Online Q&A by World Health Organization, <http://www.who.int/features/qa/42/en/index.html>.

disadvantaged groups in their previous work. However, since their main goals are constructing the system of signage, most of them don't go further in the aspect of signage for disadvantaged groups.

The topic of disadvantaged groups has been studied for a long time and in different fields, such as medical studies, law studies, social studies and so on. Since the symbol of accessibility was established in 1969 and the concept of “Barrier-free” was constructed in 1974, a lot of studies, both in practices and academia, have been done in the design field, particularly in architectural design but not many in the signage field.

Basic linguistic studies, medical knowledge and psychology, especially Gestalt psychology, is involved in this research, such as the structure of Chinese characters, definition of body impairment, colour emotion, cognitive competence and so on.

Meanwhile, signage is always delivering the message of its cultural background. For example in the countries with Confucian background, you can find more signages about taking care of the senior citizens since filial piety is a basic principle for all the people in Confucian societies. However, this kind of friendly and considerate tips might be seen as a kind of discrimination in Europe, since the concept of taking care of the senior citizen is implying they are not healthy, strong or independent enough. Cultural study is a main relevant subject in this thesis.

Theoretical underpinnings and methodological approach

Signage design theory:

This thesis is a research mainly in signage design system and its cultural reflection.

Signage design theories are the underpinnings of the signage analysis, especially in the first chapter.

Gestalt psychology:

As the famous principle of Gestalt psychology pointed out, “the whole differs from

the sum of the parts”.³ Signage should be considered as a whole, within the background and environment. According to Gestalt psychology, balance and symmetry are very important in signage. This theory is used for analyzing the balance and symmetry of signage for the disadvantaged groups.

Semiology:

In this thesis, signages are analyzed by two semiotics theories: image rhetoric of Roland Barthes and Isotype of Otto Neurath. The signifier and signified of signage, the interaction between linguistic message and iconic message, the natural feature together with linguistic features of pictographic signage are discussed based on these two theories.

Cultural and anthropological theory:

Comparative method is used in all chapters, in the comparison of alphabetic language and logographic language, image representation of senior citizens, male and female in different cultures.

Case studies

There are four case studies analyzed by different theoretical underpinnings in this thesis:

➤ Signage for “Disabled”

This international signage for “Disabled” is a convincing example of Isotype idea and semiotics theory. It will be analyzed by Semiology and Isotype theory in its historical background.

➤ Signage for priority seats

In this case study, the signages of priority seat from London and Singapore are analyzed in semiotics and cultural studies. Both of these two signages are about pregnant women, people with a baby and senior citizens in the pictograms, but

³ Sternberg Robert, *Cognitive Psychology*, Wadsworth Publishing, 2002, p476.

they are different in some ways because of different cultural supports. Moreover, there is a particular image in Brazilian priority seating sign, which is the reflex of the social problem.

➤ Gender representation in signage

Gender representation in media and art is an essential subject in humanity studies. There are diverse images in signages worldwide, to represent male, female and transgender.

➤ Logographic typography signage.

Besides Isotype signage, there is a kind of typographic-pictographic signage in China, which profits from logographic language. In this section, this kind of signage will be analyzed in the semiotics theoretical underpinnings.

Chapter 1. Signage system

Signage is presented to society succinctly and simply, but it is supported by a complicated yet scientific system behind it. It is important to understand the whole signage system before going deeper to the discussion of signage for disadvantaged groups.

Content, form and positioning constitute the signage system.

1.1 Content

Generally speaking, signage can be divided into four types by their contents: typography, pictograms, direction guide and cartography.⁴ Two or more content types can be combined in the same signage.⁵

1.1.1 Typography

Legibility of typography in signages is more important than that in books since the information is more urgent and sometimes users have limited time and visual field, for example, the traffic signage on highways.⁶

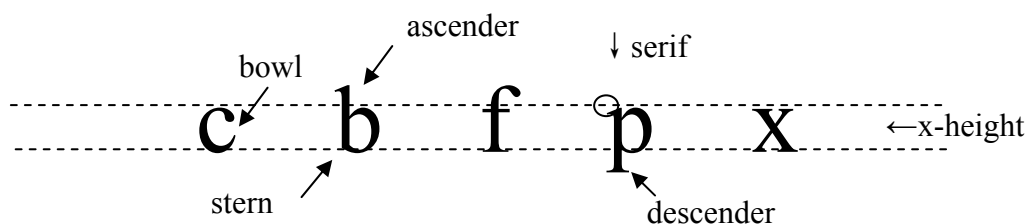
The basic anatomies of the roman letterform are x-height, ascender, descender, bowl, stern and serif in the examples below.⁷

⁴ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p127.

⁵ Ibid, p127.

⁶ Ibid, p129.

⁷ Paul Gutjahr and Megan Benton, *Illuminating Letter: Typography and Literary Interpretation*, University of Massachusetts Press, 2001, pp7-8.



Ascender length and descender length of Roman alphabet are very important to the legibility in alphabetic writing.⁸ For instance, if the descender length of P is short, it is hard to distinguish from D. This kind of ascender and descender length doesn't matter in square characters, such as the alphabetic language Korean and logographic languages like Chinese and Japanese, because they need more complicated systems to standardize their complex characters. Ascender and descender lengths could not simply dispel the confusions of “日” (sun) and “日”(say), “未”(have not) and 未 (end), “人”(people) and “入”(enter), “戊”(Yue, an ancient weapon) and“戊”(Wu, the fifth of the ten Celestial Stems), “戍”(garrison), and “戌”(Xu, the eleventh of the Earthly Branches) in Chinese and Japanese, or “모”(mo) and “보”(bo) in Korean. The consistency of the characters is important for these languages.⁹

In Japanese, font is determined by the width of ‘Square canvas’(仮想ボディ), which is the common size for all characters and slightly bigger square of a character.¹⁰

Common traditional Chinese characters are around 4800 in Hong Kong¹¹ and

⁸ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p129

⁹ Zhan Yinxin, “The Principle and Font of Chinese Character”, translated by author, in *Applied Linguistics*, Volume No. 1 of February 2008

¹⁰ Yasuo Suzuki, translated by Erika Fujiwara, <http://www.kanazawa-bidai.ac.jp/~suzuki/Q/edu/typo/01.html>

Original text:文字サイズは欧文の場合アセンダからディセンダまでの高さで指定するのに対し、和文フォントは仮想ボディの幅できめる。

仮想ボディ:字面よりやや大きな共通サイズの正方形。

¹¹ Hong Kong Education and Manpower Bureau: *Standardized Forms of Common Chinese Characters* (《常用字字形表》), 2000

Taiwan¹², and common simplified Chinese characters are around 3500 in Mainland China.¹³ It's much more than around 2000 common Japanese characters, including 1945 Chinese characters and 96 Kana¹⁴, so the Chinese character standardization system is more complicated.

The same strokes, in the same normal characteristic conditions, except length and width, their main appearance should be uniform, in addition, in the case of the same mutated characteristic conditions, their mutation should be uniform, and the same combination of strokes in the same characteristic conditions, the way they are combined should be uniform. If the character consists of either one part or a combination of multiple parts, both strokes and different parts should be unified.”¹⁵

A similar case is for all capitals, which is only used for alphabetic characters, since there is no “Caps Lock key” in logographic language at all. However, a case could be considered as case sensitive in Chinese, which is the numbers. For instance, the capitalization figure of “1” is “壹” in Chinese while the lower case character is “一”.¹⁶ It is the same for typography in upper caps which emphasizes authority more than legibility in both alphabetic language and the logographic language Chinese, such as “STOP”, “WARNING” and the capital Chinese numbers in formal

¹² Taiwan Ministry of Education, *Chart of Standard Forms of Common National Characters* (《常用國字標準字體表》), 1996.

¹³ State Language Affairs Commission of China, *Chart of Common Characters of Modern Chinese* (《现代汉语常用字表》), 1988.

¹⁴ Japanese Ministry of Education: *jōyō kanji* (「常用漢字」), 1981.

¹⁵ Fei Jinchang and Xu Lili, “Research of Standardization of Printed Songti of Normative Chinese Characters”, translated by Guo Songxi, in *Applied Linguistics*, Volume No. 3 of August 2003.

Original text: (1)同一笔画形状，在相同的正常字形环境中，除了长短粗细外，其主要外形特征应该统一；(2)同一笔画形状，在相同的变异字形环境中，除了长短粗细外，其变形特征应该统一；(3)同一笔画组合，在相同的字形环境中，除了长短粗细外，其组合方式应该统一；(4)单个部件独立构字或多个部件合成组字时，构字部件在相同的字形环境中，除了高矮宽窄外，其构成笔画的形状和笔画之间、部件之间的组合方式应该统一。

¹⁶ Online Xinhua Dictionary: <http://xh.5156edu.com/html3/7516.html>.

documents, especially in the financial field.¹⁷

1.1.2 Pictogram

Pictogram is prior to typography in signage, as a result of the universality and concision.¹⁸ Thus, conciseness, impressiveness and convention are required for pictograms.¹⁹ The best pictographic signage has to meet the criteria in two aspects.²⁰ First, it must be understood immediately for the users who see it for the first time. Second, it must be remembered in the users' minds, in order that users can recognize it as soon as they see the signage. Convention is a good solution for conciseness and also time-saving to recognize and remember. Nevertheless, this is not easy to achieve because of cultural diversity. For example, it is quite clear for most of the intended users that the pictographic signage for ticket office in Swedish railway stations indicates ticket selling (see figure 1). However my father interpreted it as a man cutting another man's arm, when he saw it for the first time, since the size of the ticket is exaggerated in order to be more accessible in this signage, which makes it look exactly like a Chinese kitchen knife.

1.1.3 Direction guide

As direction guides, arrows including directive graphic footprints on the floor, and colourful guidelines are applied to indicate the directions. The former one is used for one way direction and the latter one is bidirectional, connecting two places in the building.²¹

¹⁷ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p127.

¹⁸ Andreas Uebele and Karin Schmidt-Friderichs, *Signage Systems and Information Graphics A Professional Sourcebook*, Thames & Hudson Ltd, 2009, p60.

¹⁹ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p137.

²⁰ Ibid, p137.

²¹ Ibid, pp143-151.

1.1.4 Cartography

In Cartography, maps are defined by the way they deal with three abstractions: projection, scale, and signature standing for the objects in real world.²² It is important to depict the location of the intended user. Direction signs in maps are also essential some times: in the cities with a rectangular system of city planning, such as Beijing and Kyoto, geographical direction helps a lot in showing the way, because it is easy to figure out north and south, east and west. In these cities, it is really easy to arrive at the destination after acquiring the direction of your destination.

Take the address system in Kyoto as example: The address of your destination in Kyoto is “AB 上り”. A is the name of an east-west avenue and B is the name of a north-south street. “上り” means in the north. Thus, your task is to find out the cross of Avenue A and Street B, and then go along with the northern direction until your destination appears. On the contrary, it is rare to see geographical direction signs in Europe, at least in public urban spaces.

1.2 Form

Contents determine the type of signage, while form plays an important role in the accessibility. Colour, shape, font, size, and space are the basic elements of signage form design.

1.2.1 Colour

Colours are instrumental to most kinds of visual signage. “The physical fact is that graphic design is all about variations in colour on a surface. Colours can be seen from longer distance than other graphic elements.”²³ Meanwhile, colour does not

²² Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p153.

²³ Ibid, p161.

work alone, without the combination with form and other factors.²⁴ There are three main functions of colour: attracting the user, distinguishing from other signage, and highlighting the content by colour contrast.²⁵ “Human beings do not have the ability to register colours”²⁶, so colour contrast is significant in highlighting the information that the signage try to deliver and distinguish from the background.

Colours have their own language. Sometimes they are universal but sometimes distinct in different cultures. This will be discussed in the third chapter (see section 3.3.3). The rank of colour contrast is universal since it is based on human physiological sight. However, the colour selection is not dogmatic. For example, red is a very noticeable colour for humans in most cases, but is not useful during a fire accident. Thus, the signage for “EXIT” is always with a green background.²⁷

The diagram below demonstrates the different levels of legibility in colour contrast by the degree of light reflectancy (LR). The numbers in the table present the LR extent, through the formula $\frac{\text{Darker Value} - \text{Lighter Value}}{\text{Darker Value}} \times 100 = \text{LR}$. The acceptable brightness differential we get from this formula should be 70 percent or higher.²⁸ The numbers of the colours in the first line present the light reflectancy percentage of each colour.

²⁴ Andreas Uebele and Karin Schmidt-Friderichs, *Signage Systems and Information Graphics A Professional Sourcebook*, Thames & Hudson Ltd, 2009, p60.

²⁵ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p161 and Andreas Uebele and Karin Schmidt-Friderichs, *Signage Systems and Information Graphics A Professional Sourcebook*, Thames & Hudson Ltd, 2009, pp60-61.

²⁶ Andreas Uebele and Karin Schmidt-Friderichs, *Signage Systems and Information Graphics A Professional Sourcebook*, Thames & Hudson Ltd, 2009,p60.

²⁷ Paul Arthur and Romedi Passini, *Wayfinding: People, Signs, and Architecture*, McGraw-Hill Ryerson Limited, 2002, p179.

²⁸ Ibid, p179.

LR	61	85	19	8	14	30	18	17	34	15	71	13
Red	78	84	32	38	7	57	28	24	62	13	82	0
Yellow	14	16	73	89	80	58	75	76	52	79	0	
Blue	75	82	21	47	7	50	17	12	56	0		
Orange	44	60	44	76	59	12	47	50	0			
Green	72	80	11	53	18	43	6	0				
Purple	70	79	5	56	22	40	0					
Pink	51	65	37	73	53	0						
Brown	77	84	26	43	0							
Black	89	91	58	0								
Grey	69	78	0									
White	28	0										
Beige	0											

Do not use

Acceptable

Environmental brightness also influences the accessibility of colour contrast. The diagram below shows the priority of the colour contrast in high level, middle level, and low level for three different brightness conditions.²⁹

Optimal Ranking	High bright	Middle bright	Low bright
1	Contrast	Contrast	Contrast
2	Contrast	Contrast	Contrast
3	Contrast	Contrast	Contrast
4	Contrast	Contrast	Contrast

²⁹ Cheng Bin, "The Barrier-free Designing Research of Marking System for the Senior Citizen Housing", in *Sichuan Building Science*, Volume 32, 2006.

1.2.2 Shape

According to their information contents, typographic and map signages are mostly in the shape of a square, whereas direction guide signages are in the shape of an arrow or a line. The shape of pictograms is more liberal and diverse. Circle, triangle, and square shapes are more commonly used, compared with the diamond, oval and irregular shapes.³⁰ The standard of signage shape influences signage design worldwide, which was established by the Canadian Standard Association in the mid-70s.³¹ The circle, represented by the diagonal slash, signifies restriction and inhibition. The triangle, marked by its sharpness, is often applied to indicate warning. The square, on the other hand, which is employed to deliver the information of approval, is the most prevalent of all the above shapes; however, it is the only unique shape that is available after supervision and notification have claimed the circle and the triangle.³²

1.2.3 Font

In typography signages, font influences a lot in legibility. Nevertheless, there are totally different font systems in different languages. Taking a logographic language, such as Chinese, and an alphabetic language, English, as an example, there are characters in different fonts in the diagram below.

From the comparative diagram below, it is obvious that the common features of the optimal fonts are bold, vertical and sans serif.

³⁰ Paul Arthur and Romedi Passini, *Wayfinding: People, Signs, and Architecture*, McGraw-Hill Ryerson Limited, 2002, p171.

³¹ Ibid, p171.

³² Ibid, p171.

Name of font	Typeface	Name of font	Typeface
New Songti	售票处	Syntax, Lower case	ticket office
New Songti, Italic	售票处	Syntax, Upper and lower case	Ticket Office
New Songti, Bold	售票处	Syntax, Caps,	TICKET OFFICE
Songti, Bold	售票处	Syntax, Caps, Italic	TICKET OFFICE
Heiti, Bold	售票处	Syntax, Caps, Bold	TICKET OFFICE
Fangsong, bold	售票处	Frutiger 67, Caps	TICKET OFFICE
Kaishu, bold	售票处	News Gothic, Caps	TICKET OFFICE
Xingshu, bold	售票处	Palatino, Caps	TICKET OFFICE
Xinwei, bold	售票处	Interstate, Caps	TICKET OFFICE
Lishu	售票处	Helvetica, Caps	TICKET OFFICE

1.2.4 Size

Apparently in common signage conditions, as long as the visual field is substantial and unobstructed enough, the bigger the size is, the better the accessibility is. In order to keep the environmental aesthetics and reduce costs, the size of signage has to be limited to some extent.³³

Generally speaking, the size of signage should be 1/300 to 1/600 of the distance between the signage and the observer.³⁴ For example, the distance between the gate and the signage is 60m, and the size of the information is supposed to be from 10cm to 20cm. However, the proper size of signage for visually impaired users or foreign users who are not familiar with the local signages is different from normal users. This issue will be discussed in the second chapter.

³³ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p168.

³⁴ Edo Smitsluijzen, *Signage Design Manual*, Lars Muller Publishers, 2007, p317.

1.2.5 Space

Space is essential for accessibility and legibility in typography. It is distinguished by different languages again in typographic signage. In alphabetic languages, both the spaces between words and letters are important whereas the spaces between characters and structures play the key role in square character languages, such as Korean and Chinese. Computers solve the space problem perfectly in alphabetic language. “The VisuCom 10-unit inter-line spacing system is extremely easy to use and guarantees consistent vertical spacing of all lines on a sign.”³⁵

The principle of this system: The line or “message module” is 10 units high and that the cap-height is 6. Cap-height is 1.5 units from the top of the “message module” and x-line is 2.5 units from the bottom. The space between the x-line of one message and the top of the message below is 4 units.³⁶

In this system, the confusion of “rn” and “m” is easily solved and it is hard to combine two words into one word.

In Chinese, especially in ancient Chinese writing, spaces between characters could mislead the meaning of the whole sentence.

—	—
合	人
酥	—
	口
A box of cookies	酥

There is a famous story in the classical Chinese novel *Romance of the Three Kingdoms*, written by

Everyone a bite of cookies

LUO Guanzhong. YANG Xiu shared the king CAO Cao’s cookies with the others, because he insisted the sign “a box of cookies” on the cookie box was “everyone a

³⁵ Paul Arthur and Romedi Passini, *Wayfinding: People, Signs, and Architecture*, McGraw-Hill Ryerson Limited, 2002, p167.

³⁶ Ibid, p167.

bite of cookies” (see the Chinese characters above). At that time, the third century, Chinese was written from up to down. There are three characters in the former but five in the latter. This confusion is avoided in computer typing.

1.3 Positioning

How to present the designed signage in reality is mainly dependent on conditions of the environment.³⁷ Location and lighting are the two key factors of signage positioning.³⁸

First of all, signage should be put in the location where people need information. As Per Mollerup summarized, there are four situations in which people need signage³⁹:

When they must choose among alternatives,

When they are in new situations,

When they are unsure or insecure,

When their actions will affect safety.

Signage is supposed to be positioned in the places where these situations are happening.

Secondly, in order to attract and present the information to more people, eyelevel is an important element. Generally speaking, average eyelevel is 160cm when people are standing up and looking ahead, but it is not a good location for signage height, because in most cases our eyesight is not straight forward.⁴⁰ The optimal locations in the unobstructed place near to the users, for example for room signs at the door, it is

³⁷ Chris Calori, *Signage and Wayfinding Design : a Complete Guide to Creating Environmental Graphic Design Systems*, Wiley, 2007, p76.

³⁸ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p179.

³⁹ Ibid, p179.

⁴⁰ Andreas Uebele and Karin Schmidt-Friderichs, *Signage Systems and Information Graphics A Professional Sourcebook*, Thames & Hudson Ltd, 2009, p.12.

145cm suggested by Andreas Uebele and Karin Schmidt-Friderichs⁴¹ and 170cm suggested by Per Mollerup.⁴² When the signage is facing towards a group of users, such as in the airport, the bottom height of the sign should be between 210cm and 240cm.⁴³

Thirdly, signage could not be seen without any lights, including sunlight, candle, fluorescence and so on. Signs can be lit both externally by environmental light and internally by themselves, in the way of fluorescent tubes or filament bulbs.⁴⁴ Light is related to the colour contrast thus it influences the accessibility as mentioned before. It is also a very important element to influence the accessibility for “legally blind” people, which refers to those with visual impairment. This will be discussed in the next chapter.

⁴¹ Andreas Uebele and Karin Schmidt-Friderichs, *Signage Systems and Information Graphics A Professional Sourcebook*, Thames & Hudson Ltd, 2009, p.12.

⁴² Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p181.

⁴³ Ibid, p185.

⁴⁴ Ibid, p190.

Chapter 2. Signage for disadvantaged groups

Before the discussion about the signage for disadvantaged groups, we have to clear the definition of the disadvantaged group. In this research, disadvantaged groups are only referring to the people who are disadvantaged during the signage approach.

Disadvantaged groups are defined into two categories in this thesis: physically challenged groups and non-physically challenged groups. The former one mainly consists of senior citizens, people with perceptual impairment and mobility impairment. The latter, mentally and culturally challenged groups, mainly includes cognitive impaired users, children, illiterate, culturally discriminated groups.

However, these two categories could overlap sometimes, for example children could be both physically challenged and culturally challenged when they are immature. Moreover, as Paul Arthur and Romedi Passini pointed out, “Nobody is always ‘unimpaired’.”⁴⁵ Because everyone could be classified as mobility impaired when they are carrying heavy luggage or they become illiterate when travelling in a strange country without any local language knowledge. Sometimes, anger, confusion, threat, and grief may reduce the cognitive ability.⁴⁶

2.1 Physically challenged groups

The groups, who are physically challenged only during image signage access, are defined as physically challenged groups in this thesis. It means the groups whose

⁴⁵ Paul Arthur and Romedi Passini, *Wayfinding: People, Signs, and Architecture*, McGraw-Hill Ryerson Limited, 2002, p63.

⁴⁶ *Ibid*, p63.

impairment doesn't affect their signage approach such as arm impaired people, and the groups who don't have capacity for action such as vegetative patients, are not involved in this research.

2.1.1 Perceptual challenged group

Among all perceptual impairments, only visual impairments and hearing impairments influence the access to signage.⁴⁷ According to the statistics of World Health Organization of the United Nations, about 314 million people are visually impaired⁴⁸ and 278 million people are estimated to have moderate to profound hearing loss in both ears⁴⁹.

2.1.1.1 Visually challenged groups

Visual impairments, blindness and hearing impairments are the most obvious and the most serious perceptual impairments in the affection of approaching signage. There are three subcategories in visual impairment: loss of general sharp vision, including poor eyesight such as myopia, hypermetropia, astigmatism, nyctalopia and so on, loss of vision in particular areas, such as central field loss, peripheral field loss and colour deficiency.⁵⁰ The blind are not involved in this thesis since this project is about visual signage.

Signs must be more legible, visible, comprehensive and easy to find for visual impaired group, since they couldn't be aware of the situation as well as others could.⁵¹ These criteria help signages concern and take care of visually impaired users more, for all types of signage:

⁴⁷ Edo Smitshuijzen, *Signage Design Manual*, Lars Muller Publishers, 2007, pp36-37.

⁴⁸ Statistics from World Health Organization of the United Nations, <http://www.who.int/mediacentre/factsheets/fs282/en/index.html>.

⁴⁹ Statistics from World Health Organization of the United Nations, http://www.who.int/features/factfiles/deafness/01_en.html.

⁵⁰ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p196.

⁵¹ *Ibid*, p193.

➤ Strong colour contrast

The colour contrast priority mentioned earlier in the last chapter is not suitable for colour deficiency group. There are different types of colour deficiency, stating as total colour blindness and partial colour blindness respectively.⁵² For some of the former, they could only recognize black, white, and the shades of grey. Brightness is more important than colour for them. Partial colour blindness is mainly constituted of red-green deficiency which is dichromacy (protanopia and deuteranopia) and anomalous trichromacy (protanomaly and deuteranomaly), and blue-yellow deficiency which is dichromacy (tritanopia) and anomalous trichromacy (tritanomaly).

Figure 2 depicts the colours of the rainbow viewed by different colour deficiency groups. Comparing this figure and referring to the colour contrast diagram in the second chapter, it is obvious that the colour contrast looks different between people without colour deficiency and the colour deficiency groups. Yellow background with black foreground is the sharpest colour contrast for all the people, although it turns into the contrast of light pink and black for blue deficiency group. White background with red foreground is not a good choice for green deficiency group. Similarly, red signages in the loess area are hard to recognize for the red deficiency group. These signages should be reduced in the signage application, according to the local conditions.

➤ More legible font

Treatments such as vision correction operations and wearing glasses are helpful for some people with visual impairment. Unfortunately, there are people who can not be cured by any kind of treatment.⁵³ Eyesight declination is unavoidable for everyone.

⁵² Kokotailo R, Kline D. "Congenital Colour Vision Deficiencies." University of Calgary, Department of Psychology, Vision & Aging Lab. Retrieved September 29, 2006, <http://psychology.ucalgary.ca/pace/VA-Lab/colourperceptionweb/congenital.htm>.

⁵³ Edo Smitshuijzen, *Signage Design Manual*, Lars Muller Publishers, 2007, p34.

As Edo Smitschuijzen describes vividly in figure 3, eyesight of senior citizens declined seriously. What is crueler is that their eyesight can not be corrected by any means, because of the organ aging.

Optimal font for senior citizens might be different from the other users. Take Chinese typography as an example, bold New Songti rather than Heiti is the optimal font in Chinese signage.⁵⁴

➤ Proper size and space

Another significant factor for eyesight declined groups is the bigger size and bigger spaces between words and letters. Nevertheless, it is hard to balance among budget, aesthetics and increasing size and space of signage. Accessibility of signage is the most important, especially in the public areas where senior citizens or visually impaired users need more guidance.⁵⁵

➤ Bright environment

Adequate light level determines the vision ability. Reduced eyesight requires lighter conditions. After studying the research by Richesin and the Transportation Research Board by the National Research Council of Canada, Paul Arthur and Romedi Passini conclude: “Optometrists say that a 50-year-old needs almost twice as much light to see clearly as does a 20-year-old. People who are 70 or older need four times as much light.”⁵⁶

Another considerable aspect is the unification of the environment brightness. As we know from physiology, strong light contrasts caused temporary blindness. When we

⁵⁴ Cheng Bin, “The Barrier-free Designing Research of Marking System for the Senior Citizen Housing”, in *Sichuan Building Science*, Volume 32, 2006.

⁵⁵ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p198.

⁵⁶ Paul Arthur and Romedi Passini, *Wayfinding: People, Signs, and Architecture*, McGraw-Hill Ryerson Limited, 2002, p167.

are moving from light to dark or dark to light, we suffer from temporary blindness. Senior citizens need longer time on dark adaptation. The chart (figure 4) demonstrates dark adaptation as a function of age and time in dark, from which we can see the disadvantage of senior citizens' eyesight.⁵⁷

According to physiology and Gestalt psychology experiment, it is hard to keep balance when we are temporary blind⁵⁸. This temporary blindness is very dangerous for senior citizens. Thus, consistency and high level of the brightness environment is very important in the signage approach of disadvantaged groups. In a closed architecture, the light at the entrance is the connection of the inside brightness and the outside brightness, which is very important in dark adaptation.

2.1.1.2 Hearing challenged group

Hearing challenged people, is another huge group who need to be concerned by signage particularly.

➤ Sound replace

Visual signage has to replace the role of sound for them. Since alarm and announcement do not work well for the hearing challenged groups, some audio information has to be transferred into the visual form, pictograms or typography. For example, signages can present the repeating announcements of "Dear passengers please take care of your belongings" in airports. This kind of signage functions everywhere no matter if there is audio equipment or not (see figure 5 and 6).

2.1.2 Mobility challenged group

The wheelchair is one of the most commonly used assistive devices for mobility challenged people. An estimated of 1% of the world's population, which is over 65

⁵⁷ Richard Schulz and Timothy Salthouse, *Adult Development and Aging: Myths and Emerging Realities*, Pearson Education, 1998, p84.

⁵⁸ Kurt Koffka, *Principle of Gestalt Psychology*, Kegan Paul, Trench, Trubner & CO., Ltd, 1935, p389.

million people, need wheelchairs.⁵⁹ For the other temporary or permanent mobility challenged people, they can actually walk but with such difficulties as walking with crutches, pushing a pram, carrying heavy luggage, and so on. All these people, sometimes including you and me, compose the huge mobility challenged group.

➤ Proper position for different eyelevel users

According to statistics, the average eyelevel of people standing up is around 160cm, whereas it is 125cm for people who sit in wheelchairs. The cone of vision of normal eyesight is 55 degree.⁶⁰ The position of signage should be set according to both standing up users and sitting down users. Taking into considerations of all users of different eyelevel, 145cm is a better choice for the position of signage at door, rather than 170cm (see section 1.3).

Signages on the floor, such as guiding direction arrows, have to be longer or wider in order to apply to the perspective of the users observing from lower eyelevel.

The screening mirror effect or the veiling glare effect is another problem often encountered by mobility challenged groups.⁶¹ On one hand, it is not easy for them to manage to get rid of the glare effects as other people do. On the other hand, the difference in visual angles between wheelchair users and standing up users determines the complicated positioning of signage, to avoid light reflection. Sometimes this problem is complex to solve because of the diverse light environment in different places.

⁵⁹ Statistics from World Health Organization of the United Nations, <http://www.who.int/disabilities/publications/technology/wheelchairguidelines/en/>.

⁶⁰ Edo Smitshuijzen, *Signage Design Manual*, Lars Muller Publishers, 2007, p160.

⁶¹ Paul Arthur and Romedi Passini, *Wayfinding: People, Signs, and Architecture*, McGraw-Hill Ryerson Limited, 2002, p73.

2.2 Non-physically challenged groups

Some of the disadvantaged groups are not physically challenged, but instead they are mentally, culturally and socially challenged. It's hard to calculate the number of people who are mentally, culturally and socially challenged during the signage access. Everyone could experience such challenge as cognitive impairment because of extreme anger or anxiety, travelling in a foreign country without local language knowledge, or discrimination by the majority in some cases.

2.2.1 Cognitive impaired group

Some cognitive impairment is permanent because of illness, genetics, and age while some impairment is temporary, caused by anxiety, stress, anger, grief and so on. All these incentives arouse inappropriate decisions and damage to normal capabilities. Inaccessibility of signage caused by cognitive impairments can be reduced in two aspects:

On one hand, high simplicity and self-evidence of signage are required to increase the accessibility.

➤ Simple and explicit words

In typographic signage, small, simple, and explicit words function well both in comprehension and legibility, rather than complicated and ambiguous words. Obviously, the signage in figure 7 is more accessible than figure 8, although they are indicating the same information: Please take care of your belongings.

On the other hand, calming and balanced signage is advantageous to users' emotions. "Since we depend on so much for our very balance on a fixed framework, any instability or change of it will have profound effects on our behaviour."⁶² A fixed

⁶² Kurt Koffka, *Principle of Gestalt Psychology*, Kegan Paul, Trench, Trubner & CO., Ltd, 1935, p390.

framework means a fixed and balanced signage, which means a good figure here. A better figure is constructed by a good shape, which is “more articulated and coloured than poor shapes.”⁶³

➤ Symmetric shape

As M. Wertheimer defined, symmetry is one of the properties of *Law of Prägnanz*, which is the fundamental principle of Gestalt psychology⁶⁴. Symmetric signage as a balanced physical field has an effect on the psychological field.⁶⁵ It is impossible and unnecessary to design signage into symmetry, but we can layout the information in the center at least, which is a way of achieving symmetry. As Kurt Koffka pointed out, “the balance of the whole field would be most stable if the figure were in the center, since this is the condition of greatest symmetry”⁶⁶

➤ Positive emotion colours

Based on the results obtained from Naz Kaya and Helen H. Epps’ experiment, green is associated with positive emotions mostly (95.9%), including the feeling of relaxation, followed by happiness, comfort, peace and hope. For the achromatic colors, white attained a large number of positive responses (61.2%), compared with only 19.4% and 7.1% positive responses for the colors of black and gray, respectively.⁶⁷ Although white background is not as functional as a black background, it can be used in the signage with dark and gloomy environments to impact users’ emotion positively.

⁶³ Kurt Koffka, *Principle of Gestalt Psychology*, Kegan Paul, Trench, Trubner & CO., Ltd, 1935, p206.

⁶⁴ Ibid, p110.

⁶⁵ Ibid, p43.

⁶⁶ Ibid, pp311-312.

⁶⁷ Naz Kaya and Helen H. Epps, “Color-emotion Associations: Past Experience and Personal Preference”, *Color and Paints*, Interim Meeting of the International Color Association, Proceedings, 2004, p32.

2.2.2 Illiterate group

For all of the readers of this thesis, the situation where we become illiterate is when travelling in other countries. Sometimes we know a little about the language, sometimes we are totally illiterate and don't know the language at all. In the former situation, since we are not familiar with the language on the signage, the legibility of the language is influenced by the size of the signage.

There is also priority in typography signage; international punctuation is legible for most users. For example, the signage for the big letter "i" presents information centers in many countries. In most of these countries, "information" in their languages also start with "i". However, the information desk signage is always "?" in China (see figure 9), since the word for "information center" in Chinese is "问讯处", nothing related with "i". Question mark "?", as an international punctuation, is presenting "question".

However, this is not the majority of the illiterate group. Data in a literacy report from the United Nations Educational, Scientific and Cultural Organization claimed that today, in addition of children of preschool age and 100 million children have no access to school; there is one illiterate in every five adults.⁶⁸

There is no doubt that typographic signage has little or even no effect on this 20 percent of adults worldwide and numerous foreign travelers. Symbolic signage, including pictograms and direction guides are superior in front of the illiterate group (compare figure 6 and figure 8). Such as Ellen Lupton summarized, Otto Neurath the initiator of Isotype (International System of TYpographic Picture Education) pointed out that "vision is the saving link between language and nature, and that, hence, pictorial signs would provide a universal bridge between symbolic, generic language

⁶⁸ Report from the United Nations Educational, Scientific and Cultural Organization, <http://www.unesco.org/en/literacy/>.

and direct, empirical experience”⁶⁹.

However, pictographic signages also have their own problems. The limits in expressiveness and ambiguity caused by diverse cultural background including two main shortcomings of pictographic signage ⁷⁰: first, proper nouns, abstract information and complex meanings are isolated from pictograms. The shape of the Mickey Mouse could present Disneyland but there is no way to present Los Angeles in a simple signage (see figure 10). Second, some information is hard to be transferred into images, such as “Please flush the toilet” is hard to be presented in pictograms. Thus it is always presented typographically worldwide (see figure 11). Figure 12 is an intelligent and considerate creation for local residents in Malaysia but confusing for others. Can you guess what it means? It means there is a shelter for motorcycle drivers 200 meters ahead. It rains too much in Malaysia, thus it brings a lot of troubles for motorcycle riders. Motorcycle riders are somehow disadvantaged compared with car drivers. This issue will be discussed in the following section.

2.2.3 Minority group

The concept of minority discussed in this thesis, is not defined by the amount of population, but by the evaluation of their condition. They could be the minority of their population, and they could also be opposite to the so called mainstream of the society. Motorcycle riders are defined as disadvantaged group according to their driving environment, which is more dangerous, more uncomfortable and more influenced by the weather and road conditions rather than car drivers. Animals are also included in this definition, since some times they are injured by humans (see figure 13), although the signage users are human instead of animals themselves.

The conditions of minority are diverse in different cultures and different areas.

⁶⁹ Ellen Lupton, “Reading Isotype” in *Design Discourse: History, Theory, Criticism*, edited by Victor Margolin, University of Chicago Press, 1989, p145.

⁷⁰ Per Mollerup, *Wayshowing: A Guide to Environmental Signage Principles and Practices*, Lars Muller Publishers, 2005, p137.

Potential victims of the offence from the others, such as violence, indecency, sexual harassment and natural disasters and victims of social discrimination are different worldwide. Correspondingly, signages for them are diverse all over the World.

Chapter 3. Signage for disadvantaged groups in different cultures

Along with the process of globalization, more and more international signages are applied all over the world, such as the signage of a person in a wheelchair indicating physically challenged groups (see figure 14) and the signage for a cross denoting medical assistance. The international signage for “disabled” is discussed in the first section of this chapter.

However, there are still substantial unique signages due to cultural diversity. In different regions, the minority groups are different. In the society where robbery and theft happen frequently, there is signage for “beware of your belongings” for the potential victims (see figure 6); there is signage for exhibitionism for passengers, to warn them that exhibitionists always hang around in this area (see figure 16); there is discriminatory signage for different religious beliefs (see figure 17); there is also signage warning people to be vigilant of terrorists in the areas menaced by terrorism (see figure 18), etc. Due to different cultural background, signages with same information are presented differently. A distinct example is the typographic-pictographic signage for “No drunk driving” in China (see figure 19). It is the combination of typography and pictogram. The cultural diversity behind the signages is discussed in the last three sections.

3.1 International signage for “Disabled”

The most famous signage for disadvantaged groups, or rather disabled groups, is the signage of a person in wheelchair (see figure 14). It was originally created in the year of 1969. In that year, the world focused on the issues of the physically challenged

groups, with the 11th World Congress on Rehabilitation of the Disabled.⁷¹ The International Society for Rehabilitation of the Disabled subcommittee conducted an enquiry to find a device suitable for international use.⁷² Figure 15, designed by a Danish student Susanne Kofoed, is the most successful among all the applications.⁷³ It is also the prototype of the contemporary international “Disabled” signage.

Signage presents the three dimensional space by two dimensions. The designer chooses the profile, which is the most representative and recognizable figure of wheelchair users, rather than the angles from their front or back. The image is constituted of six lines: the vertical (a little bit lean) line, the horizontal line above, the horizontal line in the middle, two oblique lines in the below corner representing the upper body, arm, thigh, shank and foot. Or else, they can be interpreted as a wheelchair: the back, arm rest, seat, bracket and footboard. The three quarters of a circle represents the wheel of a wheelchair.

However, the jury committee was not satisfied with this design, thus they improved the signage by adding a head (see figure 14). As Gestalt psychology claimed, the whole is greater than the sum of the parts.⁷⁴ Compared with the original one, the new signage is not only the addition of a head, but also “a weak and ineptly modified version of the original.”⁷⁵ The head vitalizes the image by enhancing the interpretation of a person in wheelchair while eliminating the possibility of the wheelchair interpretation. At the same time, the message of danger and weak is presented by “a person on an unstable wheel”. From basic physics knowledge and

⁷¹ Paul Arthur and Romedi Passini, *Wayfinding: People, Signs, and Architecture*, McGraw-Hill Ryerson Limited, 2002, p173.

⁷² Selwyn Goldsmith, *Designing for Disabled*, Royal Institute of British Architects, London, 1976, p56.

⁷³ *Ibid*, p56

⁷⁴ Kurt Koffka, *Principle of Gestalt Psychology*, Kegan Paul, Trench, Trubner & CO., Ltd, 1935, p176.

⁷⁵ Selwyn Goldsmith, *Designing for Disabled*, Royal Institute of British Architects, London, 1976, p353.

daily experience, it is dangerous to sit on a circle.

This signage is very successful according to the rules of Viennese School: not providing more information after three glances.⁷⁶ For the first glance, this signage is signaled by its Isotype style, which signals it as public information rather than advertisement or decoration. Secondly, this signage delivers the message of “handicapped man”, which represent “disabled” group internationally. Finally, the concept of this signage stands for the access or assistance for disabled people.⁷⁷ It is hard to find more details after three glances.

This signage is not successful in a way since it represents only groups with severe mobility impairment, instead of all kinds of disabled groups. However, as Selwyn Goldsmith indicates, another function of this signage is to arouse the concern of the whole society:

[...]to make an impression on normal able-bodied people. The intention is that normal people should, by being confronted by unambiguous signs, be encouraged to think about the nature and implications of disablement, and should develop a more realistic appreciation of the circumstances of disabled people.⁷⁸

This revised version was finally established in 1969 and applied in many places, especially in “barrier-free” architectures.

⁷⁶ Frank Hartmann, “Visualizing Social Facts: Otto Neurath’s ISOTYPE Project”, in *European Modernism and the Information Society: Informing the Present, Understanding the Past*, edited by W. Boyd Rayward, Ashgate Publishing Limited, 2008, p286.

⁷⁷ Ellen Lupton, “Reading Isotype” in *Design Discourse: History, Theory, Criticism*, edited by Victor Margolin, University of Chicago Press, 1989, p149.

⁷⁸ Selwyn Goldsmith, *A symbol for disabled people: Symbol Application Manual*, Royal Institute of British Architects, 1969, p28.



3.2 Signages for priority seats





Priority seats implicate the disadvantaged group in a particular space, for example in mass transit system, such as subways, metros, busses, and regional trains. The image of senior citizens, pregnant women, mobility impaired people, are very common in priority seat signages, but sometimes they are presented differently worldwide.

3.2.1 Common priority seats

In this section, we are going to compare the signages in London Underground (see figure 20) and in Singapore SMRT (see figure 21). Both of them are in typography and with three pictograms at the same time, delivering the same message that the some disadvantaged groups have priority for seats than do able-bodied people.

The six icons of these images are described, interpreted and compared in the diagram below:

	Description	Interpretation
	A person with breast and skirt = women A big belly woman =pregnant	Profile is a good angle to outline pregnant women: breast and big belly. From the bottom of this signage, it seems that this pregnant woman is wearing high heels. This signage also implies the tradition of “lady first”. The first two images are woman, followed by a senior man signage.
	A woman with a baby in arm = people with babies	These three people are all presented in negative form (white glyph on a blue field) whereas the baby is positive, distinct from the negative woman. The woman in this signage looks strong since she can use one hand to hold a baby.

	<p>A person with a walking stick =mobility impaired people</p>	<p>There are lots of features that can present aging from appearance: wrinkles, white hair (which is not obvious for blond people) and so on, holding stick is not the only feature.</p> <p>Holding a walking stick is even not necessary for all the senior citizens, but priority seats are for the mobility impaired senior citizens.</p>
	<p>A person with skirt =women A big belly woman=pregnant</p>	<p>It might be a coincidence that pregnant women's breasts as an important gender trait are not emphasized at all in priority seat signages in some Asian countries such as China, Japan, Korea and Singapore. It might be because Asian women are not as buxom as Caucasians.</p>
	<p>A person holding a small person = people with babies</p>	<p>Gender trait is not emphasized in this image. There is a gap between the baby and the man, but it is not misleading observers that the man is holding the baby by only arms. It is obvious that the baby is sitting on the man's knees, just like the man is sitting on the seat.</p>
	<p>A person with a walking stick and crookback =senior citizens</p>	<p>This image is at the first place in the whole signage. The implication is the Confucian background. Three quarters of Singaporean are originally Chinese.⁷⁹ Not only Singaporean are influenced by Confucian, but also Singaporean government has been promoting movements, such as a week for respecting and honoring the senior, to disseminate Confucian since the late 1970s.⁸⁰</p>

⁷⁹ Statistic from US Central Intelligence Agency, <https://www.cia.gov/library/publications/the-world-factbook/geos/sn.html>.

⁸⁰ Wang Wenqin: "Three features of Singaporean Confucianism", translated by author, <http://www.sginsight.com/xjp/index.php?id=4614>.

		<p>Crookback is not indignity in Confucian culture. Crookback always appears in the priority seat signages in Confucian counties such as China and Japan (see figure 22 and 23).</p> <p>Senior image presented before the pregnant woman and people with babies, is not a coincidence in a society considering “there should be a proper order between seniors and juniors(长幼有序)” as one of the most basic ethic principles.⁸¹ In Chinese, another name for priority seating is “Seats for senior, weak, ill, disabled, and pregnant people”, senior must be in the first place of the order.</p>
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In the London signage, it is written in typography: “for people who are disabled, pregnant or less able to stand”, which is not the same with the pictographic signage order: pregnant, person with a baby, then mobility impaired. The isolation of linguistic message and iconic message might not be a problem when they are separately self-evident in the signages, such as in this case.

Singapore signage says “Be considerate. Give up this seat to a passenger with special needs.” It is not indicating who these beneficiaries are indeed. In this signage, linguistic message and iconic message complement each other: pictograms explain the signified of the typographic context and the typography expands the disadvantaged groups which are not included in the pictograms, such as the mobility impaired group.

3.2.2 Priority seats for particular minority groups

Besides the common disadvantaged groups including senior citizens, mobility impaired people, pregnant women, and people with babies; there are also special

⁸¹ Mencius: *Tengwen Gong* (《孟子·滕文公上》), <http://www.tianyabook.com/gudian/mengzi.htm>

disadvantaged groups in particular areas.

Figure 24 is the priority seat signage in Brazil. The signified of the first image in this signage is hard to be self-evident. It could be a pregnant woman or an obese person, since there is no gender trait in this image. With the explanation of typographic signage and the comparison of the second image which is a woman with a big belly, it is easy to tell this signage is representing obese people.

Is this signage implying that the obese people in Brazil are more severe than those in the other countries? This question is answered by the statistics from Brazil's Health Ministry: 13% of Brazilian adults are obese, and almost half (47.3%) of adult males and 39.5% of females are considered overweight, according to the study, which was carried out in the year of 2008 among 54,000 people.⁸² There are also bigger seats especially for obese people in Brazil.⁸³

3.3 Gender representation in signages

Gender is a domain where one can examine the ideas surrounding internal and external images.⁸⁴ Gender is even involved in Isotype signage, which eliminates perspective and interior of the objects.⁸⁵ Generally speaking, “in sex/gender systems, physiology, anatomy, and body codes (clothing, cosmetics, behaviours, miens, affective and sexual object choices) are taken over by institutions that use bodily difference to define and to coerce gender identity.”⁸⁶ In signage, gender is defined by

⁸² Andrew Downie and Sao Paulo, *Time*, April. 10. 2009, <http://www.time.com/time/world/article/0,8599,1890260,00.html>.

⁸³ Ibid.

⁸⁴ Michael Forrester, *Psychology of the Image*, Routledge, 2000, p103.

⁸⁵ Ellen Lupton, “Reading Isotype” in *Design Discourse: History, Theory, Criticism*, edited by Victor Margolin, University of Chicago Press, 1989, p152.

⁸⁶ Michael Forrester, *Psychology of the Image*, Routledge, 2000, p103.

cliché, such as person with skirt or dress as a woman, without skirt or dress as a man. (We even don't know if the man is wearing trousers or naked.). However, the characteristics and roles of different gender are the same in signage or other kinds of media.

3.3.1 Male representation

Almost in every culture in the world, males are the dominant and more important gender.⁸⁷ It is also reflected in the visual images. As Michael Forrester depicts, the images of man are always dominant, active and powerful.⁸⁸ Thus, in the signage for disadvantaged groups, they are not the disadvantaged side but the opposite side. In the warning signages, men are always the criminal: terrorists, robbers and exhibitionists.

3.3.2 Female representation

Different from the image and role of a male, the cliché of the weak and passive female image is also reflected in signage: the victims in beware of robbery signages, and the victims in the signages for sexual harassment forbidden (see figure 25).

There is one stereotype and function of female representation that is deficient in signage, compared with other media, which is the object of male desire.⁸⁹ For example, the way of “putting on her face” is an important approach in magazine to attract readers,⁹⁰ but this is not feasible or necessary in signage.

3.3.3 Transgender representation

Transgender is another important gender identity. However, it is not common to see it

⁸⁷ Paul Martin Lester, *Visual Communication: Image with Messages*, Wadsworth Publishing, 2010, p99.

⁸⁸ Michael Forrester, *Psychology of the Image*, Routledge, 2000, p103.

⁸⁹ Sylvia Blood, *Body Work: The Social Construction of Women's Body Image*, Routledge, 2005, p100.

⁹⁰ Michael Forrester, *Psychology of the Image*, Routledge, 2000, p104.

in signage, since there is no need to identify transgender groups in most of the signages: they cannot be pregnant so they lose the opportunity to appear in priority seat signage, their stereotype is not as weak as women so they are not playing the role of victims in signage about robbery, etc.

However, there is a particular signage for them, which is the signage for their own toilet in Thailand. For example, this group, originally called *kathoey* (กะเทย), is an important and plentiful minority group in Thailand. According to the informal estimation by Sam Winter, the number of Thai *kathoey* is as high as 300,000.⁹¹ Due to Buddhist cultural background, which proposes a high value on tolerance, these transgender people are accepted to a greater extent than those in the other countries.⁹² However, they are still disadvantaged in the hierarchical and heterosexual society, suffering discrimination and sexual harassment. An inevitable daily embarrassment for them is the public restroom. Comfortingly, in the year of 2004 Chiang Mai Technology School allocated a separated restroom for 15 *kathoey* students, with a half blue male and half red female symbol on the door⁹³ (see figure 26).

The relationship between colour and gender has been studied since early times. An early study by Jastrow in 1897 found men preferred blue to red while women red to blue and St. George maintained in 1938 that blue for men stands out far more than for women.⁹⁴ It is common that blue represents men and red represents women internationally. In this signage, half blue and half red imply the “half and half” identity of the *kathoey*, just like the half man and half woman image. Colour representation is regional sometimes. For example, blue is also the color for the

⁹¹ Sam Winter, *Counting Kathoey*, Research and Discussion Paper of Hong Kong University, 2002, http://web.hku.hk/~sjwinter/TransgenderASIA/paper_counting_kathoey.htm.

⁹² Totman Richard, *The Third Sex: Kathoey: Thailand's Ladyboys*, Souvenir Press, 2003, p57.

⁹³ “Transvestites Get Their Own School Bathroom”, Associated Press, June 22, 2004.

⁹⁴ Natalia Khouw, “The Meaning of Colour for Gender”, <http://www.colormatters.com/khouw.html>.

Buddhist God Shukra, but blue in the toilet signage is not associated with God Shukra.

3.4 Typographic-Pictographic signage

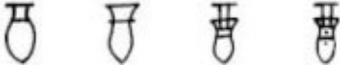
According to the road safety statistics from the United Nations, among all the traffic accident victims, almost half of them are disadvantaged road users, which consist of pedestrians, cyclists and two-wheeled vehicle drivers.⁹⁵ In low income and middle income countries, 80% of these victims are disadvantaged road users.⁹⁶ Drunk driving is a very important factor for traffic accidents. It is not only harmful for the disadvantaged road users, but also for the drivers themselves, who also belong to the disadvantaged group during the accidents.

The signages of “No drunk driving” are presented by typography, pictogram or both of them in many countries. These typographic signages are not as efficient as pictographic signages as discussed in last chapter (see section 2.2.2). In those pictographic signages, a bottle, a wine glass, a car, and stream are common symbols. Doubtless, bottles and wine glasses are presenting the alcohol and the behavior of drinking alcohol and cars are presenting all kinds of vehicles. The image of the stream might be presenting both alcohol and blood. There are also some complex signages, with more information threatening the drivers or trying to arouse their sympathy.

Figure 19 is a combination of typographic and pictographic signage, which is called typographic-pictographic signage in this thesis. This signage is delivering the literal message and the symbolic message at the same time. The whole signage presents the image of the Chinese character “酒”, which means alcohol in English. “酒” part

⁹⁵ Report from the United Nations, <http://www.un.org/chinese/esa/roadsafety/status2.html>.

⁹⁶ Ibid.

(vividly presenting liquid in Chinese) is divided into two dots (maybe two drops of blood or red wine) and a red bottle (maybe a red bottle or a bottle with red wine). “酉” part is an intelligent creation. Because “酉” is originally presenting fermented food or Chinese white spirit cup.⁹⁷  are the original written forms of “酉” in ancient Chinese writing called Jiaguwen (甲骨文) in the 14th century B.C.⁹⁸ The designer didn't stand on the stereotype, but creatively transformed it into the image of a car, with lamps and wheels.

For people who can not read Chinese, this signage is delivering three signs. First, red drops and bottle are signified the dangerous accident and tragedy. Second, car with red forbidden line represents: in order to avoid this tragedy, drunk driving is forbidden. Third, both the colour of red and black are signified death: red represents blood and black represents funeral and mourn in western culture which is the globalized colour representation.⁹⁹ For people who can read Chinese, it is a Chinese character “Alcohol” with a red forbidden line on the right part, but not equal to “Alcohol”. Literal linguistic interpretation of this signage is “𠂇” (liquid, including alcohol) is retained while “酉”(cup) is deleted, as well as paying attention to the two dots and the bottle and to forbid car driving.

As Roland Barthes claims, “all images are polysemous; they imply, underlying their signifiers, a ‘floating chain’ of signifieds, the reader able to choose some and ignore others.”¹⁰⁰ The anchorage and relay function of linguistic message is very important to help us “choose the correct level of perception”, permit us “to focus not simply my

⁹⁷ Xu Shen: *Origin of Chinese Characters*(《说文解字》), <http://shuowen.chinese99.com/index.php?action=displaychar&num=9756>.

⁹⁸ Yi Yasu: “Tracking the Trail of Jiaguwen(《寻找甲骨文的踪迹》)”, translated by author, in the official website of The Institute of Archaeology Chinese Academy of Social Science: <http://www.kaogu.cn/cn/detail.asp?ProductID=8223>.

⁹⁹ <http://www.webexhibits.org/pigments/intro/reds.html>.

¹⁰⁰ Roland Barthes: “Rhetoric of the Image”, in *Visual Culture: the Reader*, edited by Jessica Evans and Stuart Hall, Sage Publications Ltd, London, 1999, p37.

gaze but also my understanding”.¹⁰¹ The bilingual typographic signage “严禁酒后驾车” and “NO DRUNKEN DRIVING” anchor the signified to the pictogram.

If the reader reads this pictographic signage from left to right gradually, it can be interpreted as after “drink (a bottle of red wine and two drops of red wine)”, then “forbidden car”. With the correction by the bilingual typographic signage, it is not hard to understand the signified of this signage.

¹⁰¹ Ibid, p37.

Conclusion

Design and present principles

Chapter 1 and Chapter 2 mainly discuss about the signage system for disadvantaged groups. After the discussion, the principles of signage design and present are summed up below. These principles are based on signage design system and the demand of disadvantaged groups.

Principles for all the signages:

- Strong colour contrast
- Positive emotion colours
- Proper size and space
- Symmetric shape
- Bright environment
- Proper position for different eyelevel users
- Sound replace
- Pictographic signage priority

Principles for the signages which can not be presented in pictograms but have to be presented in typography:

- More legible font
- Simple and explicit words

The principles established by international standards committees, such as CSA, DOT, EEC, ISO and so on, may help the society standardize signages, thus signage users won't waste much time on learning new signages.

Isotype signage

Although Isotype is not only applied in public signage, contemporary signages are almost the most common Isotype for daily life. This is a new world between linguistic world and natural world, related to both worlds but isolated from both worlds at the same time.¹⁰² The legibility of this semi-natural Isotype signage is very obvious for illiterate groups. The linguistic barrier becomes fragile when it is knocked by Isotype.

However, a cultural barrier is still firm unless the cultural communication and globalization development moved forward a huge step. Neurath suggests reduction and consistency as the two rules of Isotype pictures to generate the international pictures. The former rule is “determining the style of individual signs” and the latter one is “giving a group of signs the appearance of a coherent system”¹⁰³. The latter rule is significant in signages for the disadvantaged groups, especially temporary illiterate groups. Actually, some standardization made by international associations is contributing to the consistency of the Isotype picture system. Public signage as a wide and inevitable textbook is everyday contributing to the communication between all kinds of people.

Cultural implication of Signage

Signage is not only a shortcut to the information it is presenting, but also a shortcut to the society behind it.

First of all, signages are the mirror of the social façade. Such as the obesity problem reflected in Brazilian priority seats, lots of social façade can be exposed by the

¹⁰² Ellen Lupton, “Reading Isotype” in *Design Discourse: History, Theory, Criticism*, edited by Victor Margolin, University of Chicago Press, 1989, p148.

¹⁰³ Ibid, p151.

signages. The signage for motorcycle drivers in Malaysia tells the plentiful rain; the signage for priority seat in Vienna (see figure 27) demonstrates how the common walker looks like; the signage for a restroom (see figure 28) in Iran depicts the local dress for women; the signage for beware of robber and exhibitionism implies the poor public security; etc.

Second, signages are the indicators of the cultural background of the society. Such as the Confucianism indicated by Singapore priority signage, many signages are implying the cultural backgrounds. Figure 19 implies and expands the Chinese language while figure 17 implies the characteristics of the monotheistic Islamic religion.

However, we have to refrain from over interpretation. For example in figure 27, from the women's hair, it can be interpreted that this signage is designed in a society with blond people, or else the women are presenting old ladies whose hair become light due to aging. It can not be interpreted assertively that Austrian women are blond and Austrian men are always wearing glasses.

Illustrations

Figure 1



Ticket office in Swedish railway stations,

By author,

2010-5-16



No color deficiencies

Protanopia

Rainbow colours viewed by different groups,

Download at 2010-5-14, at

http://www.colormatters.com/v_colorblind.html

Figure 2

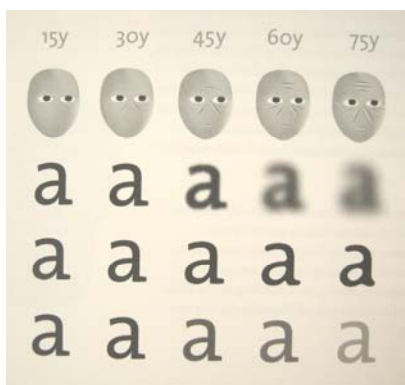


Deuteranopia

Tritanopia

[ind.html](http://www.colormatters.com/v_colorblind.html)

Figure 3



“The quality of our visual perception deteriorates with age. From top to bottom: our ability to focus gets reduced, our ability to see details gets less and in the second half of our life we need up to 4 times more light to perceive the same contrast.”

By Edo Smitschuijzen, *Signage Design Manual*, Lars Muller Publishers, 2007, p317.

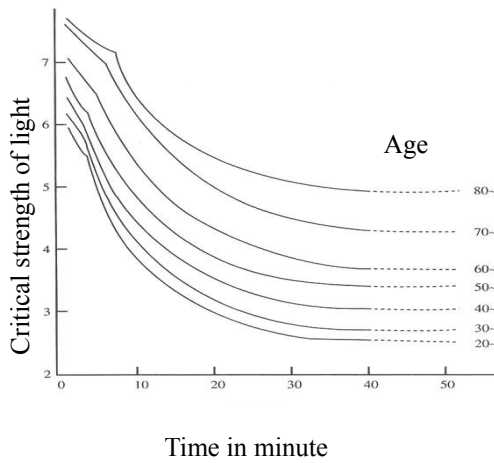


Figure 4

Chart of Dark Adaptation,
 By Richard Schulz and Timothy
 Salthouse, *Adult Development and
 Aging: Myths and Emerging Realities*,
 Pearson Education, 1998, p84



Figure 5

Signage for beware of thief,
 Tallinn, Estonia,
 Download at 2010-5-14, at
<http://spicyfish.wordpress.com/2008/04/03/tallinn-sign-nb/>



Figure 6

Signage for beware of thief,
 Kuala Lumpur, Malaysia,
 Download at 2010-5-16, at
<http://www.chineseenglish.com/2009/1/17/beware-of-snatch-thief/>



Figure 7

Signage for "Please take care of your
 belongings." Download at 2010-5-16, at
<http://pic2.nipic.com/20090429/1565618>

[121054042_2.jpg](#)

Signage for “Please take care of your belongings.” Download at 2010-5-16, at

<http://show.oopic.com/pic/769312/>

Figure 8



Information center signage

Download at 2010-5-12, at

<http://ynkmlw.com/cp.aspx?leid=5>

Figure 9



Disney signage, Los Angeles, USA,

Download at 2010-5-10, at

<http://www.answers.com/topic/mickey-mouse>

Figure 10



Toilet signage for flushing

University of Central Florida, USA,

Download at 2010-5-10, at

<http://itsaghosttown.wordpress.com/2009/10/14/so-this-is-college/>

Figure 11



Signage for motorcycle driver

Malaysia, Download at 2010-5-11, at

<http://blog.roodo.com/wanderinglife/archives/792119.html>

Figure 12





Figure 13

Signage for protecting animals

Download at 2010-4-7, at

http://file.qip.ru/file/124597108/80e1adb/15e9800aPhotopodborka_064.html



Figure 14

International signage for “disabled”,

Paul Arthur and Romedi Passini,

Wayfinding: People, Signs, and

Architecture, McGraw-Hill Ryerson

Limited, 2002, p173



Figure 15

Signage for “disabled”,

Designed by Susanne Kofoed

Paul Arthur and Romedi Passini,

Wayfinding: People, Signs, and

Architecture, McGraw-Hill Ryerson

Limited, 2002, p173



Figure 16

Signage for beware of exhibitionism

Download at 2010-5-12, at

<http://www.woostercollective.com/2006/11/29/morf1.jpg>



Figure 17

Traffic signage in Mecca, Saudi Arabia, Download at 2010-5-1, at

<http://img112.imageshack.us/img112/7893/waytomecca13hm.jpg>

Figure 18



Signage for beware of terrorism,

Download at 2010-5-11.

<http://wtf.thebizzare.com/funny-articles>

[/pay-attention-to-warning-signs/](#)

Figure 19



Signage for no drunk driving,

Changchun, China,

By Cui Changhe

2009-12-12

Figure 20



Priority seat signage, London, UK,

Download at 2010-5-11, at

<http://londondailyphoto.owenaj.com/20>

[09/09/priority-seat-on-the-london-unde](#)

[rground/](#)

Figure 21



Priority seat signage, Singapore,

Download at 2010-5-11, at

<http://www.krisandro.com/tag/priority-seats/>

Figure 22



Priority seat signage, Hong Kong,

Download at 2010-5-11, at

<http://www.hkitalk.net/HKiTalk2/viewt>

[hread.php?tid=444803](#)

Figure 23



Priority seat signage, Tokyo, Japan

Download at 2010-5-11, at

<http://www.pkusky.com/post/xuexi/126>

[2.html](#)



Figure 24

Priority seat signage, Brazil,

Download at 2010-5-11, at

<http://images.travelpod.com/users/theblak/es/1.1245355323.priority-seats-sign.jpg>



Figure 25

Signage for beware of sexual harassment,

Japan, Download at 2010-1-22, at

<http://prikol.i.ua/lenta/picture/967/>



Figure 26

Kathoey toilet signage, Chiang Mai, Thailand,

Download at 2010-5-11, at

<http://pit.dirty.ru/dirty/1/2008/06/30/14860-181048-f9aa6b6fe0b6ec2cfad9b6e24134fb81.jpg>



Figure 27

Priority seat signage, Vienna, Austria, Download at 2010-5-6, at

<http://viennadaily.blogspot.com/2008/03/priority.html>



Figure 28

Women's restroom signage, Iran

Download at 2010-5-11, at

<http://www.travelpod.com/travel-photo/soulcollector/iran2005/1251379575/sign-for-women-s-bathroom-it-makes-sense.jpg/tpod.html>

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<http://www.unesco.org/en/literacy/>

US Central Intelligence Agency:

<https://www.cia.gov/library/publications/the-world-factbook/geos/sn.html>

World Health Organization, <http://www.who.int>

Webexhibits: <http://www.webexhibits.org/pigments/intro/reds.html>