Acceptability of Design and Color of Outdoor Advertising in Historical Urban Areas in China and Japan

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CONTENTS

Introduction

0-1 Background and Previous Researches

In the 1970s, the color scheme for urban environment started. Since the 1980s, the implementation of color scheme for urban environment has become general[0-1)]. Most regulations on urban colors were singularly stipulated by the local public organizations, there is no universal standard or principle, related regulations to punish inappropriate behaviors are not complete either[0-2)]. As a result, although the planning for urban colors has been implemented, it is very restricted. In June, 2004, Japan introduced the *Landscape Act*, which has been comprehensively implemented since June 1, 2005. The theme of *Landscape Act* is to establish great landscapes through restriction of various elements of buildings, such as color, form, design and height[0-3)]. Through implementation of the *Landscape Act*, it has further strengthened the implementation intensification and legal reliance of local municipalities on related plans and regulations regarding landscape. In the *Landscape Act*[0-4)], the design element of color has been endowed with an important status. In the meantime, it has also promoted the further development and implementation of color scheme in Japan. In the *Landscape Act*, it is regulated that the planning for urban colors should be implemented based on the regulations of landscape administration organizations in various regions. Based on the main policy of adopting "colors harmonious with surrounding landscapes" and "colors that won't harm the street views", it is advocated to use the Munsell color system or JPMA (Japan Paint Manufacturers Association) Standard Paint Color for specific regulation on colors.

By January 1st, 2013, there were 568 landscape administrative organizations in Japan, and 70% of them implemented the landscape planning. Among the organizations which implemented the landscape planning, around 80% of them planed the urban color schemes by using the Munsell Color System[0-5)]. In accordance with the research data, it can be seen that during landscape planning, Japan has attached great importance to urban colors, while urban colors also affect the cityscape. As that, first of all, this study investigated the current situation of urban color regulations and the existing problems were discussed.

In the landscape planning of Tokyo[0-6)] and the landscape color guideline of Tokyo[0-7)], the city was divided into different areas in accordance with their characteristics, such as the historical area, nature protection area and downtown area etc. The color was restricted through the base color covering most area in building surface, the accent color using in a small area etc. Kyoto is a historical city, and in

order to preserve the historical atmosphere and create landscapes with Japanese characteristics, Kyoto has provided preservation and guidance of its landscape through various regulations such as the Kyoto landscape ordinance[0-8)] and landscape guideline[0-9)]. The color for Kyoto was mainly based on the idea of preservation of historical landscape, which had strict restrictions on the buildings. Nagano Prefecture is an area surrounded by the nature, and the famous and important traditional building protective area—Tsumago is located at Nagano Prefecture. Based on the natural environment, Nagano Prefecture has been divided into the urban area, area along the road, rural area and plateau mountain area, and the colors of city must be coordinated with surrounding landscape[0-10)]. Another important traditional building protective area Sanmachi, Takayama City has mainly used simple colors in order to better protect the historic environment[0-11)].

In China, the color scheme is still at its development stage. The first research on color scheme was conducted in 1991, and many of the Chinese urban color schemes have referred to the Japanese color regulations[0-12)]. At present, China is calling on and implementing various types of urban color schemes, but there is no uniform law or method for the stipulation and implementation of regulations. Various Chinese cities do not have direct landscape regulations or color scheme to conduct color control, and the regulation is mainly conducted based on the landscape chapter in overall urban planning document of government documents. Very few Chinese cities have separate guideline to recommend the use of urban color, referring the color scheme in Japan[0-13)], such as Beijing, Wuhan and Guangzhou[0-14~0-16)].

In accordance with the color schemes released during current stage, the implementation methods of color schemes were summarized. First of all, based on the nature of city, the city is divided into different areas, and different areas are required to use different colors. And the color restrictions in historical area are quite strict. Secondly, as for the restriction for colors of building exterior walls, it can be found that some color schemes only apply to the base color of exterior walls, while there is higher tolerance of color used within the rest 10% or 20% area of building surface. However, the restriction method for accent color with small area have not been explained.

In 1826, in order to promote lottery, the carriages in London were plastered with lottery posters. Later, these posters were called “urban monsters”, which were removed in 1853[0-17)]. In Japan, in 1895, Murai Brothers set the billboards of SUNRISE HERO at the mountainside of Nyoigatake in Kyoto[0-

[18]. Later, it was removed due to negative influence to the environment. At present, in order to protect the urban environment of historical area and scenic zone from damage, it is forbidden to use brand colors with outstanding features in historical area, while there is compulsive requirement to use brown billboard. According to the real situation, there is conflict between the use of bright colors in outdoor advertisings and regulations on outdoor advertising colors.

In 1949, Japan introduced the *Outdoor Advertisement Law* to establish great landscape, maintain the view and prevent public damage, and it is used to restrict the outdoor advertisings. By April, 2013, there were 166 outdoor advertising planning organizations[0-19] in Japan to restrict the use of outdoor advertisings. Then, I reviewed the current situation of outdoor advertising regulations and proposed the existence of the problems.

In accordance with the outdoor advertising regulations of Tokyo, there is restriction on the range of color used in more than 1/3 area of advertising fascia. Similarly, the advertising colors must be managed in accordance with the standard of landscape color guideline of Tokyo[0-20]. In the outdoor advertising system of Kyoto[0-21], the outdoor advertisings are regulated through division of region. On the aspect of color, it mainly restricts the background color of outdoor advertising; as for the text color, it only requires coordinated with the background color. In addition, for other forms of advertising, such as channel letters, surface area was calculated by the maximum length and width. The advertisement regulations of Nagano Prefecture only restrict the background color of outdoor advertising[0-22]. In the historic region of Sanmachi in Takayama City, there are specific restrictions on different aspects of advertising; background colors cannot be in primary or fluorescent colors, and text should be used in 2 colors[0-23].

In 2006, China introduced *Outdoor Advertisement Registration and Management Regulations*[0-24], and for the setting, shape and size of outdoor advertisings, it requires advertisement registration in related administrative organ. In April, 2015, the *Advertisement Law of the People's Republic of China* was passed in China, and it has been implemented since September 1 of the same year[0-25]. In the *Advertisement Law*, there are certain regulations for the setting of outdoor advertisings of certain products, but I cannot find any regulation regarding color. Furthermore, various cities, such as Shanghai and Shenzhen[0-26~0-27], have introduced urban outdoor advertising management method.

Similarly, neither the *Advertisement Law* nor urban advertising management has any description of color regulation.

For restriction of outdoor advertising color, it is mainly restriction of the background color, or the color used in most area. Some cities have regulations for both background and text color of advertising, but there is no further mention of color combination method. In addition, the control of outdoor advertising colors is mainly concentrated in the business district and downtown area. However, the range of colors that can be used in outdoor advertising in historical protective areas is limited, and some areas would focus on protection. Among currently released color schemes and related regulations on outdoor advertising, no matter what shape it is, the size is calculated based on the longest side length for restriction. For the same size, there is no specific instruction of acceptability of outdoor advertising with different design, use of text color and the combination between background color and text color.

Previous researches were summarized on the 3 aspects of "clashing colors[a)]", "present situation of outdoor advertising", "evaluation experiment on outdoor advertising".

(1) clashing colors

Sakahara *et al.* [0-28)] conduct questionnaire investigation of clashing color from the perspective of architectural planning. They put forward the clashing color by using the color chart. However, the color chart used in the research without considering the background buildings. Later, Taniguchi *et al.* [0-29)] discuss the clashing color standard of waterside buildings. Similarly, authors use the color chart to determine the clashing color and they do not consider the background buildings. During research on color planning approach, Nakano *et al.* [0-30)] also introduce the cases of clashing color by using the color chart. Mitsuboshi[0-31)] defines "clashing color hazards" in his research, and propose a solution based on various cases of clashing color such as area adjustment and height limitation, but he has not described the modification method that combines color and its size.

From the case studies on clashing color, most of clashing colors are found as the colors of outdoor advertising. Current researches mainly focus on the standard of clashing color, and some researches proposed the amendment opinions based on the case studies. However, researches have not considered the background buildings, and the restriction method of clashing color has not been discussed.

(2) Current situation of outdoor advertising

Current researches mainly focus on advertising regulations or actual appearance of advertising in cities.

Lee *et al.*[0-32] conduct a comparative study of regulations of outdoor advertisement in Tokyo, Seoul, Singapore and Hong Kong. They point out that 4 requirements are needed for outdoor advertising design such as order, personality, coordination and identity. However, they did not analyze the color influence on outdoor advertisement. Then, the results did not relate to the actual use of advertising. In terms of advertising regulations, Nonaka[0-33] summarizes the status and content of advertising regulations. But the results also have not been discussed with the actual use.

In terms of the actual appearance of advertising, Kato *et al.*[0-34] compare the colors of signs in several regions in Kyoto City, Osaka City, Kobe City and Noji region in Shiga prefecture using street photography. Then, they propose the size of signs in historical region is smaller and most of them use the achromatic color. However, they do not analyze the rationality of signs color based on the regulations. In addition, Taniguchi *et al.*[0-35], Yamamoto *et al.*[0-36], Sato *et al.*[0-37] and Watanabe *et al.*[0-38] investigate the colors of advertising in different cities. Similarly, they collect the color, but they did not analyze the color related to regulations.

Most of the current surveys and research concentrate on commercial districts, overlooking the use of outdoor advertising in areas of historical significance. Moreover, the current researches are less discussion on the relationship of actual using and regulations.

(3) evaluation experiment on outdoor advertising

Maki[0-39~0-40] experiments with the suitability, visibility and logo identity of existing signboard by using the pole signboard in historical street, office area and street in countryside. He suggests the evaluations of signboards in those 3 place are different. However, he did not discuss the characteristics of high evaluation signboards in historical street. And the colors used in the research did not base on Munsell Color System. Then, using the independent pole signboard in historical area is not common actually.

There are also some researches about evaluation of visual attractiveness of advertising. Yamamoto *et al.*[0-41] discuss color combination of billboards rated with a high level visual attractiveness, concluding that the visual attractiveness of achromatic color is higher that chromatic color. However,

in this survey, they used one color background for experiment without considering the influence of background building. Then, the effect of Munsell value and Munsell chroma have not been mentioned.

Uozaki *et al.*[0-42] experiment the legibility of advertisement based on the different design issues. They propose that the evaluations are changed when the color of advertising are different. But, they use the color words to describe the color using in experiment such as green, yellow et al. And how the color influence the advertising is not further studied.

The surveys of evaluation experiment of outdoor advertising are most focus on visual attractiveness and legibility. However, visual attractiveness is not the only criterion for evaluation. In the case of restrictions regarding color, further research should be conducted on visual attractiveness, coordination and other factors.

Current researches test the clashing colors and they propose the clashing color are most in high saturation. However, the clashing colors should be different for different areas. And the restriction method of clashing colors need to conduct further experiments. According to previous studies, outdoor advertising has a considerable effect on the urban landscape, and different parts of the urban environment should be regulated differently. However, combining the actual appearance, research on how to improve advertising restrictions is lacking. In addition, due to the strict restrictions on the use of color for advertising in historical areas, most researches focus on modern areas. Therefore, this paper looks at the design and color combination of advertising fascia on traditional buildings, based on the three factors of coordination, visual attractiveness and perceived acceptability of outdoor advertising.

Based on the implementation and preliminary researches of color schemes in China and Japan at current stage, it can be summarized that: 1. color has very important influence on city impression, and both the building colors and advertising colors used in a small area influence the atmosphere of a city. 2. on the aspect of elements used to control urban colors, the urban colors are mainly controlled through the color usable range, supplemented by adjusting the fascia area, use frequency of base color and the area of the building façade used for color etc. 3. both Japan and China have the strictest color management in historical areas. The color is based on the precondition of protection, but there is no further research and discussion of the color combination. 4. In the color scheme, urban color planning mainly focuses on the base color, i.e., the color used in most area. There is certain space to accept

accent color used in small area. 5. As for the color of outdoor advertising, regulations are inadequate. Some outdoor advertising color schemes still use language to describe color, and the restriction of color is mainly decided based on the advertising size no matter what the color, design and shape it has. There is no in-depth research on the relation between the advertising color, design and the fascia area. 6. China is trying to conduct color schemes for Chinese cities by referring to the color schemes and approaches adopted in Japan. However, there is no further research on the current situation comparison between the Chinese and Japanese cities and the feasibility of implementation. Based on that, I believe it is necessary to combine various elements of urban colors to conduct further research on outdoor advertising colors in historical areas.

0-2 Purposes of Research

Aims at historical urban area and surrounding regions (fig.0-1), considering both the coordination of whole city and identity of outdoor advertising, the restriction method of outdoor advertising was surveyed based on the regulations. With the historical areas in China and Japan as the research objects, an impression evaluation was conduct to clear the relationship between outdoor advertising colors, color combination of background and text color, design and fascia area. Based on the two evaluation elements of visual attractiveness and coordination, the acceptability（fig.0-2） of outdoor advertising was analyzed. Then, with the possibility of advertising being accepted as the precondition, outdoor advertising restriction method in historical urban area is proposed based on the color combination of background and text color, design and its fascia area. In addition, by comparing the acceptability of different advertising g fascia in China and Japan, this study verified the feasibility to implement Japanese color scheme in China.

At current stage, accent color within 20% area are accepted in many regions. In other words, it can accept more colors in small size. While some historical areas also show the tendency to accept accent color within a small size. In accordance with the outdoor advertising regulations, it can be seen that most regulations pose restriction on the background color of advertising. No matter what color combination or shape it has, the restriction on outdoor advertising size is calculated based on the longest length and width. It can be seen that, both the color scheme for buildings or outdoor advertising,

the regulations for colors used in small size are ambiguous. In this paper, I believed that outdoor advertising with different color combination or design have different acceptability by the fascia area. Therefore, this study tried to prove it through experimental analysis.

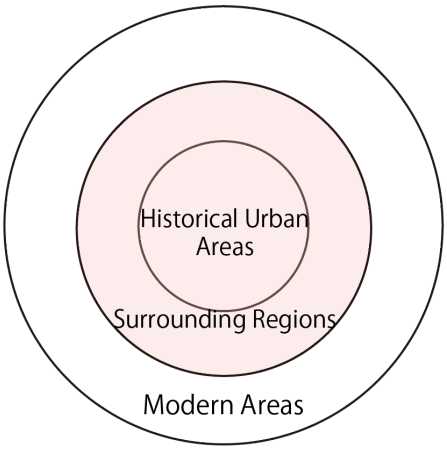


Fig.0-1 Research Object

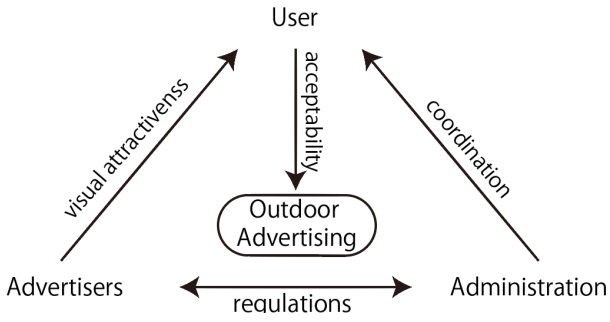


Fig.0-2 Stake Holder and Evaluation Items

Due to strict restriction on color use in historical area, the regulations focus on protection, or using the historical color "brown" etc. However, some historical areas are developed as tourist attractions, or the surrounding region of historical area has certain requirement for using the different advertising colors. I believe that the outdoor advertising in historical areas should be managed in accordance with different demand based on the acceptability of it. Therefore, as shown in Fig.0-1, with historical areas and surrounding area as research objects, this research has chosen buildings within these historical blocks as the experiment objects.

According to different positions of advertiser and administration, there are different setting methods and restrictions for outdoor advertising. As shown in Fig.0-2, the advertiser wished to use specific brand colors which are very bright with sufficient attractiveness; on the other hand, the administration emphasized the overall coordination of street, and they strictly restricted the use of outdoor advertisings. In this research, the characteristics of acceptable colors, sizes and designs of outdoor advertising are summarized from the user's perspective based on the acceptability for visual attractiveness and coordination.

In China, the color schemes had late development, which had slow growth and weak strength. Therefore, many cities copied the approached adopted by Japanese cities, and tried to promote the color development in China based on the successful color schemes in Japan. There is certain similarity between China and Japan, but on the aspect of color use, the accuracy of reference requires further confirmation. Based on that, the paper chose the historical area in China and Japan for comparative study on acceptability of outdoor advertising.

At present, in both Japan and China, the urban colors have faster development with higher intensity. However, as for how colors outside of the urban color regulations should be handled, there are many cases of direct modification in accordance with the urban color scheme. Nevertheless, if the modification is conducted in accordance with the cases of urban color scheme, the original color (e.g.: the brand color) will lose its personality; if the modification is not conducted in accordance with the color scheme, it may result in color pollution. Therefore, an important task is to connect the color regulations and the color using in reality.

0-3 Methodology of Research

This paper mainly uses the research methods of status survey, field color collection and impression evaluation experiment of advertising fascia colors.

During the status survey, I collected and analyzed the color schemes released in the websites of 4~5 cities in each of the following four countries with different development progress: Italy, France, Japan and China. Among them, because the color schemes are not very comprehensive in China, in addition to literature investigation, this study also conducted field color collection in 3 historical cities in China. Secondly, based on 166 Japanese outdoor advertising planning organizations, I organized and analyzed related regulations on outdoor advertising colors. Then, the regulation survey and literature survey were done for the current situation of Chinese outdoor advertising.

Based on the status survey, Historical areas have the strictest restriction on colors of outdoor advertising. In these areas, the form, type, height and color of buildings are also very uniform. Due to this uniformity, it is very difficult for new or bright colors to be integrated into historical cities. In addition, in order to protect the traditional buildings, it is generally forbidden to use modern design

and bright colors. Therefore, at present, the planning for outdoor advertising colors in historical areas is simple and strict.

Therefore, with the Chinese and Japanese historical area as the experiment objects, simulative elevation of street view was designed, and advertising fascia was added in the simulative elevation. Method of questionnaire investigation was used to conduct impression evaluation of advertising fascia with different color, design and fascia area. Considering the stakeholders of outdoor advertising, in this questionnaire investigation, an evaluation experiment was conducted on the visual attractiveness, coordination and acceptability of outdoor advertising. Comparison and analysis of advertising fascia acceptability were also conducted by different object locations and respondents in the study.

Analysis of acceptability for outdoor advertising was mainly to summarize the characteristics of acceptable colors, fascia area, color combination and designs of outdoor advertising based on different participant groups. Based on the experiment results, advertising color planning was proposed. Furthermore, according to different objects, the results of this experiment can be used by adjusting the critical value.

0-4 Thesis Framework

The paper composition is as shown in Fig.0-3. First of all, through status survey in Chapter I and Chapter II, I investigated the color restriction method for urban landscape and the color schemes for outdoor advertising, and extracted restriction methods and color items that can be used to control urban colors. Based on restriction methods and color elements for color restriction, in Chapter III and Chapter IV, experiment of the relation was conducted between the advertising color, fascia area, color combination and design based on the historical buildings. In accordance with the experiment results, the color planning for outdoor advertising was proposed in historical area in Chapter V. In the final chapter, conclusion is drawn based on all results.

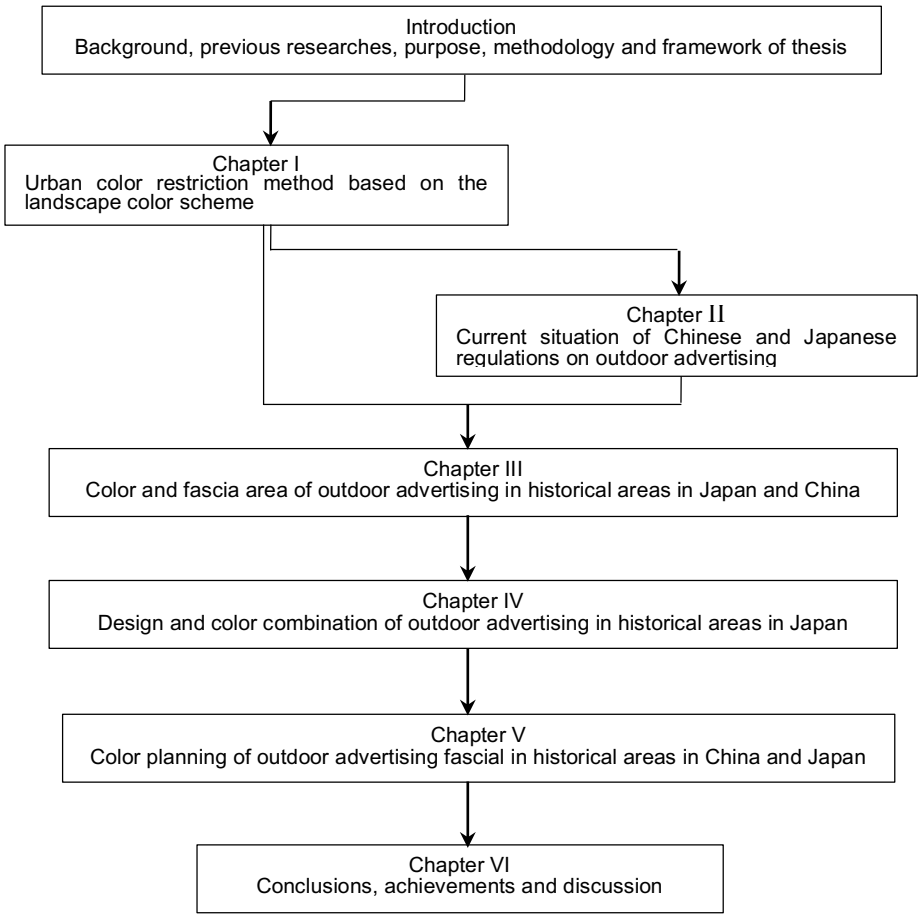


Fig.0-3 Thesis Composition

In Chapter I, the origin of outdoor advertising and restrictive regulations on outdoor advertising is introduced; then, efforts are made to investigate related history and cases regarding the development of restriction approaches for outdoor advertisement. After that, 4~5 cities in Italy, France, Japan and China was chosen to investigate the landscape and color schemes published in the websites of these cities. Because the color schemes are not very comprehensive in China, in addition to literature investigation, the study also conducted color collection in 3 historical areas in China. By analyzing the color schemes of various countries, this chapter extracted color elements that could influence the urban landscape.

In Chapter II, the current situation of outdoor advertisings in Japan and China was studied with the background of Chinese characters, collected and organized related systems and regulations regarding

outdoor advertising implemented at current stage. For Japan, this study investigated related rules and regulations released by the department responsible of outdoor advertising in local public organizations and the MLIT(Ministry of Land, Infrastructure, Transport and Tourism). In China, there are no related laws for restriction of advertising color, so the outdoor advertising color through local regulations and preliminary researches was investigated. Then, I summarized related methods used to control the advertising color, and pointed out related problems and insufficient aspects.

In Chapter III, based on the status survey results obtained in Chapter I and Chapter II, experiment of extracted color elements was conducted: color and fascia area, based on the acceptability of advertising background color and fascia area. With historical buildings in Zhouzhuang, China and Kyoto, Japan as the experiment objects, I drew the elevation of building, and the elevation includes 3 buildings. The simulative advertising fascia was added to the elevation of building, and the advertising color and fascia area were adjusted. Impression evaluation was conducted for the relationship between advertising color and fascia area based on the acceptability.

As the follow-up research of Chapter III, in Chapter IV, impression evaluation of building elevation was used once again to further test the influence of the color combination of background color and text color, and design on the acceptability.

Based on the experiment results obtained in Chapter III and Chapter IV, in Chapter V, the characteristics of various color elements of outdoor advertising with high acceptance was summarized. With the objective to improve the acceptance of billboards, and these elements include hue, brightness, saturation, color combination between text color and background color, background board shapes. Based on that, I proposed outdoor advertising color schemes for historical areas.

In the final chapter, I summarized the results verified in the research. In addition, based on the historical buildings in Japan and China and the respondents with different background, contrastive analysis of the acceptability of advertising colors was conducted. Furthermore, I explained the significance of the research. Finally, this study also investigated and discussed the feasibility to implement of outdoor advertising colors.

0-5 Keywords used in Thesis

In this research, an experiment was conducted on acceptability of outdoor advertising colors based

on buildings in historical urban areas. The historical urban areas included in this research refer to the historical areas where the buildings have generally uniform type, height, color and atmosphere. First of all, they included the traditional buildings published by Agency for Cultural Affairs, Government of Japan; secondly, they also included the areas which wish to protect their historical atmosphere or rebuild historical buildings. On the aspect of material, this research mainly chose traditional buildings with wood structure and paint as the experiment objects.

In the impression evaluation experiment on acceptability of advertising fascia, I used the three items of “visual attractiveness”, “coordination” and “acceptability” to evaluate. In this paper, their definitions are as the following:

Visual attractiveness refers to the visibility of advertised object, and the visibility of information expressed in the advertisement. Coordination refers to the coordination between the advertising color and the color of background building. Acceptability represents whether this advertising fascia can be accepted if it is actually used.

In addition, outdoor advertising stands for all the advertisement setting in outdoor. The advertising which set on the exterior wall is used in the research. As that, the advertising fascia is used as the meaning of advertising on the wall.

Color scheme is used as the color planning on regulations or laws. Color planning means the color restriction method of advertising fascia proposed in Chapter V. And the color combination stands for the combination of background color and text color of advertising fascia.

The base color used for the color used in most area of the buildings. And the accent color stood for the colors used in a small area of the building. Background color and text color is used for outdoor advertising.

Three elements of color to describe the color w as used in the research such as: hue, brightness and saturation. In Chapter Ⅲ & Ⅳ, I used the Munsell Color System to record the color used in the experiment. So the hue, value and chroma which short for munsell hue, munsell value and munsell chroma are used in Chapter Ⅲ & Ⅳ.

Note

a) ‘Clashing color’ is an approximate translation by the authors of ‘騒色’. In Japanese they are described as 公共の色彩を考える会, i.e., objectionable color combinations which are

disturbing to the local color environment and are perceived negatively. In the worst cases, they result in emotional distress, and can be the cause of health issues.

Reference and Bibliography

(0-1) 吉田慎悟:環境色彩デザインの手法ーまちの色をつくる，建築資料研究社，p. 1，1998. 10

(0-2) 宮川理香:景観法施行とこれからの建築物に色彩，塗料の研究，第 146 号，pp. 40-46, 2006

(0-3) 石原麻子:景観法時代の色彩計画，Journal of the Japan Society of Colour Material, pp. 285-289, 2013

(0-4) 景観法の概要:国土交通省ホームページ, https://www.mlit.go.jp/crd/townscape/keikan/pdf/keikanhou-gaiyou050901.pdf, 2005

(0-5) 山本早里、徐ミンジョン、槇究、熊澤貴之:地域の特色を活かした景観色彩計画に関する行政の考え方の変化，日本建築学会大会学術講演概論集，pp. 517-520, 2014

(0-6) 東京都市景観計画，東京都，2011

(0-7) 東京都景観色彩ガイドライン，東京都，2007

(0-8) 京都景観計画，京都市，2011

(0-9) 京の景観ガイドライン，京都市，2011

(0-10) 景観育成デザインマニュアル，長野県，p. 129-133，2007. 3

(0-11) 高山市景観計画，高山市，pp. 18-30，2013

(0-12) 崔唯:城市环境色彩规划与设计, 北京，中国建筑工业出版社，p. 19，2006

(0-13) Gou Aiping, 「Method of Urban color plan based on spatial congiguration」Color Research and Application, 38(1), PP.65-72, 2013

(0-14) 北京市建筑物外立面保持整洁管理规定，2000

(0-15) 武汉城市色彩技术导则，2003

(0-16) 广州城市色彩规划研究，2007

(0-17) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.410-411, 1981.6

(0-18) 八巻俊雄：日本広告史、日本経済新聞社、pp.105-107, 1992.10

(0-19) 地方公共団体屋外広告物担当課一覧，国土交通省, http://www.mlit.go.jp/crd/townscape/koukoku/seido/madoguchi.htm，2013

(0-20) 屋外広告物のしおり（東京都）, p. 21, 2011. 5

(0-21) 京の景観ガイドライン広告物編，pp. 2-4〜2-24，2015

(0-22) 屋外広告物のしおり（長野県），p. 6，2016. 4

(0-23) 高山市屋外広告物条例等早わかり，pp. 18，2014

(0-24) 户外广告登记管理规定，2006
(0-25) 中华人民共和国广告法，2015
(0-26) 上海市户外广告设施管理办法，2010
(0-27) 深圳市户外广告管理办法，2013
(0-28) 坂原弘也：実態調査による「騒色」のイメージ色について、日本色彩学会誌(26)、pp. 42-43、1996
(0-29) 谷口賛、桜井慎一、安達一慶：ウォーターフロントで許容される建築物の色彩の研究ー（その１）建築物の色彩の騒色基準ー、日本建築学会大会学術講梗概集(北陸)、pp. 413-414)、2002. 8
(0-30) 中野雄大、中井祐:景観色彩問題の事例分析に基づく色彩規制の在り方に関する考察、景観・デザイン研究講演集 10(5)、pp. 10-13)、2009
(0-31) 三星宗雄:日本における騒色公害とその解決、神奈川大学人文学研究所報 42，pp. 35-51、2011
(0-32) 李銀璡, 山本早里, 西川潔:都市景観要素としての屋外広告物デザインに求められる条件ー東京・ソウル・シンガポール・香港の中心商業地域を中心としてー，日本デザイン学会デザイン学研究, pp. 350-351, 2012. 6
(0-33) 野中勝利:景観行政団体の市町村による屋外広告物行政の取り組みー地方分権下の屋外広告物行政に関する研究その２ー, 日本建築学会計画系論文集， 第 638 号, pp. 871-879, 2009. 4
(0-34) 加藤光彦, 他３人:景観写真のメッシュデータによる屋外広告物の色彩分布に関する研究, 日本建築学会近畿支部研究報告集, pp：613-616, 2003
(0-35) 谷口みゆき, 澤一寛:屋外広告物の色彩研究ー地域別掲出傾向の調査ー、日色彩学会誌(23)， pp. 62-63, 1999. 5
(0-36) 山本陽子, 土久菜穂, 山本明:屋外広告物の規制・誘導に関する基礎的研究 その２ー長野県須坂市における建物属性別に見た広告物の特徴ー, 日本建築学会大会学術講演梗概集, 都市計画, pp. 311-312, 2006. 9
(0-37) 佐藤優, 金英美:屋外広告物の色彩の制御方法に関する研究, デザイン学研究（43）3, pp. 41-48, 1996. 5
(0-38) 渡辺安人, 他５名：京都にふさわしい屋外広告物の色彩, 日本色彩学会誌 34, pp. 30-31, 2010. 5
(0-39) 槇究:看板の色変更に関する研究ー街並みとの調和・視認性・ロゴアイデンティティの観点からー, 日本建築学会環境系論文, 第 682 号, pp. 941-948， 2012. 12
(0-40) 槇究:複数の看板を挿入した街並みの画像の印象評価-看板の色変更に関する研究その２-，日本建築学会環境系論文集，第 695 号，pp. 55-62, 2014. 1
(0-41) 山本桂佑, 塩見弘幸:屋外広告物のデザインに関する一考察, 日本デザイン学会デザイン

学研究, pp. 120-121, 2006. 6

(0-42) 宇於崎勝也, 他３名：屋外広告物の構成要素とその判読に関する実験研究, 日本建築学会大会学術講演梗概集, 都市計画, pp. 525-526, 2007. 7

Chapter I

Urban Color Restriction Method based on the Landscape Color Scheme

1.1 Introduction and Purpose

As the research related on urban colors, this chapter start investigating the restriction method for overall urban colors. In order to determine the restriction method used in urban color scheme, in this chapter, I analyzed regulations for urban color planning in various countries from the overall perspective first. Secondly, in accordance with different cities or buildings, I further studied the color-related elements that need to be used in the regulations. In the meantime, by comparing color regulations for different buildings in different countries, contrastive analysis of the color restriction method was conducted for different buildings. Based on that, this chapter made general discussion of how to modify or restrict colors used in small area. In the meantime, the possibility for color use of outdoor advertising is also explored according to the colors used in small area.

1.2 Methodology

The design of urban colors started from Turin, Italy in the 19th century[1-1)]. In the 1960, the Frenchman Jean-Philippe Lenclos believed that a city should have its regional characteristics, and proposed the unique methodology—"color geography" —in accordance with the environmental colors. In 1970, he investigated the colors of Tokyo[1-2)]. Later, Japan continued to use Lenclos's research method, conducted color investigation to other cities within Japan and built the urban color schemes. China started to study environmental colors in 1991[1-3)], and now, it is still at a stage of practice and exploration. In this chapter, with four countries with different development degrees as the research objects, 4~5 cities were chosen from each country, and investigated the environment and color schemes published on city websites.

In this chapter, this study mainly used the literature search and field color collection to investigate the current situation of urban color planning. The urban color schemes in Italy, France and Japan have relatively complete development, corresponding regulations are published in the official websites of city, so I directly used the method of literature search to collect and analyze color schemes in the three countries. Because the color schemes in China are not complete enough, and very few cities actually implemented the color scheme, therefore, for research on urban colors in China, this chapter used the two methods of literature search and field color collection to analyze the color used in Chinese cities during current stage.

1.3 Current Situation based on the Landscape Color Scheme

1.3.1 Landscape color scheme of Italy

Italy was one of the earliest countries that conducted environmental planning and construction regarding modern urban colors. During 1800-1850, under the suggestion of local architects association, the Italian Turin government entrusted this organization to conduct comprehensive color planning and design of the whole city. In the Turin color design approach, they not only paid attention to the coordinated color style of urban buildings, street furniture, but the color design of some main streets furniture was also very specific and diverse. In 1845[1-4], the Turin municipal government released an Official Announcement regarding 20 standard building colors stipulated by the architects association and passed in the Town Hall Meeting. In the meantime, a "Color Chart Wall" was also built in the atrium of Town Hall, so that the citizens and architects can refer to this chart when painting the outer wall of building. This event symbolized the start of modern urban color planning. In order to restrict the landscape of Italy, the Codice Dei Beni Culturali e del Paesaggio[1-5] has proposed in 2004. For Italy urban color scheme, the urban colors adopted by Turin, Rome, Florence and Prato in Italy was investigated(fig.1-1).

Fig.1-1 Turin, Rome, Florence and Prato in Italy

Turin, the capital of Piemonte, is an ancient city with a long history, and it has preserved many classic architectures and Baroque architectures. Turin was one of the earliest cities that implemented the environmental color scheme. During 1800-1850, under the suggestion of local architects association, the Italian Turin government entrusted this organization to conduct comprehensive color planning and design of the whole city. In 1845, the architects association released the research and practice results in nearly 50 years to the public—the Urban Color Chart[1-6)]. In the Chart, these colors were coded, which can be used as reference when the house owners and members of architects association repainted their houses, and this urban color scheme was listed in official government document. In 1978, Professor Giovanni Brenner from Polytechnic University of Turin[1-7)] was in charge of the project to renovate the color style of this city, and the urban colors of Turin were revitalized. At present, in order to protect the city heritage and intensify the urban landscape, Turin proposed an urban color scheme on the aspect of color control, including interference with outer wall colors[1-8)] proposed in 1997 and various supplementary regulation proposed after that[9)]. The regulations of color scheme[1-9~1-9)] stipulate that the color scheme is mainly used to strengthen the urban landscape, protect historical relics and buildings, improve environmental aesthetics and increase recognition of different results of urban color schemes. Through the regulations of painting and the restriction of materials, the color scheme can be used for cleaning and repair of outer wall, control of street object color, specific plan for particular area, use plan of paint color and project design within the color area. All external visible parts are within the scope of interference. For the convenience of region division(fig.1-2), it is divided into the central area, special area, external central area and other area, and the colors can be regulated through different intensities and control methods. For modification of private outer wall, related application needs to be submitted. In the meantime, E areas are divided in the city, and for buildings within the area under renovation, the modification is forbidden, or there is compulsory requirement to execute in accordance with the color scheme. For any violation of law, there will be monetary penalty. On the implementation of color scheme, 72 gypsum colors and 35 timber/metal colors are proposed based on the material(fig.1-3), and the standard values of various parameters are also provided, including the color chart, color range, material and painting.

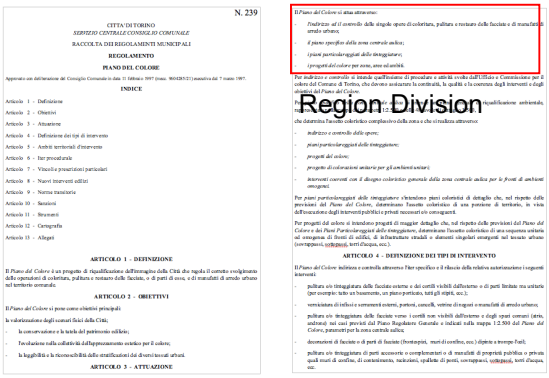


Fig.1-2 Color Scheme of Turin

(Piano Del Colore, Citta'Di Torino, pp:1-2, 1997)

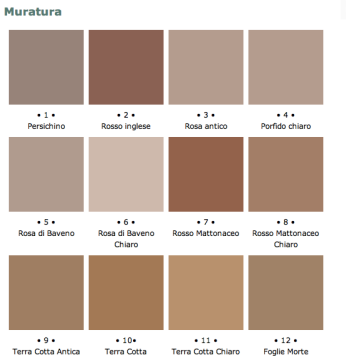


Fig.1-3 Color based on the Material

(Guida per la manutenzione delle facciate pulire colorare conservare, p.12, 2009)

Rome is the capital of Italy, and with orange-yellow and orange-red as the dominant tone, the old town of Rome has well preserved the colors of historical heritage. The urban color scheme for Rome is not directly released on the city website of Rome. However, in accordance with the record of the two documents of *Estratto dal verbaledelleDeliberazioni del Consiglio del Municipio Roma 6*[1-10] and *Estratto Dal Verbale Della Seduta Del Consiglio Del Municipio 2 Deliberazione N.51, 2007*[1-11], it can be seen that Rome modified and supplemented the Rome Color Scheme[1-12] in the 2013 meeting. First of all, the urban colors can be controlled through the protective color, color of building outer door and color of street furniture. Secondly, a specific color scheme was proposed. In particular, strict color restriction is imposed on historical buildings beside river, and there is specific color scheme for the downtown area. In accordance with the color control method for Rome, first of all, they will conduct planning of the overall situation, including analysis of the situation of different areas; then, they propose a color scheme, point out the false color during current stage, and propose related color use model, protective area and related suggestions for urban color control of Rome. On the aspect of execution intensity, if decoration needs to be added to the regional scope, including the construction facility, it needs to be reported, and the government can adopt color intervention. The color management of Rome is entrusted to the UOT management department.

Florence is a city in Central Italy, which is renowned as a “city of art”, and it is a world famous cultural tourist attraction. The official website of Florence has not released specific environmental color regulations, but the released construction regulations of Florence[1-13] have restricted the use of

urban colors. The construction regulations divided the urban buildings into different districts and parts, such as public buildings, historical area, etc. For different types of buildings, specific planning will be conducted to the outer wall, door, window, chimney, antenna and door plate of building etc. On the aspect of color, most designs are proposed based on the material by maintaining organization and coordination. The selection of paint color is relatively more discreet, and when there is no overall background color as reference, the color use should be defined under the precondition of harmony of environmental colors. In particular, for the setting of sun shades, traditional green and brown tones are proposed; for traditional doors and windows, the traditional white and brown tones are proposed. Color restriction is very specific.

Fig.1-4 Color Scheme in Prato

(Piano Del Colore Dell' Edilizia Storica Di Prato, p.1, 2013)

Prato is located at East Italy, which is the capital of Province of Prato at Tuscany Region. In accordance with Article 26 of 2003 Regional Law, it defined the color law to guide colors use within the city and maintenance of building exterior walls. In the city website of Prato, the regulations of regolamento edilizio[1-14)] and Guida delle norme per gli interventi del colore[1-15)] are published for urban color planning of Prato. The building code has restricted the painting of external façade and decoration of outer walls in the city, and on the aspect of color, the regulations have combined related technology and material. On the aspect of billboard instruction, it has simultaneously imposed constraint on

lighting and color. On the whole, the color combination is divided into the two types of traditional color combination and modern color combination to provide color guidance to different areas. The urban color guiding principles[1-15)] are supplementary instruction to the urban color guidance and restriction method. First of all, the regulations have specifically regulated the intervention objects, intervention measures, definition of material and classification of colors. The color regulations have not only specifically introduced the color use at the moment, the material color and aging phenomenon, but also made corresponding regulations. On the aspect of color planning, certain requirement has also been made for regular maintenance of city, so that the city can maintain better landscape. On the aspect of specific use, the color charts are used to control the urban colors as shown in fig.1-4.

In Italy, on the aspect of color restriction, the material control is relatively stricter. In addition, the requirement for appearance control is more specific, such as the door and window etc. of building, and there is also strict control of external visible area with small size, such as the cable. Furthermore, Italy has also stipulated a series of regulations for punishment of violation of rules to increase the execution intensity of regulations.

1.3.2 Landscape color scheme of France

Color geography is a color environmental science founded by Professor Jean-Philippe Lenclos from l'Ecole Nationale Superieure des Art Decoratifs (EnsAD). He founded l'Atelier 3D Couleur (Design and Color Studio) in Paris in 1978, which conducted color environment design for many cities, communities and industrial environment, and it significantly improved people's recognition and emphasis on color environment design. Therefore, it can be regarded that researches on color environment started from France. The color geography[1-16)] proposed by Jean-Philippe Lenclos divides the color environment into the cultural color and natural color. Through dual investigation and analysis of urban natural color and cultural color, Lenclos conduct urban color planning. In France, the environment was managed through ZPPAUP[1-17)], and it was changed to AVAP[1-18)] since July 12, 2010. In addition, various counties have set the CAUE architectural organization to adjust the building and color of various counties. At present, each French city has its own city development plan (i.e., PLU) for planning of urban development and environment. Based on PLU and the landscape and urban planning of various cities, in this survey, I investigated the color environment schemes published on the city websites of Paris, Lyon, Marseilles, Bordeaux and Nice of France as shown in fig.1-5.

Fig.1-5 Paris, Lyon, Marseilles, Bordeaux and Nice of France

From 1961 to 1968, the Paris Planning Department of France completed the planning and adjustment of major Paris region, and proposed using beige as tone for Paris[1-19)]. Since the 1980s, the Paris Government has included color planning into the government regulations. In addition, the Cultural Department is in charge of the urban planning and construction of Paris rather than the Department of Building and Housing. Therefore, not only the outer wall color of buildings is restricted, but in some streets in Paris, the billboards and signs also have the yellow tone[1-20)], and they also proposed the patterns that can be used externally. In order to strictly control the urban colors, according to the urban color management system[1-21)], the shops facing street can only be on the first floor to present the color of shop, and no billboard or sign is allowed to be set above the first floor. Even if there is any billboard or sign on the first floor, the color is strictly controlled. Through this kind of control approach, it can realize uniform and diverse urban colors. In accordance with the downtown regulation of Paris[1-22)], various elements of newly constructed building must be strictly considered, such as the shape and color. In the meantime, as shown in fig.1-6 the material must also be considered during color application[1-23~1-24)]. For example, the construction materials of limestone and gypsum are used to lay down the tone of Paris, and it is forbidden to integrate new material and color into current scope. The regulation has also specifically and strictly restricted the colors for different parts.

Fig.1-6 Material and Color and Building in Paris

(Mairie De Paris – Façade en Pierre Naturelle, pp:1-2, 2010)

Lyon is located at Southeast France, and the main tone of this city is ochre[1-25)]. In order to strengthen the environmental beauty of city, Lyon has regulated the material color and daily color maintenance in accordance with Lyon's urban planning regulations. According to the building facades and materials regulations of Lyon[1-26~1-27)], the selection of building external façade color must be consistent with the street atmosphere, and on the aspect of material selection, the color stability should also be considered. In accordance with the investigation, it can be seen that Lyon emphasizes environmental color planning, and specific color planning also focuses on consultation. In 2003, the Lyon Color Scheme was proposed[1-28)], and in the meantime, the Construction Consultation Center was also established, which provided the consultation of building colors. In order to protect the historical buildings, improve the living environment and make it possible for Lyon to carry out the warm tone of ochre, the city website has provided consultation and support for maintenance of external façades in Lyon.

Marseilles is an old port city in France. Urban colors of Marseilles were analyzed in accordance with the recommendations for external façade painting[1-29~1-30)] released by Marseilles. In accordance with the regulations, Marseilles is divided into different areas, and the color recommendations and planning are conducted to different areas. The main areas are concentrated on the two sides of canal and the historical area etc. Color collection for various areas is mainly based on the natural color and

the color of construction material, and the urban color planning is conducted according to the collected data. In accordance with the situation of actual color use, the color use scope of the area is regulated, and colors of external façades are recommended based on color palette. During the color investigation process, the frequency of external façade color being used is analyzed(fig.1-7). The color with high use frequency will be defined in the color palette; similarly, colors in color palette vary in accordance with their actual use proportions. In the meantime, the comparison diagram between color and material and the elevations of area are provided for design and comparison of colors.

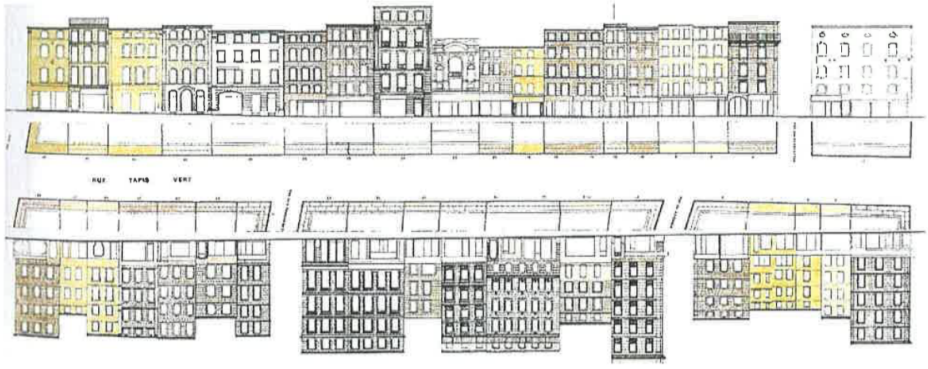


Fig.1-7 Building Façade in Marseilles

(Preconisations pour la mise en couleur des facades, p.7, 2013)

Bordeaux is a port city in Southwest France, which is the fourth biggest city in France. In Bordeaux, the sustainable development law of construction[1-31)] and the Bordeaux public utilities regulations[1-32~1-33)] are used for planning and control of the environmental color of Bordeaux City. In Article II of this law, during objective statement of regulations, it is believed that for planning of building, the building shape, material and selection of colors affect the building. The public utilities regulations point it out that the colors of public utilities should be controlled, and specific color mark should be provided, such as the road pavement color is marked as RAL5004 etc. In the meantime, based on the public utilities regulations[1-32~1-33)], the color chart in fig.1-8, corresponding number and object interval used in urban utilities are also provided.

Nice is a coastal city in South France, which is one of tourist cities in France. Application needs to be submitted for construction and renovation of urban buildings. For historical area within the city, Nice would conduct color investigation, analysis and research of the area to continue the beauty of

color[1-34]. In Nice, there is special color scheme[1-35] to provide guidance during design of outer wall colors. For the control of historical buildings, the regulations propose using yellow, warm stone color and red for outer wall, using yellow color of natural material for ornaments, and using contrast cold colors such as green and blue for eaves. For traditional French buildings, the colors generated by the angular lines and iron technique (e.g., balcony) are also very important, which directly affect the overall urban color. Based on the architectural characteristics of the city, the building color regulations of Nice mainly divide colors into the categories of outer wall[1-36](fig.1-9), window, eaves, angular lines of outer wall and iron technique, and corresponding color chart is also provided.

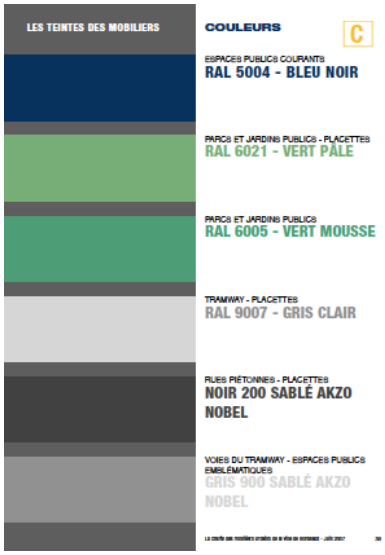


Fig.1-8 Color Chart of Base Color in Bordeaux

(Catalogue du Mobilier Urbain, p.39, 2007)

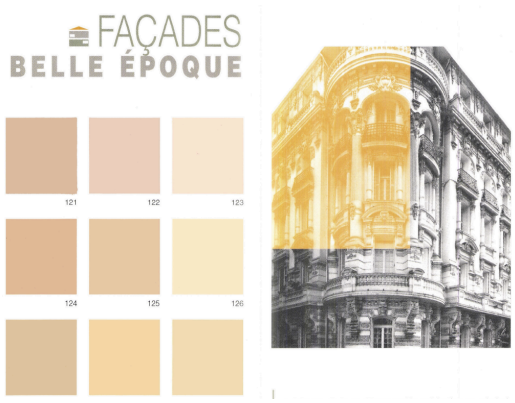


Fig.1-9 Base Color of Buildings in Nice

(Ravaler a Nice, Ville de Nice, p.2, 2008)

Similar to the urban color control approaches adopted by Italy, France also emphasizes the configuration of material. The introduction of French regulations mainly adopts the form of consultation.

1.3.3 Landscape color scheme of Japan

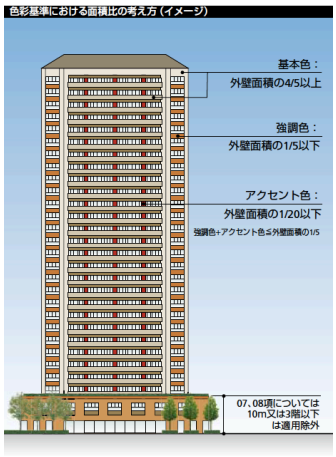
In June, 2005, in order to promote a good national landscape environment, Japan implemented the *Landscape Act*. The *Landscape Act* has restricted the behavior of urban landscape production as well as the elements of form, color and color, and color has been endowed with an important status[1-37]. In the area covered by the landscape scheme, if it requires renovation or construction of building, or

change of the appearance and color, corresponding application must be submitted to related department. It is forbidden to change the appearance and color of important landscape and building without obtaining approval. In accordance with Article 64 of *Landscape Act*, construction of building in violation of related regulation will be ordered to stop, and corresponding measures will be taken to recover the original appearance and color. Based on Japan's *Landscape Act*, various major Japanese cities have proposed various environment and color plans to ensure creation of great landscape. For control of urban color scheme, Japan has mainly adopted the approaches of law and city regulations. During our research, five Japanese cities was selected which have implemented the environmental policies and regulations to analyze their urban color schemes, including Tokyo, Kyoto, Osaka, Fukuoka and Sapporo as show in fig.1-10.

Fig.1-10 Tokyo, Kyoto, Osaka, Fukuoka and Sapporo in Japan

Tokyo is the capital city of Japan, which is located at Kanto. In order to maintain great landscape of Tokyo, the City Street Planning Section of Street Building Department at Tokyo Urban Development Bureau proposed the Tokyo landscape scheme[1-38)] and Tokyo landscape color guideline[1-39)]. By using the *Landscape Act* flexibly, the landscape formation criteria of application system have been established. In the Tokyo landscape scheme, the color restriction and induction for Tokyo colors are explained, and the color for important landscape buildings is proposed(fig.1-11). Based on the Tokyo landscape scheme, Tokyo proposed special color interpretation to induce the criteria for Tokyo

color scheme. For situations such as newly built building, or changing the color of outer wall, it can provide reference for color use. In the meantime, different color reference benchmarks are provided for different areas within Tokyo. On the aspect of color restriction method, in addition to a limited color range, the urban colors are mainly controlled through color setting for different areas, building color layering and area setting of building.



基準の適用部位・面積	色相	明度	彩度
外壁基本色	0R～4.9YR	6以上8.5未満の場合	4以下
		8.5以上の場合	1.5以下
	5.0YR～5.0Y	6以上8.5未満の場合	4以下
		8.5以上の場合	2以下
	その他	6以上8.5未満の場合	2以下
		8.5以上の場合	1以下
屋根色	5.0YR～5.0Y	——	4以下
	その他		2以下

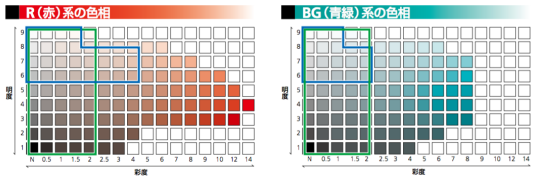


Fig.1-11 Color Usable Percentage and Color Chart in Tokyo

(東京都景観色彩ガイドライン, pp:5-7, 2007)

Kyoto is an ancient city in Japan, which is located at Kansai. In order to preserve the ancient atmosphere of Kyoto and create landscape with historical characteristics, Kyoto Urban Planning Bureau proposed the Kyoto landscape scheme[1-40)] and Kyoto landscape criteria[1-41).] The Kyoto color scheme mainly restricts the colors of building roof and outer wall based on the landscape concept. And there is a subsidy system for the preservation and recovery of the colors of historical buildings. In order to maintain the overall harmony of urban colors, Kyoto has very strict restriction for the setting of outdoor advertisings. First of all, the advertisement registration system was introduced, and the release of advertisement must be based on advertisement. Secondly, it provides the scope of colors that can be used in advertisement, as well as specific and detailed classification of forbidden colors. It also restricts the area of color use. In the meantime, high-quality outdoor advertisings will be rewarded.

Osaka is located at Kansai, Japan. Compared to the ancient city with a long history, Osaka is a modern city. With individualized, harmonious and friendly landscape as the center, the Urban Planning Department of Osaka proposed the urban landscape design guidance[1-42)] and the urban colors[1-43)] for

Osaka. In order to realize a beautiful world city Osaka, the Osaka landscape scheme was proposed based on the *Landscape Act* in the 20th year of Japanese Heisei era, and the landscape color criteria were proposed based on the color basis stipulated in the landscape scheme by combining the characteristics of various color elements. In the color restriction of Osaka, the land planning area was divided into areas of road, river, mountain and green land, basic colors for these areas were set, and the use of high-saturation colors was restricted(fig.1-12). The extraction of Osaka feature colors was mainly proposed through comprehensive consideration of various elements, such as the trend of using existing colors, ideal landscape color, properness of location and material color. The specific color setting is also proposed through the base color, harmonious color and color plates.

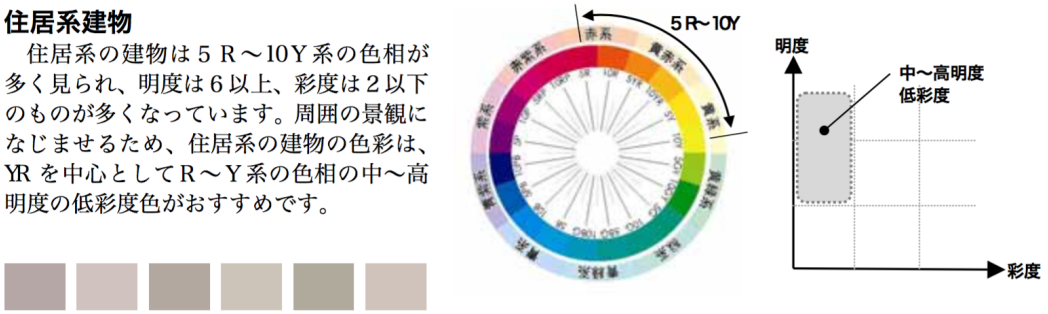


Fig.1-12 Recommended Color for Different Buildings in Osaka

(大阪府景観色彩ガイドライン, p.7, 2013)

Fukuoka is located at the Kyushu area, which is a coastal city beside the sea. With the objective to build a beautiful riverside tourist city, the Urban Planning Department of Fukuoka proposed various policies to guide the environmental governance of Fukuoka, such as the Fukuoka Urban Plan: basic policies for city landscape production[1-44] and Fukuoka Landscape Plan (draft)[1-45]. In recent years, in order to intensify environmental planning, Fukuoka proposed the importance of color restriction in the basic policies for beautiful city production. Although Fukuoka does not have overall color planning, different color schemes are implemented in different areas(fig.1-13). In Fukuoka Landscape Plan (draft), it is proposed to form standard based on the color landscape, and application must be submitted for construction, renovation and change of appearance. During the stipulation of regulations on urban colors, the urban colors were mainly regulated through methods such as prompt from base color and restriction of complementary colors.

Sapporo is located at Hokkaido, Japan. In order to create the beauty of harmony, so that each one would feel that this is a beautiful city, the Urban Planning Department of Sapporo proposed the Sapporo Landscape Ordinance[1-46)] and 70 landscape colors for Sapporo[1-47)] to control the urban landscape and landscape colors. In Sapporo, the color of big buildings is mainly controlled through color benchmark. In the meantime, the color chart based on 70 landscape colors for Sapporo was proposed and related color combination(fig.1-14) approach was recommended for control and induction of urban colors.

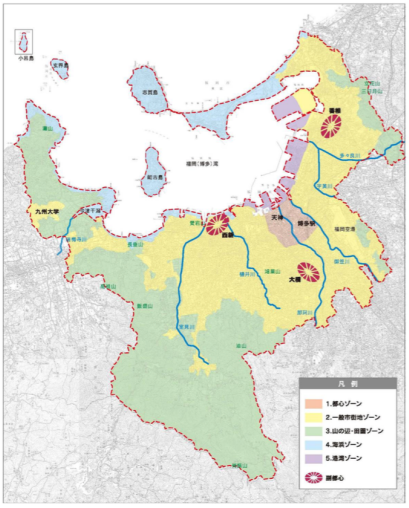


Fig.1-13 Region Division in Fukuoka

(福岡市景観計画, p.0-6, 2012)

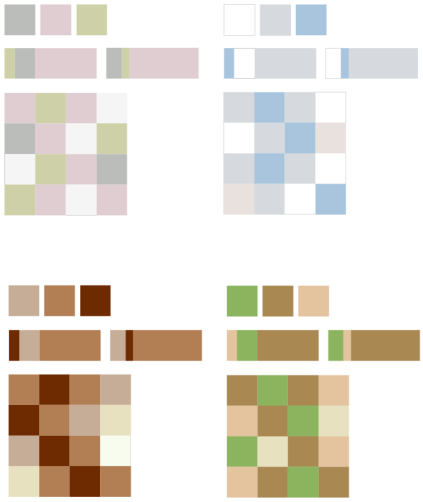


Fig.1-14 Color Combinations in Sapporo

(札幌の景観色 70 色, pp:8-14, 2014)

In accordance with the investigation of urban environment and color schemes adopted by Japan and 5 Japanese cities, it can be concluded that Japan mainly controls urban colors through the methods of color restriction, tone regulation and application etc. In fact, the color elements are mainly reflected by the application range, importance classification, area of colors, and the range of forbidden colors.

1.3.4 Landscape color scheme of China

(1) Current situation of Regulations

China had late development of color scheme. The first research on color scheme was conducted in 1991 when Beijing Institute of Architectural Design organized the research team of "Decoration, Environment & Color Research of Traditional Chinese Buildings[1-48)]" to conduct systematic research on the colors of traditional Chinese buildings. In August, 2000, in order to bid for the Olympic Games,

Beijing took the initiative to hold seminars on urban building color construction in China. The environmental colors of Chinese cities are mainly implemented through the overall planning and color regulations of various cities. This investigation involves the 5 Chinese cities of Beijing, Shanghai, Guangzhou, Wuhan and Chengdu, and analyzes the environmental color control approaches adopted in China in fig.1-15.

Fig.1-15 Beijing, Shanghai, Guangzhou, Wuhan and Chengdu in China

Beijing is the capital of China, which was also one of the cities that implemented a color scheme early. In order to strengthen the capital functions, build a world city, carry out its history and culture, and create a livable city with great ecology, Beijing proposed the overall urban planning[1-49)] for Beijing. In order to preserve the history and culture of Beijing, and maintain clean, neat and complete external façade of building, the Administrative Regulations to Maintain Neat Building External Façade in Beijing were proposed. During renovation, coordination between various parts of the building should be adjusted, and if it requires changing the original tone and model of building, application should be submitted to related department. In the meantime, *Notice of Comprehensive Implementation of Exterior Façade Cleaning and Painting Work for Urban Buildings*[1-50)] was released on October 8, 2000, which specifically pointed it out that "the building exterior façades in Beijing should adopt composite color with grey tone to build a steady, elegant, refined and harmonious urban environment." Beijing mainly controls the urban colors through selection of main tones.

Shanghai is a famous port city in East China. During the war, most area of China became colony,

which also resulted in varied architectural characteristics within Shanghai. The general urban planning[1-51)] of Shanghai has imposed certain restriction on the landscape planning and historic protective area of Shanghai. In June, 2005, Shanghai released the urban appearance standard for Shanghai[1-52)], part of the content involves the city tone and the newly built and renovated building(fig.1-16), and great importance is attached to the harmony between the tone and the surrounding buildings and spatial landscape, while no consideration was given to the main tone of city and color scheme. The urban colors are mainly implemented through regulations such as small-scale color planning and architectural conservation. The architectural aesthetics expert Professor Shen Fuxu from Tongji University said in an interview[1-53)] that: "In the past, there was no uniform regulations for building colors, but due to the inclusive Shanghai culture, Shanghai has very rich urban colors." At present, the Shanghai urban colors have two main characteristics: first of all, the urban buildings have the main tone of warm colors such as red, yellow and grey-red, and houses with red brick wall and red roof are scattered in the lanes and alleys; secondly, the buildings designed by architects from different countries during different periods have significantly different styles with rich colors, which highlight the inclusive style of Shanghai architecture.

Fig.1-16 Color Scheme for Guangzhou

(http://www.gzpi.com.cn/p_planning_149.html,2007)

Guangzhou is located at South China in Guangdong Province, which is a coastal city. In Guangzhou, the Guangzhou Overall Urban Planning[1-54)] is used to restrict and instruct the urban development, distribution of districts, preservation of famous historical city and urban planning. In 2007, Guangzhou Planning Committee released *Guangzhou Urban Color Planning Research* (draft)[1-55)], and determined that the main tone of Guangzhou should be yellow grey. The main range of its color planning was

limited to the downtown area of Guangzhou(fig.1-17), and the purpose was to address chaotic urban colors, achieve an urban color system for Guangzhou, protect the historic features of old town, and improve the environmental quality of city. On the aspect of color planning, first of all, color is divided into the main color, supplementary color and embellishment color; secondly, for intensity classification during the urban color restriction scope, it is divided into the key control area and general control area for color planning. Furthermore, the color scheme strategy is proposed in accordance with the color carrier of city, such as the street furniture and advertisement color.

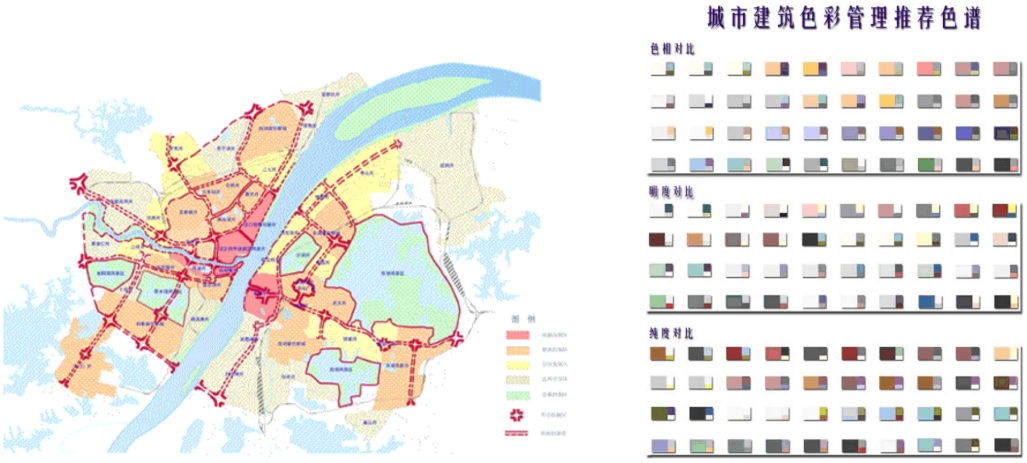


Fig.1-17 Recommended Region Division and Color Combinations in Wuhan
(武汉城市建筑色彩技术导则，pp:3-5, 2003)

Wuhan is located at Hubei Province in Central China, which is an inland city. The general urban planning regulations[1-56)] of Wuhan briefly have described the urban development and urban system. In order to deepen the overall planning of Wuhan, increase the environmental quality, improve the city cultural taste and carry out the characteristics of city image, in 2003, Wuhan City Planning Bureau proposed *Technical Guideline for Wuhan Urban Building Colors*[1-57)]. In the regulations, the overall goal is to build an "overall harmonious, diverse and uniform" image of urban building color landscape, and the regulations are mainly used to restrict the building colors of Wuhan. The regulations generally divide Wuhan into the following seven areas: the landscape coordination area, overall restriction area, development guidance area, overall guidance area, overall guidance area, landscape control area, large city landscape node and urban color interface control belt, and color planning to the 7 areas will be conducted separately. In the meantime, the urban building color chart is also proposed, including the

5 categories of cold grey system, warm grey system, neutral grey system, strong color system and light color system, and these systems should be selected in accordance with the area and architectural form. In order to improve the practicality of color scheme, Wuhan also released chromatography recommended for management of urban building colors. The recommended color combinations can be directly used to guide the design of building colors.

Chengdu is located in Sichuan Province of West China. In the overall urban planning for Chengdu[1-58)], specific planning is conducted to the urban system and downtown area. In 2004, Chengdu Color Research Report[1-59)] pointed it out that composite grey would become the basic color for building external walls in Chengdu. In the meantime, it also regulates the main tone of various districts in Chengdu. Chengdu is a city with less sunlight exposure, so peaceful grey can represent the leisure culture and urban character of Chengdu. In Chengdu color research report, the central area of Chengdu is divided into 4 types of color restriction areas: the strict restriction area, restriction area, non-restriction area and other general area. The strict restriction area mainly includes historical buildings and protective area, in which, the area of embellishment color should not exceed 5% of the overall area; the restriction area includes important roads and rivers, in this area, first of all, the tone must be uniform, and secondly, the area of embellishment color should not exceed 10% of the overall area; the non- restriction area includes relatively remote area and buildings not facing the street, and there is no regulation for this area, which can enrich visual experience of the citizens; the last area refers to general area other than the 3 areas mentioned above, which can make certain improvement based on the original tone, but the area of embellishment color should not exceed 15% of the overall area.

(2) Field color collection

In order to determine the color characteristics of Chinese cities, by combining the colors of historical cities, I chose the three historical cities of Zhouzhuang, Chibi and Fenghuang in Central and East China, and conducted field color collection in these protective areas. All three cities are located at Central and East China, there are related regulations to provide general protection of city, and the protection scope includes the building renovation, use of material, etc. They have similar geographical conditions, they all have buildings left from the Ming and Qing dynasties, and these historical areas are all well preserved at present.

During the field investigation conducted in 2012 and 2013[1-60)], Munsell color system was used for

collection and classification of building outer wall colors. The building consists of roof, outer wall, balcony, window and door, and we successively conducted collection and analysis of their colors. During collection of outer wall colors, the color used in most area is the tone of outer wall.

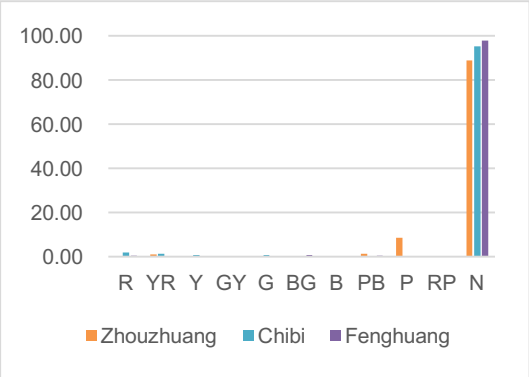


Fig.1-18 Use Frequency of Roofs (%)

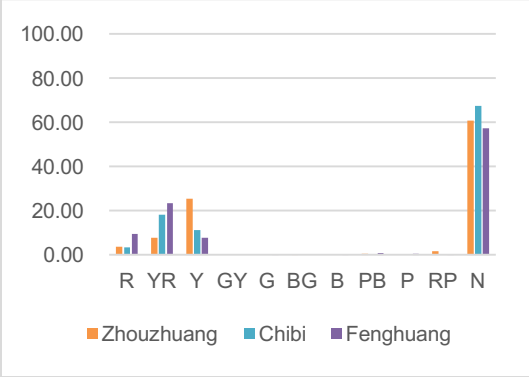


Fig.1-19 Use Frequency of Outer Walls (%)

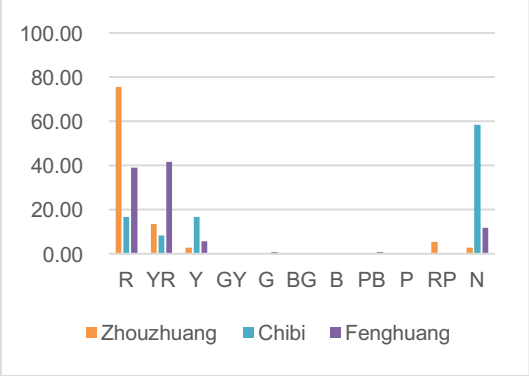


Fig.1-20 Use Frequency of Balcony (%)

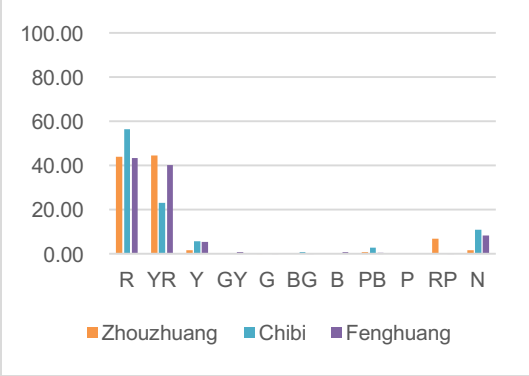


Fig.1-21 Use Frequency of Windows (%)

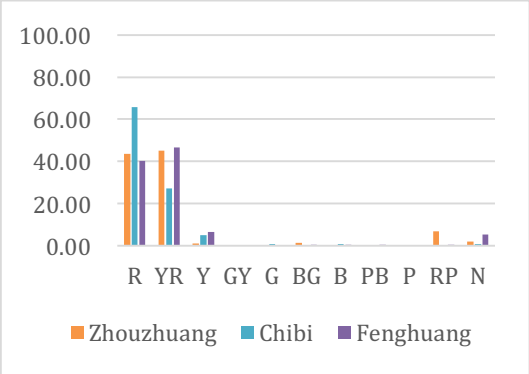


Fig.1-22 Use Frequency of Doors (%)

First of all, the roof will be discussed. In the analysis chart of fig.1-18, orange represents Zhouzhuang, blue represents Chibi, and purple represents Fenghuang. In accordance with the chart, it can be seen that the roof colors in the three cities of Zhouzhuang, Chibi and Fenghuang were mainly achromatic colors. Certain data of these three areas are concentrated at R~YR. On the aspect of value, it was concentrated at the achromatic level of 3; the value of chromatic colors was mainly concentrated at the medium-low value of 1-5. On the aspect of chroma, it was generally concentrated on the low chroma range of 1-3.

Secondly, it is the outer wall. In accordance with the fig.1-19, it can be seen that among the three cities, the achromatic colors were used in highest proportion, followed by the R~Y, and a small number of colors were concentrated at the hue of BG~PB. As for the overall hue application, the range was similar. On the aspect of value, achromatic colors with high value were massively used in these three cities. On the aspect of chromatic colors, colors with medium and high value were mainly used. From the perspective of chroma, the colors with low chroma were generally used.

Next, I will compare and analyze the color data of balcony, window and door(fig.1-20~1-22). In accordance with the data chart, it can be seen that all three cities had a small number of balconies, but the colors were mainly concentrated on the achromatic range of R~Y. On the aspect of tone, the colors used in the three cities were all concentrated on the range of low value and low chroma. Secondly, for the building windows, the three cities had relatively uniform colors, which were mainly concentrated on the hue of R~YR. Finally, it's the building door, the color of building doors was similar to that of windows, and the colors were mainly concentrated on the hue of R~YR. On the aspect of value and chroma, massive colors with low value and low chroma were used.

In accordance with the used colors shown on the above diagram, it can be concluded that the three cities had generally similar range of color use, and the colors were mainly concentrated on the achromatic colors of white and grey, and chromatic colors of red and yellow. Based on that, in order to determine the difference among these three cities on the aspect of color combination, I will continue analyzing the basic color used on the outer wall.

In accordance with the frequency of base colors being used on the outer wall, it can be concluded that the color use frequency varies within the same color range. Among the three cities, the achromatic colors or YR~Y colors were used most frequently in Zhouzhuang, and more than 90% of the buildings

chose color similar to white with a value higher than 8. Chibi preferred achromatic outer walls, and frequencies of white color with medium-low value and high value being used were almost the same. In Fenghuang, the base color of outer wall was in the range of R~YR was more than 20%, and the frequencies of wood color with medium value and medium chroma, white and grey being used were almost.

(3) Summary

In accordance with the urban survey of China, it can be concluded that it is generally difficult to control the overall urban colors. Most colors are used in the downtown area, while color use in historical areas focuses on restriction and protection. In addition, on the aspect of color use, it is concentrated on the regulation of main tone. In China, due significant difficulty of color control, strictness of color restrictions will also be adjusted correspondingly. In accordance with the color data obtained from field investigation, it can be seen that historical Chinese cities have similar scope in color use, but difference is reflected on the frequency of dominate color being used, and it is this kind of difference that has created different urban landscapes of various cities.

1.4 Comparative Analysis and Summary of Color Schemes Adopted by 4 Countries

In this chapter, I will conduct analysis and summary of color elements mentioned in the urban color schemes. In Italy, the atmosphere of urban colors is mainly controlled through the use range and layering of colors, and the specific color classification of use objects. France mainly adopts the approaches of the use range of color, the range of forbidden color, the specific color classification of use objects and the importance of use objects, and some cities indicate the use frequency of colors. In Japan, the elements of the use range of color, the range of forbidden color, the layering of color and the use area of color are mainly used to control the urban color atmosphere. China mainly determined color use through the color range and layering of colors as well as the importance of use objects. Different color-related elements used by the above four countries was summarized as shown in the following table 1.

The color-related elements mainly include the use range of colors, use frequency of base color, usable area, importance of use object, use object, etc. Among them, the use range of colors includes the range of base color, recommended color, restriction of forbidden color, etc.

Table 1 Color Restriction Method and Color Elements Used for Urban Color Scheme in 4 Countries

		Italy				France					Japan					China				
		Turin	Rome	Florence	Prato	Paris	Lyon	Marseilles	Bordeaux	Nice	Tokyo	Kyoto	Osaka	Fukuoka	Sapporo	Beijing	Shanghai	Guangzhou	Wuhan	Chengdu
Regulations	Law	○	○	○	○	○	○	○	○	○	○	○	○	○	○					
	Municipal Regulations	○	○	○	○	○	○	○	○	○	○	○	○		○	○	○	○	○	○
	Draft													○				○		
Publicity Way	Environmental Scheme	○	○		○						○	○	○	○	○					
	Urban Scheme					○	○	○	○	○			○	○		○	○	○	○	○
	Building Scheme			○																
	Color Scheme	○	○		○	○		○	○		○	○	○	○	○	○	○	○	○	○
Color Restriction Method	Region Division	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Characteristic Colors	○	○	○		○	○			○		○				○		○	○	○
	Recommended Color	○			○			○	○	○	○		○	○	○		○		○	
	Color based on Landscape Objects	○	○		○	○			○		○	○			○					
	Color based on Usable Area					○					○	○	○	○				○		○
	Position of Building Surface	○	○	○	○	○	○			○	○	○								
	Strict Degree of Restriction	○																○	○	○
	Material Color	○	○	○	○	○	○	○	○	○	○	○								
	Application System	○	○							○	○	○		○						
	Color Restoration	○			○		○													
	Consulting Service						○			○										
	Information System	○										○								
Color Elements	Usable Range	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Usable Area										○	○						○		○
	Shape and Design					○														
	Position	○	○	○	○	○	○		○	○	○	○								
	Use Frequency							○												
	Number of Colors											○*								

* Number of colors just used in outdoor advertising color scheme in Kyoto.

Through research in this chapter, I would also conduct summary of the implementation situation and approaches of urban color schemes in these 4 countries. The restriction method of urban color was summarized as follow:

1. Conduct regulation and guidance of colors through laws, government regulations or municipal regulations.

2. In accordance with the functions, divide the city into different regions, and adjust the overall color of city through control of section colors.

3. Characteristic colors of city is proposed in the color scheme or determined the color usable range through determination of main tone.

4. On the aspect of color regulation, determine the color combination and proposal of forbidden color etc. On the aspect of urban color combination, the overall color combination of city is mainly controlled through the classification of base color and accent color.

5. The facilities within city are divided into building, street furniture and outdoor advertising to conduct different color system management.

6. Colors are restricted by the usable areas.

7. Corresponding color rules will be proposed for colors of different parts that have appeared in the buildings.

8. In the city, the strict degree of color restriction is determined in accordance with the importance of area.

9. With material used in the city as the theme, regulate color based on the material. Similarly, suggestions and regulations will also be provided for colors of different materials and forms.

10. Application system is used for urban colors. For modification of outer wall color, application must be submitted to related department.

11. Within the required time, the building external façade must be cleaned and renovated to maintain persistent and beautiful color.

12. Consulting service is offered by urban environmental department.

13. Certain punishment will be imposed for violation of regulations.

According to the color restriction method in cities of 4 countries, regional division is one of the common methods adopted in these countries. All cities have divided historical areas into a separate

category and impose stricter color restriction. On the other hand, according to regulations on city colors, both modern and historical areas have certain policies to accept color introduction within small scope, and some restrictions on colors used in small area also apply to outdoor advertising. However, there is no further instruction as how to use color in small area. According to restriction imposed in these regulations, most historical areas in Europe have stone buildings; in China and Japan, most buildings in historical areas are wooden buildings and painted building.

1.5 Conclusion and Discussion

In accordance with the investigation and research of this chapter, it can be concluded that various cities in these 4 countries have all conducted color planning based on urban districts. They have the strictest color restriction for historical areas, and most have adopted protective measures. On the aspect of color elements, measures are taken to regulate the range of color use and restrict related colors in accordance with different use objects. Therefore, during regulations of color, I should regulate the importance of different areas, color use situation, influence of district characteristics on color and color restriction degrsee based on district division. On the aspect of color restriction, the restriction of dominate color adopts the basic restriction method. Therefore, for the planning of urban color, I believe efforts should be made to further conduct effective planning of urban color in accordance with the current situation and nature of city based on the district distribution and color use range.

During research on the current situation, it can be found that there is higher tolerance for small-area color. For example, for color used within 10% or 20% area, the color use range can be properly broadened. However, there is no further instruction as to how conduct planning of colors used in small area.

During the research, I found certain similarity between some of the color schemes implemented in Chinese cities and the color schemes currently implemented by Japan. They both have the objective to protect the city personality, and they both use the Munsell color system to restrict the colors used in city. However, when the domination color is not determined, it is very difficult to implement specific color scheme in China. As a result, although color schemes have been introduced at current stage, they are not implemented in accordance with the requirement. Therefore, when China refers to the Japanese color scheme, this process should also be gradual.

By combining the research result of this chapter, wooden buildings and painted building was chosen in Chinese and Japanese historical areas as the research objects. By combining the possibility of color use in small area of outdoor advertising, a further study would investigate on restriction of outdoor advertisings color in Chinese and Japanese historical areas.

Similarly, in order to preserve the city personality, considering the actual situation of city, it is not necessarily to use all color elements and control approaches summarized in this chapter. In accordance with the city current situation and the goal that needs to be achieved, I can effectively choose required color elements and related restriction methods to conduct planning of urban colors step by step. As for how to accurately choose relevant color elements and control methods, there is no further correlation analysis. In the future, I should conduct further research and discussion on the construction of color atmosphere and the relation between method and elements.

Reference and Bibliography

(1-1) 崔唯：城市环境色彩规划与设计,北京，中国建筑工业出版社，p.16，2006

(1-2) 三星宗雄：色彩地理学の可能性，神奈川大学人文学会誌 05（175），pp.65-93，2013

(1-3) 崔唯：城市环境色彩规划与设计,北京，中国建筑工业出版社，p.19，2006

(1-4) 井晓鹏：历史文化名城城市色彩体系控制研究-以西安老城区为例，长安大学，p.9，2007

(1-5) Codice Dei Beni Culturali e del Paesaggio, 2004

(1-6) 吴晔：城市色彩规划与设计研究，湖南师范大学，p.11，2007

(1-7) Piano Del Colore, Citta'Di Torino, 1997

(1-8) Guida per la manutenzione delle facciate pulire colorare conservare, 2009

(1-9) Piano di tutela dell'immagine dell'area urbana del municipio roma 2 (pinao del colore e dell' arredo urbano), 2008

(1-10) Estratto dal verbale delle Deliberazioni del Consiglio del Municipio Roma 6,2013

(1-11) Deliberazione N.51: Piano Della Tutela Dell' Immagine Dell' Area Urbana Del Municipio Roma Ⅱ, 2007

(1-12) Variazioni ed integrazioni del Regolamento Edilizio di Roma Capitale: Piano del Colore di Roma Capitale, 2013

(1-13) Regolamento edilizio comune di Firenze, 2014

(1-14) Regolamento edilizio, 2014

(1-15) Guide delle norme per gli interventi del colore, 2013

(1-16) Jean-Philippe Lenclos: Colors of the World, W.W.Norton&Company, 2004

(1-17) Zone de protection du patrimoine architectural, urbain et paysager, 1983-2010
(1-18) Aire de mise en valeur de l'architecture et du patrimoine, 2010
(1-19) 崔唯：巴黎的城市色彩，广西城镇建设(6)，p.24，2010.6
(1-20) Pour les Acteurs de la Construction et de l'Amenagement, 2008
(1-21) Publicite, Enseignes, et Preenseignes, a Paris Cahier de Recommandations, 2011
(1-22) Caractere de la zone urbaine generale(UG), Reglement du PLU, 2013
(1-23) Mairie De Paris – Façade en Pierre Naturelle,2008
(1-24) Mairie De Paris – Concevoir sa Devanture Commerciale et son Enseigne, 2008
(1-25) 贾欣，城市色彩的地域特色研究-以防城港城市色彩专项规划为例（11），广西城镇建设，pp.118-122，2013.11
(1-26) Le ravalement de facades a Lyon, 2010
(1-27) Amenagement urbain, Grand Lyon, 2010
(1-28) Plan couleur de la ville de Lyon, 2003
(1-29) Zone de Protection du Patrimoine Architectural, Urbain et Paysager du Panier, 1997
(1-30) Preconisations pour la mise en couleur des facades, 2013
(1-31) Charte de la Construction Durable, 2009
(1-32) Catalogue du Mobilier Urbain, 2007
(1-33) La Charte du mobilier urbain de la ville de Bordeaux, 2007
(1-34) Nice Ville Verte de la Mediterranee, 2010
(1-35) Guide des Couleurs, Mairie de Nice, 2007
(1-36) Ravaler a Nice, Ville de Nice, 2008
(1-37) 景観法：http://law.e-gov.go.jp/htmldata/H16/H16HO110.html，2004
(1-38) 東京都景観計画：東京都，2011 年 4 月改訂版
(1-39) 東京都景観色彩ガイドライン，2007
(1-40) 京都景観計画，2011
(1-41) 京の景観ガイドライン，2011 年
(1-42) 町並を考える（都市景観のデザイン指針），2013
(1-43) やわらぎ　大阪・町の色（大阪市色彩景観計画ガイドブック），2013
(1-44) 福岡都市景観形成基本計画，1988
(1-45) 福岡市景観計画，2012
(1-46) 札幌市都市景観条例，2007
(1-47) 色彩景観基準運用指針（札幌の景観色 70 色），2007
(1-48) 崔唯：城市环境色彩规划与设计,北京，中国建筑工业出版社，p.19，2006
(1-49) 北京市城市总体规划，2004-2020
(1-50) 北京市建筑物外立面保持整洁管理规定，2000

(1-51) 上海市城市总体规划，1999-2020
(1-52) 上海市城市容貌标准规定，2005
(1-53) 刘梦圆：上海城市色彩景观研究与对策，华东大学，pp.？-？，2010
(1-54) 广州城市总体规划，2011-2020
(1-55) 广州城市色彩规划研究，2007
(1-56) 武汉市总体规划，2010-2020
(1-57) 武汉城市色彩技术导则，2003
(1-58) 成都市城市总体规划，2011-2020
(1-59) 成都色彩研究报告，2004
(1-60) 庄怡、山本早里、「景観計画における色のコントロール方法の抽出ーイタリア、フランス、日本、中国における町の色彩計画をもとにー」、日本建築学会学術講演梗概集(環境工学 I)、日本建築学会、pp.487-488、2015

Chapter II

Current Situation of Chinese and Japanese Regulations on Outdoor Advertising

2.1 Introduction and Purpose

Due to the influence of clashing color cases from outdoor advertising, the restriction on outdoor advertising has been put on the agenda. Based on this status quo, in this chapter, I start investigation from the origin and history of regulations on outdoor advertising; then, clashing color cases and related solution have been investigated and studied.

Then, this research mainly investigates the outdoor advertising colors in the historical areas. Based on this, this chapter also studied the current situation of restrictions on outdoor advertising colors in this chapter. Japan and China, the two Asian countries which use Chinese characters, was selected as the research objects, and investigated related regulations and schemes for outdoor advertising.

Based on the case study of clashing color, the study analyzes the influence of outdoor advertising on people's impression of a city, the approaches of advertising restriction and the feasibility to implement these approaches. Then, through investigation of regulations on outdoor advertising current implemented in Japan and China, the restriction methods and color regulations for outdoor advertising was summarized. Based on the reality, the current situation of outdoor advertising used in Japan and China, and the relation between various regulations was compared. Among them, I further investigated the restriction approaches for outdoor advertising in historical areas and their characteristics. Finally, based on analysis of current situation, this study pointed out and analyzed the problems existing in restriction approaches for outdoor advertising.

2.2 Methodology

Through literature survey, first of all, this chapter study the origin and history of restrictions on outdoor advertising. Then, I study and analyze the "clashing color" cases of outdoor advertising, and investigate related solutions to clashing color cases. Based on previous researches on various outdoor advertising cases, the implementation method and feasibility of outdoor advertising restriction was analyzed.

By April, 2013, the *Ministry of Land, Infrastructure, Transport and Tourism*(MLIT) in Japan had released the list of local public Outdoor Advertisement Offices. Among them, 47 were in prefectures, 20 were in designated cities under government order, 42 were in local core cities, and 57 in other

municipalities; the 166 Outdoor Advertisement Offices[2-1)] had stipulated outdoor advertising regulations. Based on the outdoor advertising regulations released by these 166 Outdoor Advertisement Offices on their city websites, investigation and analysis of the current situation of outdoor advertising in Japan was conducted. Comparison and analysis were made on the aspects of advertising planning method, advertising restriction elements, existence of color restriction, color elements, related approach of color restriction and implementation method etc.

In 1994, the *Advertisement Law of the People's Republic of China* was passed, and its implementation started in February, 1995. In April, 2015, modification was made to the *Advertisement Law*. At present, the Chinese regulations on outdoor advertisings are mainly based on the *Advertisement Law*, and by combining the urban planning of each city, the *City Outdoor Advertisement Management Method* was stipulated to restrict the use of outdoor advertising. However, the restrictions regulation of advertising color has not been purposed in the *Advertisement Law*. In the meantime, the *City Outdoor Advertisement Management Method* has no specific regulation on colors either. Therefore, for the advertising colors used in China, this chapter investigated the current situation of advertising colors through regulation investigation and current researches.

2.3 Origin and Case Study of Outdoor Advertising

In the Middle Age, the billboard was still unknown. Back then, all stores face the street, they were completely open, and in this way, products in the store were very clear to see, and they did not need billboard. However, the wine house or accommodation house needed some billboard for instruction. In Roman times, the front of wooden pole on wine house eave would be tied with shrub branch for instruction, and this was the origin of billboard[2-2)]. Later, in order to attract more guests, the wine house or accommodation house started to hang different objects outside, such as Christian cross. With the changes of the times, common stores also began to use portraits related to their products[2-2)]. For example, a knife store may establish a billboard with knife pattern; a glove store may have a billboard of glove pattern. Among the Middle Age billboards, there was also a type of billboard based on heraldry[2-3)]. In particular, the nobility mansions in the city generally had family heraldry as decoration. Since the 18th century, a combinational billboard was introduced, which combined two completely irrelevant products[2-2)], such as crown and glass. As for what triggered this kind of design, one theory

was after the apprentice graduated from his mater's store, he would open his own store. At this moment, he would combine his master's mark and his own billboard characteristics, and this kind of combinational billboard was generated.

In Roman times, the billboards were not like current form. Back then, some instructions would be drawn with fantastic theme in the entrance, and the house would be named based on the theme[2-4]. In the Middle Age, Paris named the city through 3 systems. First of all, it was named after the celebrity related to the city; secondly, the name of professional or store in the city would be used; thirdly, it was named after the image on outstanding billboard in the city[2-5]. The second and third systems were inherited from the Roman times. In 1826, in order to promote lottery, large posters were attached on the carriage in London as shown in fig.2-1. These posters were called urban monsters, which had severely damaged the city image, and it was forbidden in 1853[2-6]. This could be regarded as the initial action to restrict outdoor advertising.

Fig.2-1 Carriage Posters in London

(春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.125-126, 1981.6)

In Japan, with the popularization of coating, billboard became larger and more diverse. Iwatani Matsudaira from Tengu Tobacco used the biggest billboard in Ginza[2-7]. In 1895, Murai Brothers set the billboards of SUNRISE HERO at the mountainside of Nyoigatake in Kyoto[2-7]. There was one word on each billboard, which stood on the mountainside, just like sunset glow, so they were also called the "sunset glow billboards". However, because they affected the view, they were soon removed

under order. However, this was also the beginning of independent billboards in Japan.

The first half of 20th century was a new era in which various industrial groups were established[2-8]. The advertiser association was also built during that period. Later, many departments have also been successively established to address related issues of outdoor advertisement. In 1949, Japan released the Outdoor Advertisement Law. However, since then, due to improper use of outdoor advertising colors, the establishment of some outdoor advertising affected the surrounding environment, and they were ordered to adopt correction.

The clashing color has been widely used since the McDonald's event in Setagaya, Tokyo[2-9]. It is used to represent outdoor advertising color not in harmony with the surrounding environment, and the color which might generate unpleasant feeling. Representative clashing color cases of Japan are introduced as follows.

Since late March, 1981, the bus colors were changed from white and blue to yellow and red in Tokyo. For the new colors, there was some positive feedback that the colors looked warm; however, there were also negative comments: the color was dazzling and uncomfortable. In the meantime, yellow and red were also similar to the symbol colors of “safety and attention” decided by JIS, so it had certain influence on the functionality of color. Later, based on the opinion of 8 color experts, the bus colors were changed.

Fig.2-2 Brown Billboard of McDonald’s in Kyoto

In 1985, a McDonald's store in Setagaya, Tokyo set a 12.5m*15m*5m large neon billboard on its

roof, which used the symbol corporate colors of red, yellow and white, different forms were presented through change of colored lamp. However, this plan was strongly opposed by the surrounding residents. However, the red color is too stimulating, which tends to make people feel tired, and flashing lamp tends to make people feel anxious. This problem was regarded as a clashing color problem, which was broadly reported in news and TV. In 1995, this billboard was removed. Later, in historical blocks in Tokyo, McDonald's has used brown billboard which is not the corporate color(fig.2-2).

In 1986, the branch of Bic camera was opened at the East Exit of Takasaki Station of old Japan Railway (JNR). The orange fluorescent material was used within an area of 1000 square meters on the outer wall of store. The surrounding residents lodged complaints against it. On October, 24 of the same year, Takasaki Regional Health Committee required Biccamera to make improvement and correction. In June, 1987, Biccamera changed the color to beige.

In 1997, pink resident event occurred in Yokohama. The keynote color of residence outer wall was pink, and the color was painted with gradual change. However, the surrounding residents all expressed that the pink color made them feel stressful and lose their appetite, and it had caused negative impact on surrounding people.

In addition, in areas such as historical blocks and natural parks, there were also many noisy color events caused by bright billboard colors. In September, 2017, Nagoya held the movement to eliminate illegal advertisement[2-10]. It aims to improve the urban living environment, and ensure beautiful landscape and comfortable living environment of the city.

According to the above cases, it can see that without restriction, the use of outdoor advertisings will generate negative impact on surrounding environment in a certain degree. For various problems during setting of outdoor advertisings, current restrictive regulations on outdoor advertisings will be further studied in the next chapter.

2.4 Japanese Regulations on Outdoor Advertising

2.4.1 Outdoor advertising restrictions in prefectures

Based on related outdoor advertising groups released in Japan, I conducted analysis and summarization of outdoor advertising restrictions in Japan in accordance with administration partitions, such as province, city and village. First of all, the restriction strength, implementation

approach and various restriction elements for outdoor advertising was investigated in prefectures. Then, I focused on the aspect of colors, and further verified whether these restrictions include restriction of color, related approach for color restriction and related elements of color. Finally, the approaches that can be used for color restriction was investigated and summarized in historical areas.

Article II of the *Outdoor Advertisement Law*[2-11] has defined the outdoor advertising as follows: advertising displayed outdoors to the public on a long-time basis, including the board, standing board, poster and similar exhibits displayed on objects such as advertising tower, poster board or building. These exhibits include the exhibit on building surface, independently standing exhibit and mobile billboard. In Japanese cities, various administration groups mainly further regulate local advertising rules by combining the actual local situation based on the *Outdoor Advertisement Law*. Generally speaking, the city outdoor advertisings are mainly restricted through the advertising regulations, implementation rules and advertising rules.

The outdoor advertising within Hokkaido are mainly restricted through outdoor advertising regulations[2-12]. On the aspect of implementation approaches, first of all, the city is divided into different areas, the restriction or permissible criteria for outdoor advertising are proposed based on the area, and in the meantime, the restriction strength of advertising is also planned based on the area. Among them, historical areas belong to areas forbidden of advertising. Secondly, the application contains the subsequent maintenance of advertising and the advertising alternation procedure, and they focus on supervision of the safety issue of advertising. Furthermore, the companies that have businesses of outdoor advertising must be registered, and they can only conduct related operation based on certain understanding of the regulations and processing of advertising setting. Finally, when any advertising is found to have violated the regulations, guidance must be provided to the advertiser and management to modify, move or remove the billboard. A fine will also be imposed for violation of regulations. However, the regulations on colors are only mentioned: efforts should be made to plan the presentation method for colors, and propose it in the application.

Aomori Prefecture[2-13] has divided the prefecture into forbidden area and permitted area(fig.2-3). The locations and objects not allowed to post or place advertisement are specified, and instruction of permitted advertising types is also provided. In the meantime, the application system and registration system of advertising operators are also proposed, and a penalty system is proposed for violations.

Aomori has planned the building colors separately, but it has not mentioned the advertising colors.

On advertising restrictions, Iwate Prefecture[2-14)] has also regulated the distance between advertising and building, and the distance between different advertising boards. On the aspect of color restriction, the color scheme was only proposed in several cases, but there is no general advertising regulation that has terms regarding color description.

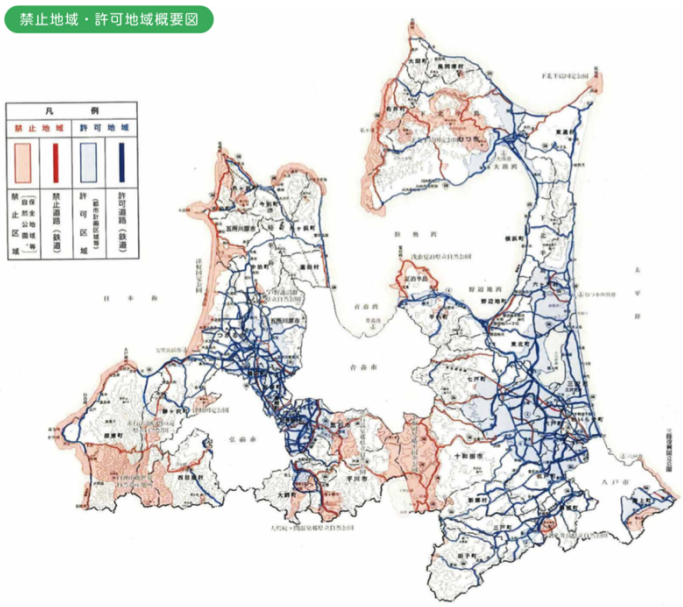
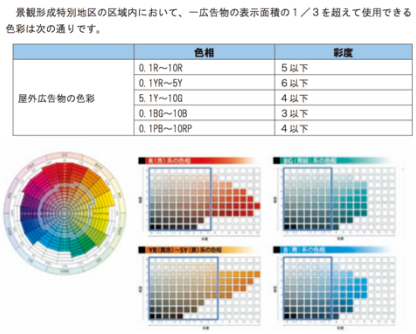


Fig.2-3 Region division in Aomori Prefecture
（屋外広告物規制のあらまし（青森県），p.8, 2014）

In regions such as Gunma Prefecture[2-15)] and Saitama Prefecture[2-16)], they have also classified the nature of advertising, such as home use billboard, commercial advertising and instructive sign. For outdoor advertising with different nature, restriction on the setting area and size is also provided.

区　分	表示等の制限に関する事項
屋上設置の広告物	□ 建物の屋上に、広告物を表示し、又は設置しない。
建物壁面等の広告物	□ 広告物の光源に、赤色又は黄色※1を使用しない。 光源は点滅させない。
広告物の色彩※2	□ 建物の壁面のうち、高さ 10m以上の部分を利用する自家用広告物の色彩は、水辺景観と調和した低彩度を基本とし、一広告物の表示面積の１／３を超えて使用できる色彩の彩度を定める。 【色相】 → 【彩度】 0.1R～10R → 5以下 0.1YR～5Y → 6以下 5.1Y～10G → 4以下 0.1BG～10B → 3以下 0.1PB～10RP → 4以下
表示等の制限の例外	□ 許可を受けずに表示できる広告物には、本表に定める表示等の制限は適用しない。 □ この基準に適合しない広告物であっても、特にデザインが優れ、水辺景観の形成に寄与するものについては、この基準によらないことができる。

Fig.2-4 Color restriction for outdoor advertising in Tokyo
(屋外広告物のしおり（東京）， p.25, 2016)


景観形成特別地区の区域内において、一広告物の表示面積の１／３を超えて使用できる色彩は次の通りです。

	色相	彩度
屋外広告物の色彩	0.1R～10R	5以下
	0.1YR～5Y	6以下
	5.1Y～10G	4以下
	0.1BG～10B	3以下
	0.1PB～10RP	4以下

Fig.2-5 Color restriction for outdoor advertising in Kyoto
(京の景観ガイドライン, p.2-17, 2014)

On the elements of outdoor advertising design, regions like Hokkaido[2-12], Iwate[2-14], Miyagi[2-17], Ibaraki[2-18] and Tokyo[2-19~2-20] have regulated the advertising height, color(fig.2-4) and size, and its distance from outstanding buildings based on the classification and location of outdoor advertising. Regions, such as Tokyo and Kanagawa Prefecture[2-21], have also specified the requirement for advertising lighting in their regulations, and the use of flashing lights is forbidden. For advertising restriction, Iwate Prefecture has proposed the distance between independently standing outdoor advertisings, and the acceptable number of advertising in the area. However, there is no further instruction on the aspect of color restriction.

On the aspect of color restriction, Kyoto[2-22], Nagano Prefecture[2-23], Toyama Prefecture[2-24] and Ishikawa Prefecture[2-25] have adopted the Munsell color system to restrict the colors used on outdoor advertisings as shown in fig.2-5. The colors used in large area of advertising (background color) are restricted through the Munsell hue and chroma. Most cities that have restriction on colors have defined colors with chroma above 8 as bright colors, and imposed related restriction. In addition, some local prefectures, such as Aichi Prefecture[2-26] and Mie Prefecture[2-27], have described forbidden colors in language through coordinated theme. For example, it is not allowed to use primary colors like and red, and the use of black is also forbidden.

In addition, many prefectures have no strict restrictions of colors used in advertising in the guideline, and most only mention color restriction in the regulations. In addition, in the advertisement application material, specific advertising color scheme needs to be set to control color use in an indirect way.

For outdoor advertising in historical areas, Hokkaido[2-12], Kyoto[2-22] and Toyama Prefecture[2-24] have imposed restrictions on advertising within the historical area, natural area and landscape area. Hokkaido proposed that within the restricted area, consideration must be made to coordinate advertisings with the surrounding environment to form great landscape and highlight the local characteristics. However, no specific outdoor advertising setting and planning elements have been released in the regulations.

Overall, the outdoor advertisings in prefectures are mainly controlled through the three regulations of advertisement regulation, implementation principle and guideline. Due to large administration area, in accordance with the analysis, it can be seen that these prefectures mainly conduct classification and restriction of outdoor advertising in the major direction based on the *Advertisement Law*. Because the

approaches are mainly based on the *Advertisement Law*, there is no significant difference between the restriction approaches adopted by various prefectures. They regulate various approaches through restriction intensity and strength in accordance with their specific situation.

On the aspect of outdoor advertising elements, restriction on board size, height and color is mainly conducted based on the outdoor advertising type. On the aspect of color restriction, various prefectures mainly regulate color use through coordination of theme. In addition, some prefectures restrict colors through language, such as black and tawny, while some prefectures regulate colors through direct restriction of hue and Munsell chroma.

2.4.2 Outdoor advertising restrictions in cities

This chapter summarized and analyzed the advertisement regulations adopted by various designated cities under government order, local core cities and other municipalities in Japan. In accordance with the summarized data, it can be seen that the restrictions on outdoor advertisings adopted by the Japanese cities are similar to those by prefectures, and they also restrict the urban outdoor advertisings and regulation implementation through the advertising guideline, advertising regulation and implementation rule.

In the advertising regulations adopted by cities such as Sapporo[2-28~2-29], Sendai[2-30] and Chiba[2-31], restrictions on advertisings are mainly conducted through partitioning and advertising classification. First of all, for different areas, different outdoor advertisings are acceptable. For some areas, such as the cultural protection areas and natural areas, the installation of advertising is restricted, while the downtown area is more acceptable to outdoor advertising. Furthermore, the advertising size and height are decided by the type and location. Similarly, it also requires application to set outdoor advertisings. During the application procedure, specific description should be provided, including all related elements of advertising such as size, color etc., and the time and location to set the advertising. In accordance with the nature of advertising, there are different application standards for home use billboard and commercial advertising. However, under the precondition of satisfying certain regulation, some temporary advertisings and home use billboard could be directly used without application. Each advertising has a corresponding service life, and after the advertising is set, there is also related regulation on its maintenance and safety inspection. In particular, when there is hidden safety problem and no maintenance is provided, related department has the right to dismantle the advertising.

Similarly, for situations such as aging and color fading, repair must be provided. For advertising that violate the regulation, a penalty system has been established to impose certain fine.

On the aspect of advertising design elements, cities such as Kyoto[2-32], Nagoya[2-33] and Osaka[2-34] mainly stipulated regulations to restrict the size, height, shape, color, material and lighting of advertising. As shown in the picture of advertising regulation on the outer wall, the maximum height and size are regulated. For roof advertising, the maximum height is regulated. For outstanding billboard, there is also strict restriction on the outstanding part. Finally, related regulation has also been provided for the number of advertising that could be set on one wall.

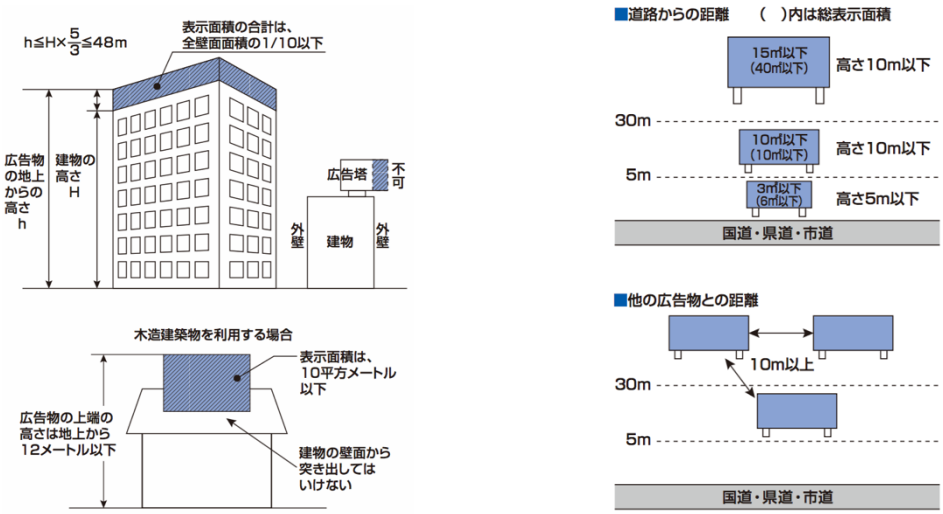


Fig.2-6 Size, Height and Space for different outdoor advertising in Kawagoe
(川越市屋外広告物条例のしおり, p.9, 2016)

Most cities have conducted planning of outdoor advertising colors, and compared to the prefecture regulations, regulations on the aspect of colors are more specific. Most cities have adopted the Munsell color system. The outdoor advertising color regulations of Sakai[2-35] require restrictions of base color of advertising, and the colors used in most area of advertising should be coordinated with the surrounding environment. Kumamoto[2-36], Kawagoe(fig.2-6)[2-37] and Higashi Osaka[2-38] restrict the highest chroma of outdoor advertising. Kyoto[2-32], Toyonaka[2-39] and Himeji[2-40] restrict the advertising background color on the aspects of hue and Munsell chroma. As for Munsell chroma of bright colors, different cities have different regulations. Cities like Atami[2-41] and Hagi[2-42] have not only specified

the use of background color of city, but also regulated the text color and pattern design of outdoor advertising. For example, for background color with high Munsell chroma or striking background color with high contrast, the coordination can be improved by reducing its chroma or modifying its color.

Based on related regulations on outdoor advertising in historical area adopted by various cities, most cities have set historical building, natural landscape and environmental greenbelts as advertising restriction areas. Most of these areas are not allowed to set outdoor advertising. For some areas, stricter restriction is imposed based on original scope.

2.4.3 Summary

During research on the advertising-related regulations released by 166 Japanese outdoor advertising organizations, it can be concluded that they have similar restriction and implementation methods. Based on the Japanese Outdoor Advertisement Law, the advertising release method is regulated through advertising regulations and implementation rules. Secondly, by combining the characteristics and urban planning requirement of the city, the requirements for advertising are presented through the guideline.

Then, the restriction methods and design elements of outdoor advertisings were summarized in prefectures and cities. The following 11 methods can be used for advertising restriction:

1. The partition of areas is also correspondingly adjusted in accordance with the outdoor advertising restriction method and strength for different areas, such as the historical areas and downtown area.
2. Stipulate locations forbidden to set outdoor advertising. It is not allowed to set outdoor advertising near certain locations, such as the overpass and landscape plant.
3. Through classification of advertisements, such as advertising fascia, advertising tower, poster, outstanding billboard and standing board, impose corresponding restriction on different advertising.
4. Impose restriction in accordance with the nature of outdoor advertising, such as home use billboard, commercial advertising and guide sign.
5. For safety maintenance of outdoor advertising, after the advertising is set, regulation maintenance should be provided. If there is severe damage, aging or color fading, it should be dismantled.
6. Restrict advertising lighting. Special lighting or reflective coating is forbidden.
7. Recommend or restrict related design elements of outdoor advertising, such as the used color, height,

size and idea etc.

8. Grasp the time to set outdoor advertising.

9. Permission application: when setting the outdoor advertising, application should be submitted to related department to set the outdoor advertising.

10. Advertising operator registration system: the companies that set outdoor advertising in city must be registered in related department, and they can only conduct outdoor advertising operation based on understanding of related advertising system.

11. Punishment system: the outdoor advertising that violate the outdoor advertising regulations must be imposed with related punishment, such as forcefully dismantlement, guidance to advertising setting or a fine.

For historical areas, most cities focus on protection and restrict setting outdoor advertising in historical blocks. For streets with many historical buildings, the advertising colors are restricted for coordination and formation of good landscape. However, specific planning has not been announced yet.

As for various design elements involved during restriction of outdoor advertising, the following 12 elements was summarized: advertising size, setting height, advertising color, style, material, shape, location, outstanding distance, lighting, quantity, distance between advertisings, and advertising placement method.

The color regulation can be generally conducted on the following several aspects: 1. Propose the purpose of urban color, such as recommending using natural colors, and choosing color based on coordination with the building. 2. Set the main tone of advertising, such as using warm colors. 3. Use language to describe recommended and forbidden colors. Such as, forbid the use of primary colors, recommend using tawny, etc. 4. Use the Munsell color system, and restrict the advertising background color through hue and Munsell chroma. 5. Use the hue,value and chroma of Munsell color system to restrict the outdoor advertising colors. 6. Adjust the striking feature of advertising by changing high-chroma and striking colors. In the sixth restriction method, some cities have not specified the background color and text color of advertising, but under most circumstances, the advertising color mentioned above refers to the color used in most area.

On the color restriction methods, this study divided them into direct and indirect restriction methods.

Some cities have provided explicit color instruction and range of colors that can be used in their advertising guideline, and I believe this method is direct color restriction method. Some cities have not clearly specified the color scope in their guideline, the color use is determined based on the submitted application material, and I believe this method is indirect color restriction method. However, no matter which restriction method is used, current Japanese outdoor advertising regulations have strictly requirements for color use.

Finally, the advertisement guidelines of prefecture and city was compared, such as Osaka Prefecture[2-43)] and Osaka City[2-34)]. The advertising guideline of Osaka Prefecture has specified the advertising application procedure in detail; in the advertising guideline of Osaka City, it has simplified the advertising application procedure, which has further illustrated division of areas within the city. Through comparison of the advertising guidelines of Fukuoka Prefecture[2-44)] and Fukuoka City[2-45)], I also found that the advertising guideline of Fukuoka Prefecture explains the use of advertising regulations in detail, while the advertising guideline of Fukuoka City as specified division of areas and classification of outdoor advertising types.

2.5 Chinese Regulations on Outdoor Advertising

China has introduced the *Advertisement Law*[43)], but the *Advertisement Law* only focuses on the content and product nature of advertising, while there is not too much instruction on the setting of outdoor advertising. At present, China has not introduced related landscape law to provide legal basis for urban environment management, and the setting of outdoor advertising is mainly restricted by advertiser based on the "outdoor advertising management method" of the city. Based on this current situation, for the setting of outdoor advertisings in China, I mainly summarized and analyzed the outdoor advertising management methods adopted by various cities and the prior researches. In accordance with the current situation of outdoor advertising in China, this study organized related management problems of outdoor advertisings currently adopted.

2.5.1 Outdoor advertising restrictions in cities

Similarly, this chapter organized the outdoor advertising management methods of Chinese cities based on the provincial and municipal administration partitions. First of all, I investigated related outdoor advertising regulations on provincial level; secondly, the urban advertising regulations was

studied. The advertising management regulations adopted by Chinese cities are mainly based on the *Advertisement Law of People's Republic of China*[2-46], *Advertising Code of China*[2-47] and other related laws and regulations. The definition of outdoor advertising is the advertisement released by utilizing the outdoor location, space and setting.

First of all, the outdoor advertising management methods was analyzed adopted by Guangdong[2-48], Jiangsu[2-49] and Hubei[2-50] Provinces, and the advertising management regulations of these three regions have all specified the outdoor facilities or locations not allowed to be set with advertising. For example, at indicators, traffic lights facilities, national institutions and hospital buildings, it is not allowed to set outdoor advertising. During construction or renovation of outdoor advertising, specific planning of advertising should be conducted, and announcement should be made. Related elements should be included, such as the location to set advertising, position, form and specification, and it can only be implemented after obtaining permission. After the implementation, it cannot be modified without obtaining approval first. After setting the advertising, regular safety inspection and maintenance must be provided to outdoor advertising to ensure it is neat and complete. Observe the setting time of advertising, and if extension is required, application must be submitted. If there is violation against the advertising regulations, related penalty and punishment measures will be taken. In the advertisement regulations of Guangdong and Hubei Provinces, it is pointed out that the company that sets the outdoor advertising should leave the information and phone number of personnel responsible for regular maintenance of outdoor advertising facilities. In the provincial advertising management regulations, there are no related regulations on advertising colors.

Secondly, I interpreted the outdoor advertising management methods adopted by Shenzhen[2-51], Shanghai[2-52], Nanjing[2-53], Chongqing[2-54] and Wuhan[2-55]. In the advertising management methods adopted by these 5 cities, it requires inspection and approval in order to set outdoor advertising. The city has also established special market supervision department to be in charge of reviewing outdoor advertising. The announcement time is 30 days, and if no objection is proposed, the outdoor advertising can be set. In addition, it has also specified the area and facilities not allowed to be set with outdoor advertising. For example, in areas such as the scenic area and historic reservation, it is not allowed to set outdoor advertising. Secondly, the authenticity of advertisement owner who releases the advertising will be check. In the meantime, during the advertising placement, safety maintenance

and supervision of outdoor advertising are also regulated, and corresponding punishment system is also established for violation of related regulations regarding advertising setting.

Shenzhen proposed 3 principles for setting of outdoor advertising: the safety principle, energy conservation & environmental protection principle, and quality principle, and it has also specified that the advertising color should be coordinated with the background building. Nanjing has regulated that the advertising color should not be similar to instructive signs. Chongqing proposed regulating the advertising tone. Wuhan has partitioned the urban area, and in certain areas, the advertising setting has to be approved by the government before release and implementation. In addition, Chongqing and Wuhan have also proposed related regulations to forbid strong light exposure, and they have not further specified the regulation on lighting.

In both provincial and municipal outdoor advertising management methods, it has not mentioned how to regulate advertising in historical areas. At present, China has separate protection policies for historical areas, and it requires dutiful inspection and approval for construction or renovation of building, including establishment of advertising.

2.5.2 Current researches on outdoor advertising

I have organized related researches on outdoor advertising. Related researches were divided into three aspects: 1. Current situation and countermeasure for outdoor advertising; 2. Research on outdoor advertising colors; 3. Case study of outdoor advertising. The advertising issue will be analyzed through researches on these three aspects.

(1) Current situation and countermeasure for outdoor advertising

In his paper, Gao Xuan[2-56)] pointed out the defects in Chinese administrative legislation of outdoor advertising. He believed that current laws and regulations on advertising are not coordinated in content, i.e., the regulation of *Advertisement Law* is different from local regulations. The laws are not complete, the execution department is unclear, and there exists a chaotic situation which requires inspection for approval and management at various parts. Based on this current situation, he analyzed the problems existing in Chinese advertisings from the legal perspective and pointed it out that China should complete related legislation on advertising, establish the legal status of advertising, plan local legislation, effectively implement legal regulations.

Xia Yaling[2-57)] pointed it out that the administrative examination and approval of advertising and

the operational model have collision in interest. The author discussed the transformation of outdoor advertising management model from the perspectives of national outdoor advertising regulations as well as related regulations adopted by some provinces and cities. This paper mainly discussed the legitimacy of outdoor advertising. Then, based on the current situation of outdoor advertising overflow, it proposed advertising management through various methods, such as concentrated management through regulations, establishment of a planning, examination and approval system, and properly handling exiting outdoor advertising.

Through research on current urban advertising management regulations and the current situation of Chinese outdoor advertising, Huang Yuan[2-58)], Qiu Xiaohong[2-59)] and Lun zhihui[2-60)] pointed it out that current Chinese advertisings have various problems, such as high density of outdoor advertising, big size, wrong location and sharp contrast of lighting effects. For the current problems, related regulations on outdoor advertising are too abstract, which cannot fundamentally solve the problem of various advertising, and the management strength is also low, which has resulted in abuse of advertising. In addition, during some reviews, they do not have clear recognition of the nature of advertising, and there is lack of specific guidance to set outdoor advertising, such as the area, location and size. They believed that for advertising planning, the professionalism of related regulations and the professional guidance ability of related department should be strengthened.

(2) Research on outdoor advertising colors

Wu Haiyan and Dai Ruiqing[2-61)] investigated the chaotic situation of color use in Chinese outdoor advertising. By comparing the current situation of Chinese and foreign advertisings, they analyzed the problems of Chinese outdoor advertising and the gap between China and foreign countries in advertising management. They believed that efforts should be made to improve advertising planning and management in China, and not only the government should take corresponding measures, but the advertisers should also improve their recognition and design of advertising. In the meantime, for the consumers of urban outdoor advertising, the public should also provide direct supervision of advertising. In her research, Liu Lei[2-62)] pointed out the current situation of lack of coordination between the outdoor advertising color and overall urban color, and proposed that the outdoor advertising color should be integrated into the public color, and the management system for outdoor advertising color should be improved. In their research, Yan Zheng[2-63)] and Wang Qian[2-64)] pointed out

that the advertising color directly affects the image of a city, and the color should also be connected to historical and cultural development. Based on this theory, they believed that the color elements of outdoor advertising should be listed in the advertising management regulations, and the advertising color management method should be proposed in accordance with different blocks. Furthermore, the advertising color management method should be recommended on the aspects of color type, color area, material, presentation material and night lighting.

(3) Case study of outdoor advertising

During his research on advertising planning in the historical feature district of Suzhou River, with overall design along the bank of Suzhou River as the background, Zhao Jun[2-65)] conducted in-depth analysis of various uncoordinated problems on the aspects of advertising color, material, decoration element and environment coordination, and proposed pertinent solutions by combining related Chinese and foreign researches in accordance with the relations between advertising color planning, size restriction, location operation, decoration elements and theme building.

Zhu Changping[2-66)] believed that most advertisings in historical areas have ignored the overall impression, and they are not in harmony with the style of historical areas. As a result, it has weakened the overall image of historical commercial blocks, and cause visual pollution to the consumers. Finally, based on this situation, she proposed that the overall advertising style should be considered, and the advertising should not be set from an individual perspective, but individual characteristics should be sought from general characteristics.

With Qunli New Community in Harbin as the research object and with "internationalization, high taste & characteristics" as the general policy, Liu Shengjun and Jiang Xuemei[2-67)] proposed outdoor advertising planning based on fashionable, modern and leading design concept. With outdoor advertising setting in the downtown area of Hangzhou as example, Zhang Yue and Pan Rong[2-68)] discussed the method for outdoor advertising setting. They divided the downtown area of Hangzhou into allowed area, restrictive area and forbidden area on the three aspects of area, node and path, and within the allowed area, they proposed specific classification guidance to outdoor advertising setting in accordance with the characteristics of different sections. By combining the planning to set outdoor advertising facilities in Shanghai, Wang Lei[2-69)] pointed out the problem of Shanghai outdoor advertising regulations, and conduct research and exploration on how to improve the reasonability of

regulations.

2.5.3 Summary

In accordance with the regulations, it can be seen that China does not have very specific regulations on outdoor advertising, and there is no direction instruction on related elements for outdoor advertising setting either. The feasibility of advertising size, color and design needs to be further conformed through the material application and review stage. As for the outdoor advertising restriction approaches currently adopted in China, I drew the following conclusions:

1. The area and facilities forbidden to set advertising have been proposed.
2. Efforts were also made to plan urban areas that need to pass the examination and approval.
3. There must be specific planning for advertising and announcement of more than 1 month. The advertising can only be set after obtaining permission.
4. After setting the advertising, regular safety inspection and maintenance of outdoor advertising should be provided.
5. On the outdoor advertising facility, leave the information and phone number of personnel responsible for regular maintenance of outdoor advertising facilities
6. The time to set advertising was districted.
7. Punishment system.

Regulations on related elements for advertising setting are mainly provided through the setting location, position, quantity, size, height, material, color, style and lamp. Most advertising regulations have not directly released related terms to set various elements, and they are mainly reviewed through self-planning, announcement, examination and approval.

In accordance with the current researches, it can be seen that most researches focus on current situation of advertising regulations, advertising color research and case study. Among them, during researches on the current situation of advertising regulations, certain methods have been proposed for improvement based on the current situation, such as partition of areas, and there will different restrictions on advertising in different areas; production of advertising impression, such as making advertisings that satisfy the atmosphere of historical buildings. On the aspect of advertising color restriction, current researches mainly propose restriction of colors, and that different methods and approaches should be used for color restriction.

2.6 Summary and Comparative Studies on Current Situation in Japan and China

This chapter compared the outdoor advertising restriction approaches and design elements in Japan and China as show in table 1 & 2.

In accordance with current advertising regulations adopted by Japan, it can be concluded that there are explicit regulations to support and guide the implementation of advertisings, and its advertising planning method is also more complete. However, I also found that due to restriction of area or other reason, there are relatively fewer regulations on advertising color. The color restriction is generally conducted through indirect method. Color guidance is provided through language description, such as recommending brown. Or, with the purpose of color setting, recommend colors coordinated with surrounding environment and buildings. However, these methods cannot provide intuitive guidance of color, and there is no reference value as whether a color can be used.

Table 1: Outdoor Advertising Restriction Approaches in Japan and China

Japan	China
Region Division	Area Needed to Restrict Outdoor Advertising
Forbidden Area	Forbidden Area
Advertising Classification	
Restriction on nature of outdoor advertising	
Safety Maintenance	Safety Maintenance
Restriction on advertising lighting	
Restriction on design elements of advertising	Restriction on design elements of advertising
Time Limited on advertising lighting	
Permission Application	Permission Application by Announcement System
Advertising Operator Registration System	
Punishment System	Punishment System
	Contact Information should be announced on outdoor advertising

Table 2: Outdoor Advertising Design Elements used in Restriction in Japan and China

		Japan	China
Design Elements	Size	○	○
	Height	○	○
	Color	○	△*
	Style	○	○
	Material	○	○
	Shape	○	○
	Location	○	○
	Position	○	○
	Outstanding Distance	○	○
	Lighting	○	○
	Quantity	○	○
	Distance	○	
	Placement Method	○	

* Color is mentioned in Outdoor Restriction Method in China. However, the restriction method has not been announced.

In addition, many cities have stipulated advertising colors through the Munsell color system. Most cities restrict advertising colors through hue and chroma, but not many have mentioned brightness, or there is no restriction of brightness. Furthermore, most regulations guide the color used in most area of advertising, while there is no more specific instruction on color used in small area or text color. Some cities require that advertising cannot use too bright colors. Bright colors could be the colors with Munsell chroma above 8 or above 12, and there is no uniform specification. In the meantime, there is no further instruction on the definition of the Munsell chroma of bright colors either.

Furthermore, Japan conducts advertising management through partition of areas, it has stricter advertising management for historical areas, and some areas directly restrict the use of advertising in historical protection area. However, there is no further research on advertising design and color in historical areas.

In historical areas, by combining history and culture, common outdoor advertisings include wooden board, vertical billboard, outdoor signboard and sticker etc. Wooden billboard is a type commonly used in various historical areas. Although there is certain restriction on outdoor advertising colors in historical areas, there is no different color planning for each type of outdoor advertising.

China is still at the initial stage in urban color restriction, and most regulations on outdoor advertising started from 2011. Therefore, the regulation methods for outdoor advertising are not very

complete, and the regulation strength is not adequate either. Even though there are related methods for outdoor advertising management, they do not have very clear guiding significance, and most opinions are for the setting, safety and maintenance of advertising. There are no direct regulations on the visual influence elements of advertising, such as its size, height and color etc. Advertising is mainly examined and approved through review. As a result, even though some cities have introduced related advertising regulations, the advertising have not presented uniformity and coordination.

In accordance with the prior researches, it can be seen that China has not introduced complete advertising regulations, and current chaotic advertising has not been significantly improved either. Based on the case study, by combining the actual situation of city, it can provide certain suggestions to stipulation of advertising regulations, and certain instruction to advertising color. Due to incomplete regulations and lack of an overall urban color scheme, it becomes more difficult to control advertising colors. Even for specific cases, only restriction method for advertising colors is provided, and there are no specific opinions of color use.

The prior researches show that at current stage, advertising planning in historical areas still has certain problems, and the advertisings have significant influence on the historical areas. Also, according to the cases of outdoor advertisings, it can be seen that there is certain conflict between advertiser and administration on the aspect of color use in outdoor advertisings. There is no further verification of acceptability of outdoor advertisings from the user's perspective.

2.7 Conclusion and Discussion

According to the origin of outdoor advertising and various cases, I found that outdoor advertising must be set with plan. Under the precondition to ensure a coordinated urban environment, the outdoor advertising should be set under strong and effective measures from the government.

On the aspect of restrictions on outdoor advertising, different from the Japanese outdoor advertising regulations, the urban advertising management regulations were implemented late in China, and these regulations are not complete. Most advertising management regulations have been successively implemented since 2011, and they are at the initial stage of implementation.

On the aspect of management method, China does not have general implementation and area partition method, i.e., set different advertising regulations for different areas, and it has only specified

area forbidden to set advertising. Secondly, there is no clear classification of the nature of advertising. Same management is provided to all outdoor advertising, and there is no distinction between home-use or commercial advertising etc. Without treating different advertising differently, the advertising presentation will be more chaotic.

At present, the advertising presentation is directly executed by the advertiser in China. The advertiser proposes the advertising planning, applies for approval of advertising from related department, and sets the advertising. It has not gone through related advertising operation department. Therefore, the restriction of advertising setting is weak, related departments provide weak guidance of advertising, and this has also become one of the major problems during outdoor advertising management in China.

In the Chinese advertising management method, China has proposed environmental friendly material and implementation method. In other words, when setting outdoor advertising, the resources (material, lighting, etc.) should be set based on the precondition of energy conservation and environmental protection, and there should not be massive consumption of energy. At present, this regulation is only implemented in some cities, and its effects require further investigation. However, on the aspect of resource and energy use for advertising, the Japanese advertising management regulations have no related illustrated.

As for the design elements during outdoor advertising, China has no explicit regulation on the aspects of lighting and color, and the requirements for lighting and color are unclear either.

The color management of outdoor advertising must be based on the urban color management. In China, the urban color scheme was initially proposed in 1991, and the urban color planning was conducted by referring to the Munsell color system used by Japan. In the meantime, the Japanese color experts were invited to conduct urban planning in China[2-70)]. Since 2011, China has successively implemented outdoor advertising management, and although it is still at its initial stage, it has been gradually improved and promoted. Therefore, the advertising color management methods adopted in Japan can provide certain inspiration to China. In the subsequent investigation, I will conduct further experiment and research on the advertising colors used in Japan and China.

For historical areas, Japan generally focuses on protection, or adopts stricter regulations for restriction. For the surrounding commercial districts, the same urban advertising regulations are

implemented. At present, China has not partitioned related areas for implementation of advertising regulations. For advertising in historical areas, the advertising is examined and approved in accordance with the protection regulations for historic scenic spots. Compared to more complete advertising restriction regulations for downtown area, the advertising restriction methods for historical areas are weaker.

Based on the problems existed at current stage, in the research of next chapter, with representative wooden buildings and painted building in China and Japan as the background, the most commonly used wooden billboards, which are also permitted by regulations on outdoor advertisings, are chosen as the objects to conduct further discussion of the relationship between color and the color usable area in outdoor advertisings.

Reference and Bibliography

(2-1) 国土交通省：http://www.mlit.go.jp/common/001011830.pdf, 2013

(2-2) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.118-119, 1981.6

(2-3) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.120-123, 1981.6

(2-4) 春山行夫:西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.72-73, 1981.6

(2-5) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.125-126, 1981.6

(2-6) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.410-411, 1981.6

(2-7) 八巻俊雄：日本広告史、日本経済新聞社、pp.105-107, 1992.10

(2-8) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.257-258, 1981.6

(2-9) 三星宗雄:日本における騒色公害とその解決、神奈川大学人文学研究所報 42，pp.35-51、2011

(2-10) 違反広告物をなくす運動、名古屋市、2017

(2-11) 屋外広告法：http://law.e-gov.go.jp/htmldata/S24/S24HO189.html, 2011 年改正

(2-12) ルールを守って美しい広告景観を―北海道屋外広告物条例のあらまし，2016

(2-13) 屋外広告物規制のあらまし（青森県），2014

(2-14) 屋外広告物の手引（岩手県），2013

(2-15) 屋外広告物の手引（群馬県），2017

(2-16) 埼玉県屋外広告物のしおり，2017

(2-17) 宮城県屋外広告物関係例規集，2016

(2-18) 屋外広告物のてびき（茨城県），2007

(2-19) 東京都景観景観に基づく屋外広告物の規制，2008

(2-20) 屋外広告物のしおり（東京都），2016

(2-21) 神奈川県屋外広告物条例のあらまし，2016

(2-22) 京都府屋外広告物条例：http://www.pref.kyoto.jp/toshi/okugaikoukokubutu.html，1953

(2-23) 屋外広告物のしおり―長野県屋外広告物条例の概要，2016

(2-24) 富山県屋外広告物条例，2012 年改正

(2-25) 屋外広告物の手引き（石川県）～美しい景観づくりのために～，2016

(2-26) 愛知県屋外広告物条例のしくみ，2017

(2-27) 屋外広告物の手引き（三重県），2017

(2-28) より美しく魅力ある札幌へ―札幌市屋外広告物条例の手引，2012

(2-29) 景観保全型広告整備地区の手引（札幌），2011

(2-30) 仙台市屋外広告物条例のしおり，2017 年改定

(2-31) うるおいのあるまちづくり―千葉市屋外広告物条例のしおり，2002

(2-32) 時を超え光り輝く京都の景観づくり―屋外広告物の制度，2011

(2-33) 名古屋市屋外広告物条例のしおり―広告は街の感性です，2016

(2-34) 屋外広告物のしおり（大阪），2016

(2-35) 屋外広告物ガイドライン（堺市），2016

(2-36) もっとよいまち　よい広告―屋外広告のてびき―（熊本市），2010

(2-37) 川越市屋外広告物条例のしおり，2016

(2-38) 東大阪市屋外広告物のてびき，2010 改定

(2-39) 屋外広告物のしおり（豊中市），2015

(2-40) 姫路市屋外広告物条例の手びき，2014

(2-41) 熱海市屋外広告物条例の手びき，2009

(2-42) 屋外広告物の手引き（萩），2008

(2-43) 官公署等における屋外広告物の掲出ガイドライン（大阪府），2015

(2-44) 福岡県屋外広告物のしおり，2017

(2-45) 福岡市屋外広告物の手びき，2017

(2-46) 中华人民共和国广告法，

http://www.npc.gov.cn/npc/cwhhy/12jcwh/2015-04/25/content_1934594.htm， 2015

(2-47) 广告管理条例实行细则，

http://lbzhzf.dg.gov.cn/News_view.asp?Newsid=645，1987

(2-48) 广东省户外广告管理办法，

http://zwgk.gd.gov.cn/006939748/201304/t20130417_372369.html，2013

(2-49) 江苏省户外广告管理办法，

http://www.ntgsj.gov.cn/baweb/show/shiju/bawebfile/158403.html，1997

(2-50) 湖北省户外广告设置管理办法，

http://www.hbad.org.cn/flfg/153290.htm，2013

(2-51) 深圳市户外广告管理办法，

http://www.sz.gov.cn/zfgb/2013/gb846/201308/t20130814_2183415.htm，2013

(2-52) 上海户外广告设施管理办法，

http://cgzf.sh.gov.cn/main/news_140.html，2010

(2-53) 南京市户外广告设置管理办法，南京市人民政府公报（12），2011

(2-54) 重庆市户外广告管理条例，

http://www.bngs.gov.cn/html/xxgk/zcfg/16/05/156.html，2013 年改定

(2-55) 武汉市户外广告设置管理办法，

http://www.wuhan.gov.cn/hbgovinfo_47/szfggxxml/zcfg/zfgz/201702/t20170209_100727.html，2016

(2-56) 高轩：论我国户外广告行政立法的缺陷及其完善，时代法学 6（5），pp.67-72，2008

(2-57) 夏亚灵：我国城市经营型户外广告管理法规研究，广告管理（5），pp.59-72,2006

(2-58) 黄渊：城市户外广告设置规划的方法体系，规划师 22（10），pp.38-40,2006

(2-59) 邱晓红：城市户外广告设置规划初探，城市问题（6），pp.70-74,2006

(2-60) 伦志晖：中国户外广告发展现状及发展趋势研究，媒体时代（2），pp.42-45,2013

(2-61) 吴海燕, 戴瑞卿:城市建设中户外广告色彩乱象及规划整治, 人民论坛(2), pp.91-93,2016

(2-62) 刘蕾：城市户外广告色彩制定对其整体色彩规划的影响，现在装饰：理论（2），p.133，2012

(2-63) 严正：城市街区户外广告色彩规划设计，新视觉艺术（5），pp.74-75,2016

(2-64) 王千：城市街区美观与户外广告色彩规划，艺海（8），pp.114-116，2016

(2-65) 赵君：苏州河历史风貌区广告牌规划控制研究，中国市场（39），p.137，2011

(2-66) 朱昌萍：浅析历史商业街广告牌设计，山西建筑 34（30），pp.49-50,2008

(2-67) 刘生军，江雪梅：城市新区户外广告空间总体布局及其导控-以哈尔滨市群力新区户外广告规划设计为例，规划师（6），pp.70-77,2014

(2-68) 张越, 潘蓉：户外广告设置规划初探-以杭州市区户外广告设置为例，浙江建筑 26（1），pp.10-14，2009

(2-69) 王磊：上海户外广告设施设置阵地规划探索和实践，城市规划 38（4），pp.46-53，2014

(2-70) Gou Aiping,「Method of Urban color plan based on spatial congiguration」Color Research and Application, 38(1), PP.65-72, 2013

Chapter III

Color and Fascia Area of outdoor advertising in historical areas in Japan and China

3.1 Introduction and Purpose

Following Chapter I of municipal guidelines for color plans for cities in Italy, France, Japan and China. As shown by the result[3-1)], regulation and control of urban colors was dominated by stipulating the usable range of colors and supplemented by adjusting the fascia area, the use frequency of dominant colors, the area of the building façade used for color, etc. Among all the color plans I looked at, color planning was mostly determined by local regulations. Colors used in areas of historical significance were generally delineated in the strictest way. According to the regulations, it is possible to use colors in small area, and some restrictions on colors used in small area also apply to outdoor advertising. However, there is no instruction of specific color planning method.

In Chapter II of this paper, I studied the outdoor advertising colors in Japanese and Chinese cities, and found that the advertising colors are mainly restricted on the aspects of base color, color number and embellishment color etc. Similarly, the restriction for historical areas is stricter, and compared to other areas in the city, only a small range of colors can be used in historical areas. However, the advertising colors are restricted based on fascia area, and all colors are restricted with the same size, while the color of advertising is mainly restricted through saturation. There is no further investigation of the relation between the fascia area and brightness, hue and saturation. Considering the similarity and difference between Japanese and Chinese cities, as well as the influence of background building on the advertising, in this chapter, experiment will be conducted to compare historical buildings in China and Japan.

With this in mind, this chapter was conducted on the relationship between surface area, hue, value and chroma. With reference to historic regions that have implemented color planning schemes, I focused on the use of small areas of color on the fascia of commercial properties, and establishing what was acceptable to onlookers in terms of accent color combined with various overall background color. To determine an effective color plan, I experimented with varying hues, values and chroma used in different sized proportions of fascia surface area and collated data on how these combinations were perceived by a sample demographic. This chapter also explored what was considered an acceptable range of colors in when used in different fascia areas and how colors could be categorized.

3.2 Methodology

The survey questionnaire incorporated sectional elevations of three building, in which the surface area and color of the fascia were shown in different configurations. Respondents were asked to give their impressions and evaluations to the different renderings. The buildings used in this survey were traditional vernacular properties constructed with wood frames, with white walls. Given the similarities and differences between Japanese and Chinese architecture, this study used model structures based on traditional wooden-frame buildings in Kyoto, Japan and white-walled buildings in Zhouzhuang, China. In addition to comparing the Chinese and Japanese buildings, I will also investigate the influence of the color of background building on advertising.

Fig.3-1 Buildings in Kyoto

Fig.3-2 Buildings in Zhouzhuang

Kyoto is located at West Japan, which is one of the traditional building reservation areas specified by Ministry of Land, Japan. Most buildings in Kyoto have wooden structure, and these buildings are under protection in current stage. Any renovation and conversion to these buildings need to be applied. The experimental subject building chosen in our study is as shown in fig.3-1. Zhouzhuang is in Central East China, which is one of the historic preservation cities specified by the government, which has well preserved the historical and urban atmosphere from the Ming and Qing Dynasties. In addition, most buildings in Zhouzhuang have white walls, supplemented by wooden structure. At current stage,

the historical buildings in Zhouzhuang are under protection. The street view of Zhouzhuang is as shown in the fig.3-2. Two historical blocks are historic reserves designated by the state, and they are both famous urban scenic spots at present. However, there are no very explicit regulations on the restrictive approaches for outdoor advertisement. Based on that, in this research, the experimental diagrams were drawn by selecting two historical blocks as the prototype.

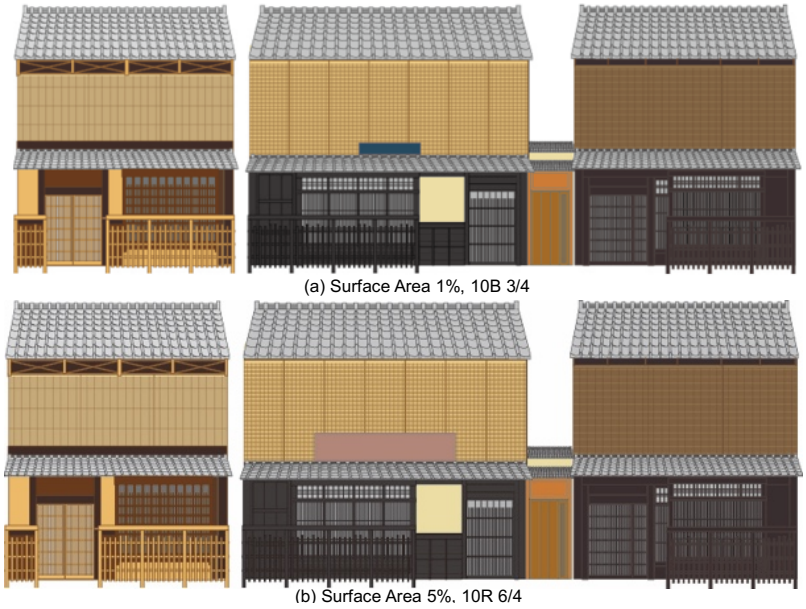


Fig.3-3 Experimental Images Based on Kyoto Wooden Architecture

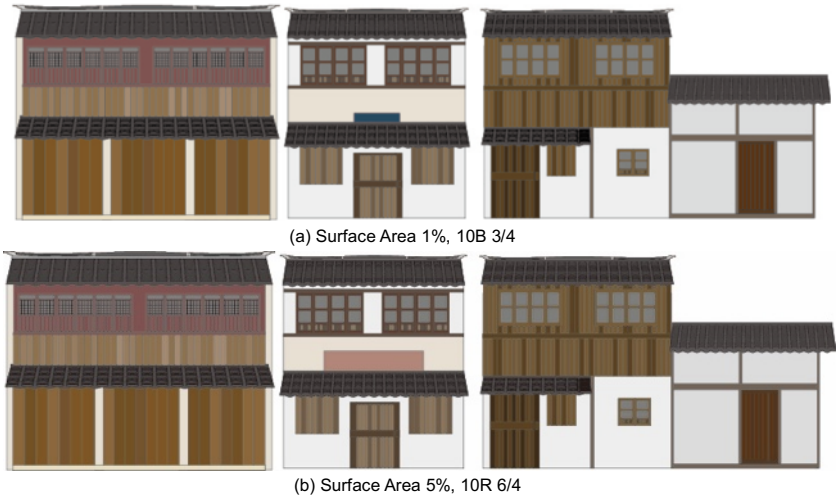


Fig.3-4 Experimental Images Based on White-wall Architecture in Zhouzhuang

In this study the size and color of the fascia above the pent roof of the first floor were varied. Fig.

3-3 are designs based on traditional Japanese wood frame buildings from Kyoto, while those in Fig. 3-4 were based on white-walled buildings in Zhouzhuang. The research objective was to establish the extent to which fascia could be used for advertising before provoking a negative reaction. Therefore, in this experiment, the background color was used to directly portray the surface area of the fascia. In addition to this, before being shown the images, it was indicated to respondents that advertising fascia had been newly added in the area, thus the respondents should give their evaluations based on the premise that the fascia would carry advertising.

In the field(fig.3-5), I used JIS color charts to measure the the actual coloration of the target buildings and apply real-world color data in the pictures used in the trial. The building colors are shown in Table 1.

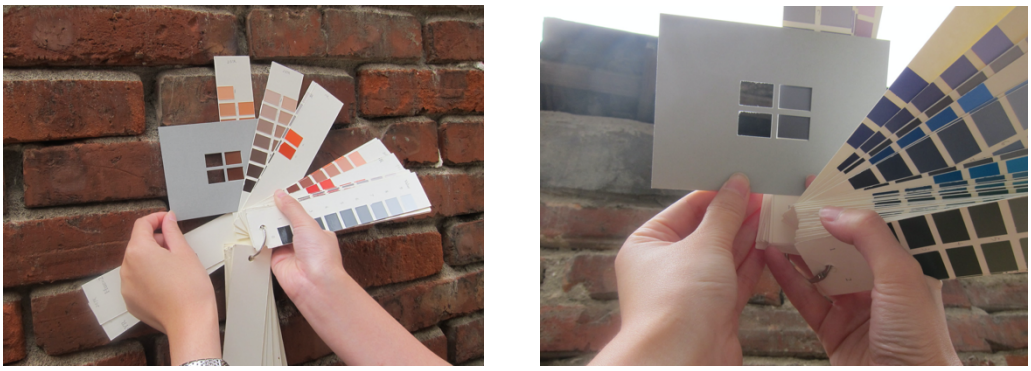


Fig.3-5 Color Collection in Field Research

Table 1: Color of Experimental Architecture

	Architecture of Japan			Architecture of China		
	Left	Middle	Right	Left	Middle	Right
Roof	10B 8/1	5PB 8/3	5PB 8/3	N3;N6	N3; N6	N3; N6
Exterior wall	2.5YR 2/2; 5YR 3/6; 10YR 8/8	5R 2/2; 10YR 2/2; 5Y 9/4	5YR 2/2	2.5Y 9/1; 10YR 5/4	N8; 10YR 9/2	N7; N8; 7.5YR 8/4
Window	2.5Y 9/4; 2.5YR 2/2	5R 2/2; 10YR 8/2	10YR 3/4; 10YR 5/4	5R 4/4	10YR 5/3; 10YR 4/4; 10YR 3/3	10YR 3/4; 10YR 4/4
Door	5YR 3/6; 2.5YR 2/2	5R 2/2	5YR 2/2	2.5YR 4/6; 2.5YR 3/4;	10YR 4/4; 10YR 3/3	10YR 3/4; 10YR 4/4
Other	5YR 3/6; 2.5YR 2/2	5R 2/2; 7.5YR 5/8; 5YR 6/10			-	

In the historical area, the type, height and surface area of buildings are also relatively uniform. Therefore, in the experiment, the fascia area of outdoor advertising was controlled according to its percentage to the surface area of background building.

From a preparatory test[3-2)], it was found that different hues affected the degree to which respondents' accepted the use of fascia for advertising, and tolerance decreased as chroma increased. Also, the acceptance of colors decreased as surface area increased, and the mean value of acceptability of advertising fascia would be less than 0 when the surface area exceeded 10%, therefore, the fascia surface area was kept to under 10% of the building façade and the colors used were varied based on changing the hue and surface area.

The fascia sizes used in this trial were 1%, 3%, 5%, 8% and 10% of the actual building façades. The outdoor advertisings are designed in those sizes with different colors.

Table 2: Colors and Experimental Area Rate

	Value			Chroma				
	3	6	8	3	6	10	11	12
R	10R 3/4	10R 6/4	10R 8/4		10R 5/6	10R 5/10		10R 5/12
AREA(%)	1%, 5%	1%, 5%	1%, 5%		1%,5%,8%,10%	1%,5%,8%,10%		1%
Y	10Y 3/4	10Y 6/4	10Y 8/4		10Y 5/6	10Y 6/10	10Y 8/11	
AREA(%)	1%, 5%	1%, 5%	1%, 5%		1%,5%,8%,10%	1%,5%,8%,10%	1%, 5%	
G				10G 5/3	10G 5/6	10G 5/10		
AREA(%)				1%,3%,5%	1%,3%,5%	1%, 3%		
B	10B 3/4	10B 6/4	10B 8/4	10B 5/3	10B 5/6	10B 5/10		
AREA(%)	1%, 5%	1%, 5%	1%, 5%	1%,5%,8%,10%	1%,5%,8%,10%	1%		
P				10P 5/3	10P 5/6			
AREA(%)				1%,3%,5%	1%,3%,5%			
N	N3	N6	N8					
AREA(%)	1%, 5%	1%, 5%	1%, 5%					

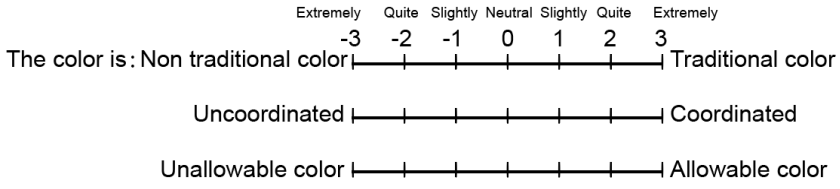


Fig.3-6 Evaluation Items

According to the Munsell color system, hues are divided into R, Y, G, B and P, each of which contains low, moderate and high value colors. Three chroma were selected for each hue with the

highest chroma being the highest point on the spectral locus. As shown in table 2, 26 colors were combined with different surface areas for the trial.

For each image, there were three factors to evaluate(fig.3-6): conformity to traditional color usage, coordination and whether the fascia color/size combination was acceptable to viewers given the architectural context. These were evaluated using a 7-stage semantic differential rating scale, and values -3, -2, -1, 0, 1, 2 and 3, were collated for each response. Negative numbers indicated a negative reaction, while positive numbers represent respondents' positive acceptance of a design.

Respondents were categorized by nationality, profession, whether they had actually seen the target buildings in situ and the degree of their positive or negative reaction to fascia colors.

Altogether, there were 87 participants in this trial, i.e. 42 Japanese college students and 45 Chinese students studying in Japan. Uncompleted questionnaires, and those in which all questions had received the same response, were discarded. There was a combined total of 80 valid questionnaires, which constituted the database. The setup for filling in the questionnaire is shown in fig.3-7.

The trial was carried out in a standard D65 luminous environment and at an illumination intensity of 1200lx on desk surfaces.

I used an 8-color inkjet printer to print the images and verified the colors using JIS color charts after printing the images.

In order to clearly indicate the variations in fascia surface area and color, these were depicted on elevations of the building façades. With the premise of providing a complete view of the color matching applied to the three buildings and a clear sense of the changes to the fascia size, the images used in the trial were 15cmx30cm.

Fig.3-7 Experimental Scenes

66 images were used with different variations and fascia size for each group of buildings. As there were two sets of buildings, there was a total of 132 images. These were shown to the respondents randomly, and questionnaires took 30 minutes to complete.

3.3 Analysis of Responses

First of all, I will analyze the background attributes of respondent, conduct correlation analysis of three evaluation items, and select data for this analysis. Then, I will analyze the acceptability relation between the fascia area, hue, value and chroma based on the questionnaire data.

To be able to confirm the distribution of the data, box plotting and mean value were used in the analysis. However, when the mean and median values were significantly different, the distribution of the data was analyzed. A large difference had arisen between mean and median values in several cases, but both of them were in positive or negative. In addition, the bimodality of data had not been appeared. Based on this, mean values were used to determine whether the colors/size were considered acceptable through the P value and with positive and negative changes of the mean value.

Finally, quartile data are used to analyze and summarize the characteristics of colors and applicable size of outdoor advertising acceptable to different participant groups.

3.3.1 Analysis of respondent backgrounds

Firstly, responses were collated according to respondents' background attributes such as nationality, sex, profession, field experience et al. Table 3 shows the range of acceptable size and color combinations for Chinese and Japanese respondents on the two different types of building. There was no significant difference in response, on the basis of country of origin of either the respondent or the building, or, in fact, any other background factors. In other words, the trial results were consistent, and therefore the mean value of the 80 valid questionnaires was used for evaluation.

Table 3 Acceptability of Fascia Colors on Kyoto and Zhouzhuang Buildings by Chinese and Japanese Respondents (chroma at surface area of 1%)

	Hue	R			Y			G			B			P	
	Chroma	6	10	12	6	10	11	3	6	10	3	6	10	3	6
Japanese Building Design	Japanese respondents	0.48	-0.10	-1.03	0.08	0.53	-0.73	0.13	-1.2	-1.43	0.70	0.08	-1.75	0.08	-0.70
	Chinese respondents	0.95	-0.58	-1.45	0.28	0.03	-0.79	-0.05	-1.08	-1.53	1.00	-0.05	-1.53	-0.03	-1.08
Chinese Building Design	Japanese respondents	1.1	-0.03	-1.10	0.75	0.30	-0.93	0.45	-1.13	-1.48	1.20	0.40	-1.75	0.13	-0.70
	Chinese respondents	0.63	-0.75	-1.73	0.35	-0.13	-1.33	0.45	-1.03	-1.53	1.18	0.10	-1.43	0.63	-1.05

* p<0.05 **p<0.01

3.3.2 Correlation of responses

As mentioned, each image was evaluated based on three factors: traditional, coordinated and Acceptable. When $p < 0.01$, for the Kyoto buildings, the correlation coefficient between traditional color combination and values perceived as acceptable was 0.976. Between coordinated color matching and acceptable values it was 0.984 as shown in table 4. For the Zhouzhuang buildings (table 5), the correlation coefficient between traditional color matching and acceptable values it was 0.961, and between coordinated color matching and acceptable values, 0.980. Traditional color matching and coordinated color matching strongly correlated to values considered acceptable to respondents.

Table 4 Correlation Coefficient of 3 Factors in Kyoto

	Traditional Color	Coordinated
Acceptability	0.976**	0.984**

* P<0.05 ** p<0.01

Table 5 Correlation Coefficient of 3 Factors in Zhouzhuang

	Traditional Color	Coordinated
Acceptability	0.976**	0.984**

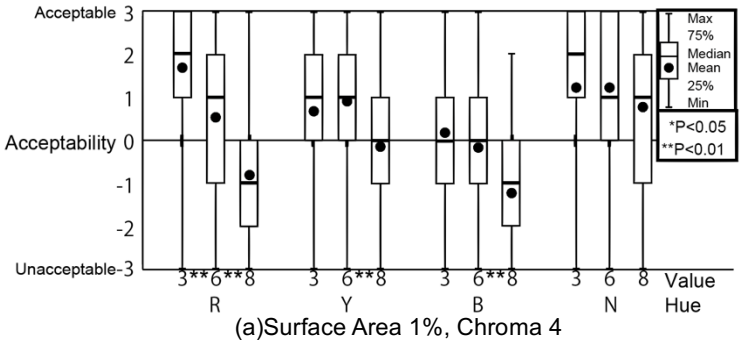
* P<0.05 ** p<0.01

3.3.3 Varying fascia area and value

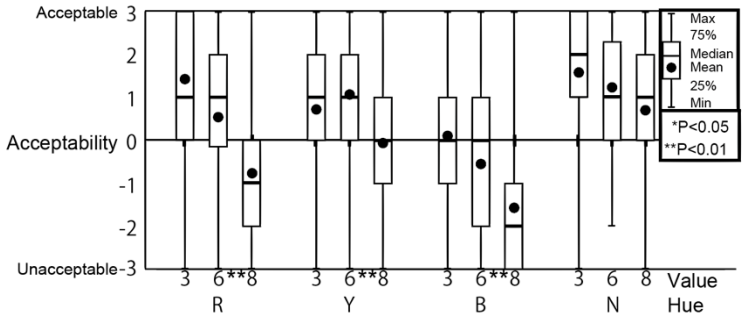
Fig.3-8 and 3-9 show ranges of acceptability for fascia colors of different values. With a fascia surface area of 1%~5% of the building façade, chroma 4, hue R, Y and B, there were significant

differences for values between 6 and 8 for both sets of buildings. When the value was about 8, the acceptability rating for new fascia colors went into the negatve. However, there was no such change for achromatic color, N. Therefore, when the fascia size was less than 5% of the building façade, if the value of chromatic colors was more than 6, then the colors were deemed unacceptable. However, there was no value restriction when it came to achromatic colors.

In fig.3-9(a), a significant difference can be seen between mean and median values of color N6. From an evaluation of the data, it can also be seen that 77.5% of the answers were concentrated in acceptability range of 1~3. 20% of the answers were concentrated in the acceptability range of -1~-2. This made the mean value less than the median value of N6.



(a)Surface Area 1%, Chroma 4



(b)Surface Area 5%, Chroma 4

Fig.3-8 Acceptability for Fascia Colors of Different Values on Kyoto Wood-Frame Buildings

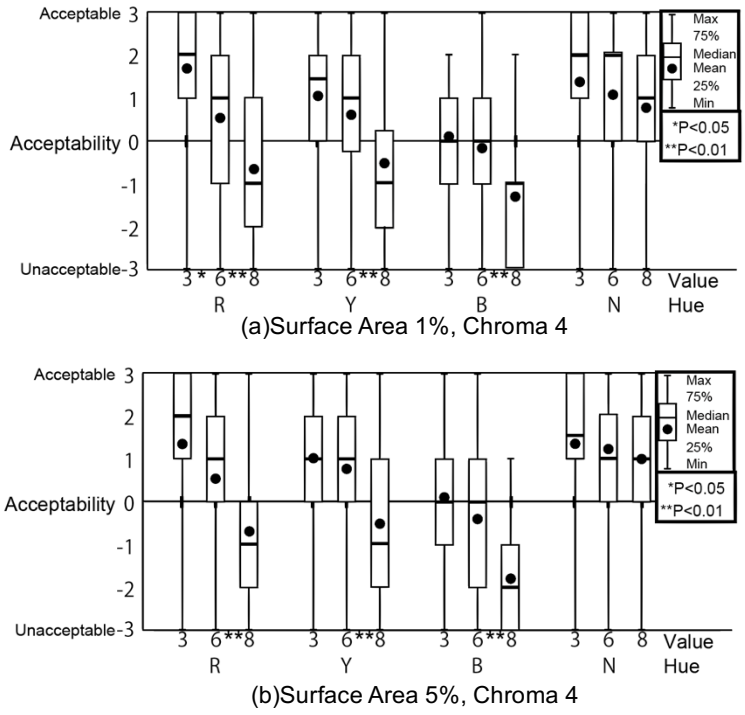


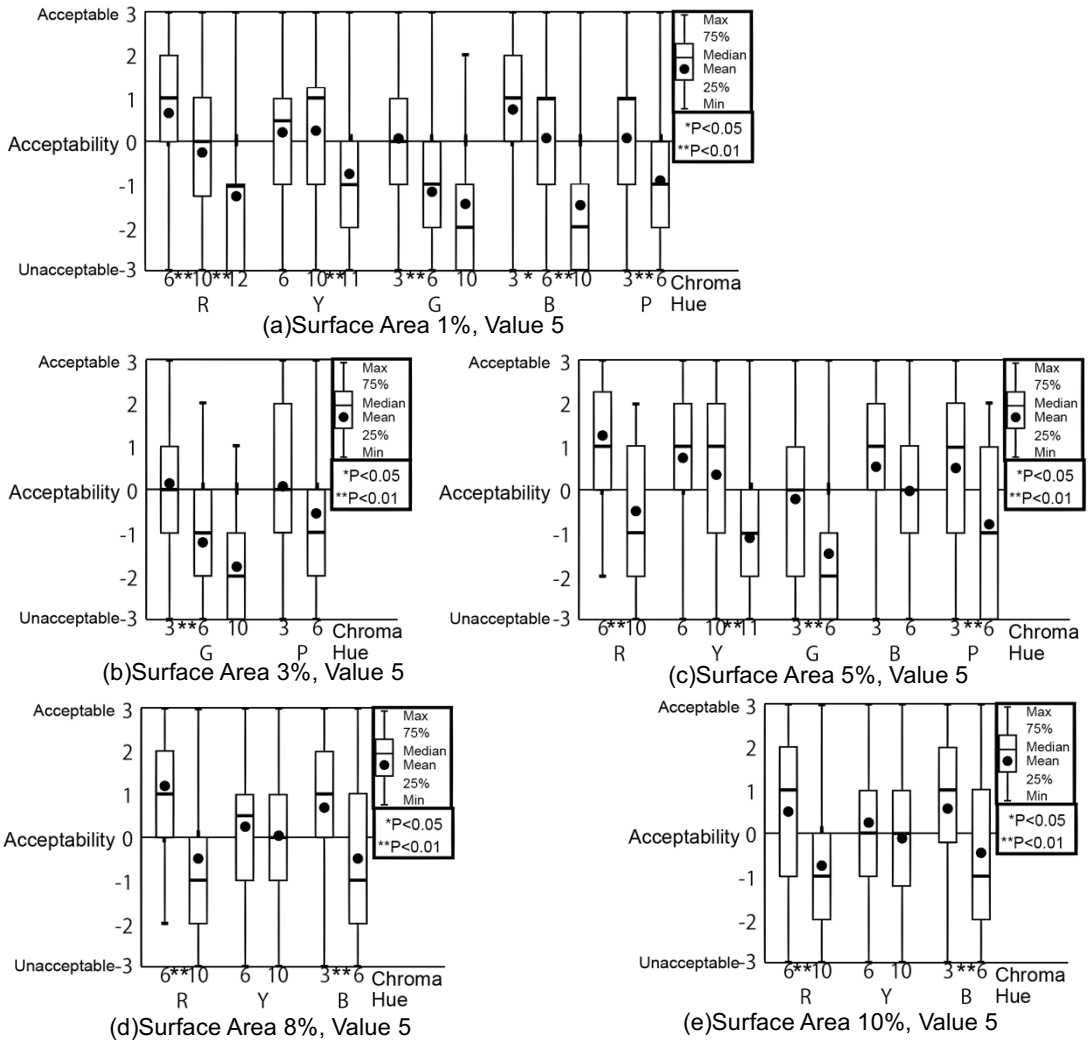
Fig.3-9 Acceptability for Fascia Colors of Different Values on Zhouzhuang White-wall Buildings

3.3.4 Fascia surface area and chroma

Fig.3-10 and 3-11 show respondents' evaluation of fascia colors with different chroma. A value of 5 was mostly used in this part except 10Y 6/10 and 10Y 8/11. Fascia sizes were divided into two ranges, 1%~5% and 8%~10%, and chroma of each hue were evaluated for these two groups.

When the fascia was within the range 1%~5%, there were significant differences between hue R, chroma 6 and 10 in both the Japanese and Chinese buildings. When the chroma was 10, the respondent reaction was negative, i.e. the layouts were not considered an acceptable fit to the environment. A significant difference in judgment of hue Y occurred when the chroma was between 10 and 12, i.e. the color of hue Y was deemed acceptable when the chroma was less than 10. A significant change in reaction to color G occurred between chroma 3 and 6. Thus, the chroma of hue G was considered acceptable when it was less than 3. As for hue B, when the fascia was increased to 5% of the façade, there was no significant difference between chroma 3 and 6 for the Japanese buildings; however, there was a quite different response to the same colors when applied to the Chinese buildings. A significant change in reaction to hue P, with the mean value of responses going from positive to negative, occurred

with chroma between 3 and 6. Therefore, colors of hue P with chroma of less than 3 were considered acceptable.



(a)Surface Area 1%, Value 5

(b)Surface Area 3%, Value 5

(c)Surface Area 5%, Value 5

(d)Surface Area 8%, Value 5

(e)Surface Area 10%, Value 5

Fig.3-10 Acceptability for Fascia Colors of Different Chroma on Kyoto Buildings

When the fascia was in the 8%~10% range, the change in reaction to hue R was between chroma 6 and 10. There were no changes in reaction to hue Y. However, with a fascia of 10%, value 5 and chroma 6, there were significant differences in reaction to hue Y depending on which buildings were being considered; Acceptance of the color was greater with the Japanese buildings than with the Chinese buildings. Reaction to B changed from chroma 3 to 6. Thus, when the fascia size was greater than 5%, hue R was considered acceptable with chroma 6, hue Y with chroma 10, and hue B was

considered acceptable with chroma 3.

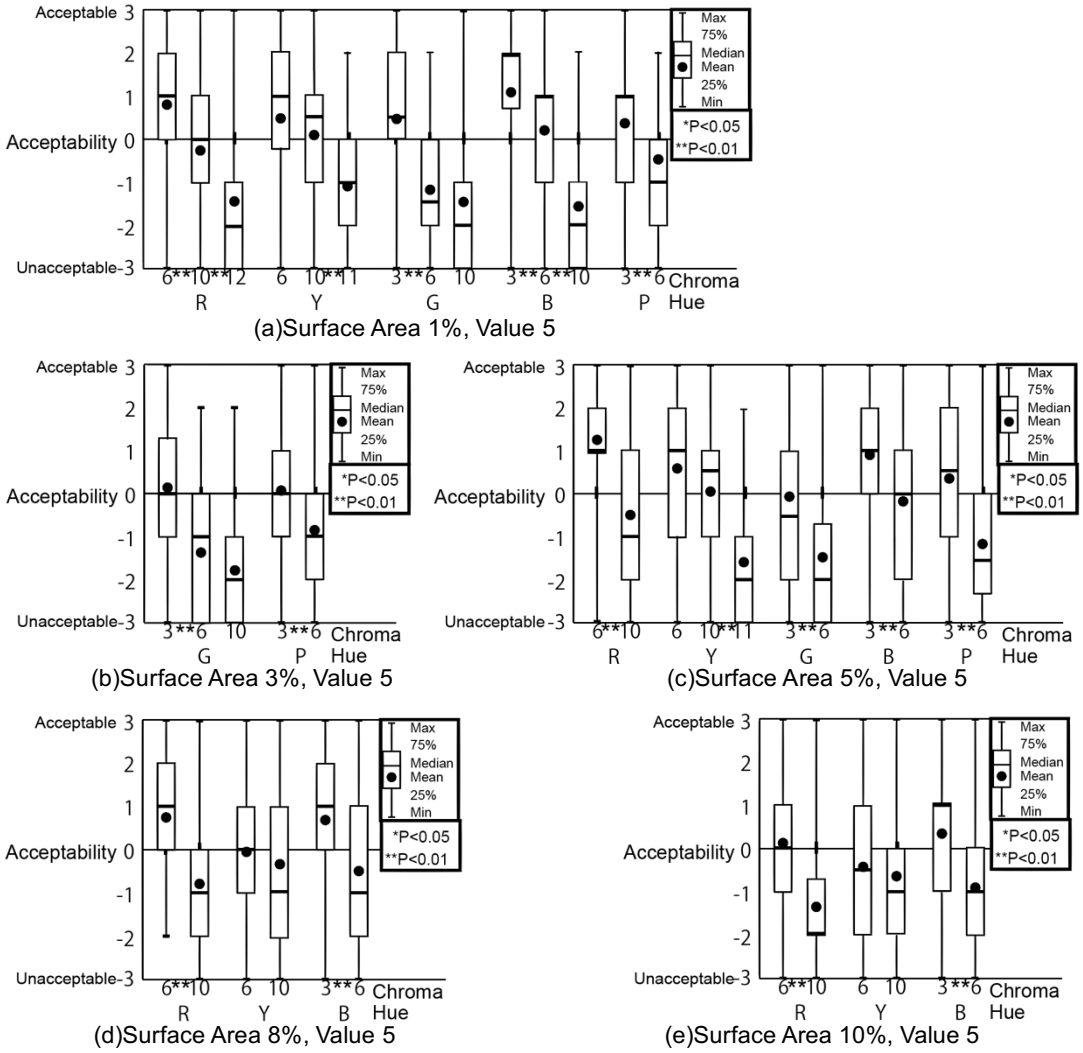


Fig.3-11 Acceptability for Fascia Colors of Different Chroma on Zhouzhuang Buildings

3.3.5 fascia area and hue

With value and chroma constant, reaction to changes in hue could be evaluated. Results were mainly used a way to categorize hues. If there was no significant difference in reaction between two hues, the two hues could then be considered the same in value or chroma. As shown in Table 2, colors and fascia size are compared with the same value and chroma in this section.

In the observation of value, there were major differences in response between chromatic and

achromatic colors. For the Japanese buildings, when the value was 6, the response to hue B was similar of that to hues R and Y; when the value was greater than 6, there were relatively large differences in reaction between hues B and R~Y and N. For the Chinese buildings, when the value was 3, there were significant differences in reaction to hue R~Y and hue B, even though responses to both were greater than 0, in the positive range. Therefore, when categorizing value, if the fascia was less than 5% of the façade, the hues could be divided into three groups R~Y, B, and N for the purposes of planning value.

Regarding chroma, evaluation was made by dividing the fascia sizes into two ranges: 1%~5% and 8%~10%. With the fascia at less than 5%, as we can see from data in Figs. 9 and 10, when the chroma was 6, the responses to hues R, Y and B were similar to but different from that to hues G and P. When the chroma was greater than 10, only the average value of the response to hue Y was greater than 0. Therefore, when the fascia was less than 5% and the chroma was no more than 6, the hues could be divided into two groups: R~Y and B, and G and P. If the chroma is 10, hue Y should be considered different from other hues.

When the fascia was between 8% and 10% and chroma was 6, there were significant differences in reaction to hues R, Y and B; hue R~Y was considered acceptable, but reaction to hue B was negative. Thus, when the fascia was between 8% and 10%, chroma should be considered independently.

3.3.6 Fascia area and color

There were different responses to the same color when the fascia size was varied between 1% and 10%. Results showed only color 10R 5/10, 10B 5/6 elicited a significantly different reaction to the Chinese buildings as shown in fig.3-12, when the fascia was between 1% and 10%. Therefore, the size of the fascia had less influence on the overall color matching. The planning of fascia size and the classification of colors in this research were mainly based on the evaluation of changes to hue, value and chroma.

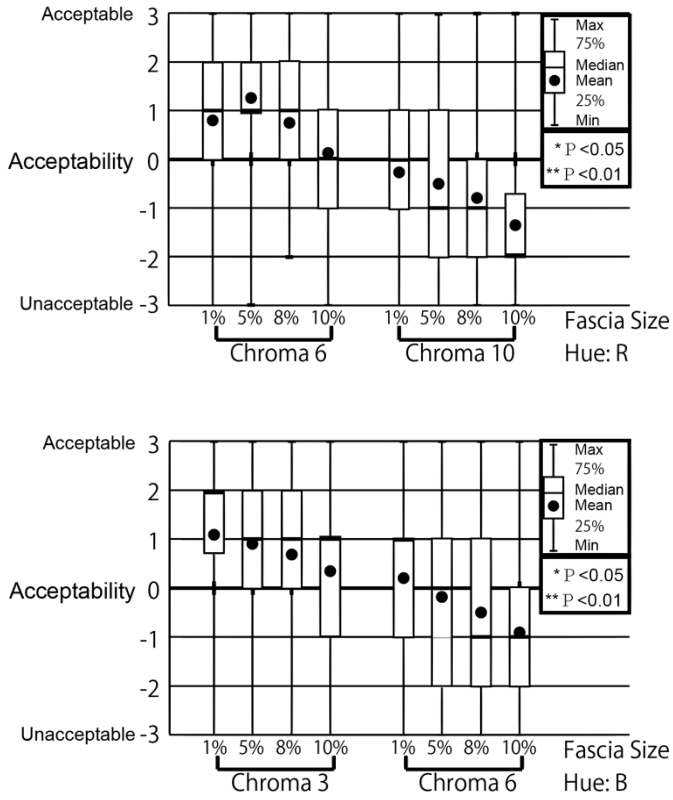


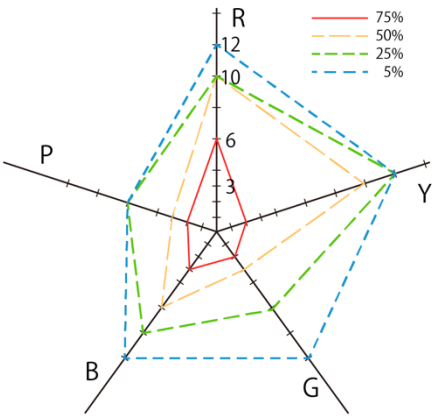
Fig.3-12 Acceptability for Colors of Different Fascia Size on Zhouzhuang Buildings

3.3.7 Hue and chroma based on fascia area

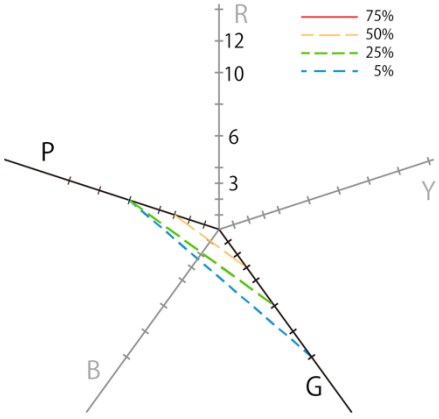
Based on the fascia area of color used in outdoor advertising, this section will compare and analyze acceptable chroma of different colors. The percentage of acceptability is used for analysis in this section. If there is no corresponding quartile, the default chroma is 2. For example, in Fig.3-13, for the experiment, the minimum chroma of hue Y is 6, but this chroma does not satisfy the acceptance level of 75%, and in this case, the data in Fig.3-13 shows the chroma of 2. In this section, the hue-chroma diagrams are used to analyze the acceptability of different participant groups based on different fascia areas.

In Fig.3-13, when the fascia area was 1%, for hue R, 75% of the participants could accept the chroma of 6; for hues Y~P, they could accept the chroma of 2. When the fascia area was 3%, experiment was only conducted for hues G and P, and it can be found that 50% of the participants could accept chroma below 3, while 25% could accept chroma below 6. When the fascia area reached

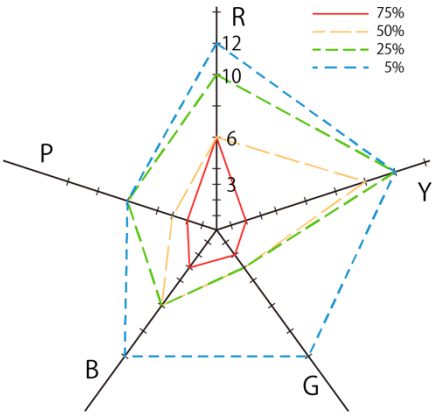
5%, the data showed that under 50% circumstances, the acceptable chroma for hue R was 6, the acceptable chroma for hue Y was 10, and the acceptable chroma for hues and P was 3. When the area was 8%, the generally acceptance reduced, and 25% and 5% of the group had the same acceptance level. When the fascia area reached 10%, the data only include the two levels of 50% above and 25% for the participant group.



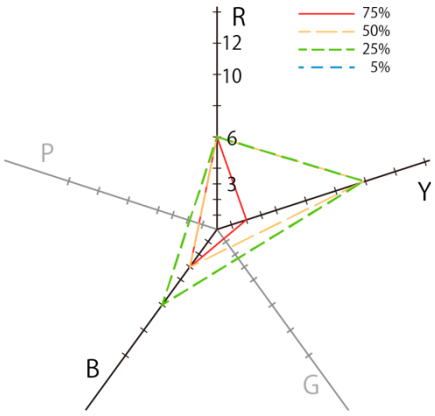
fascia area 1%



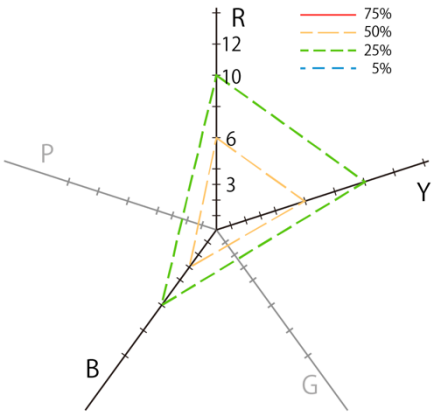
fascia area 3%



fascia area 5%



fascia area 8%



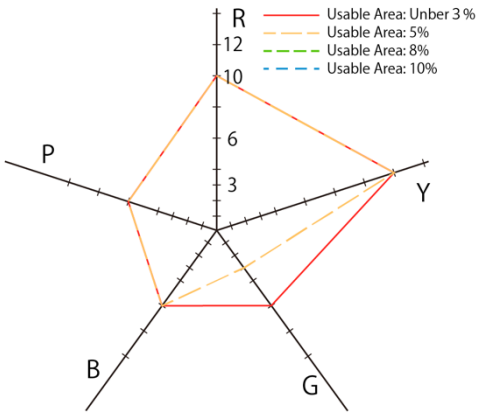
fascia area 10%

Fig.3-13 Hue and Chroma based on Fascia Area

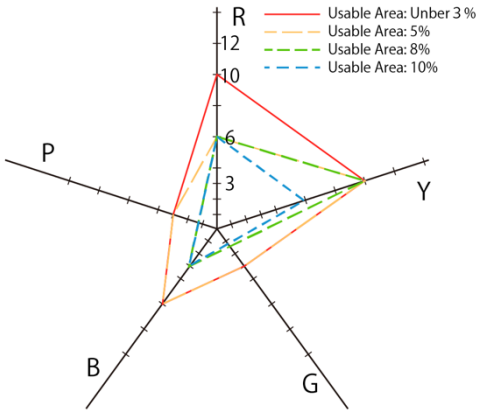
According to Fig.3-13, it can be seen that the chroma of hues G and P did not present significant difference with the change of area, and they are within the range of 3~6. For hues R~Y, the acceptable chroma present certain change with the change of area.

3.3.8 Hue and chroma based on quartile

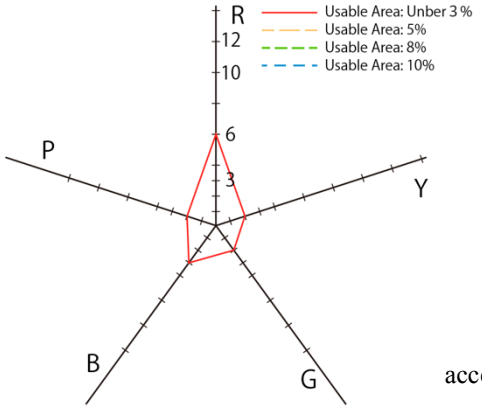
Based on Fig.3-14, I conduct comparison and analysis of the relationship between hue and choma based on quartile. In this section, the hue and chroma diagrams is also used to analyze the relationship between hue, chroma and fascia area acceptable to 25%, 50% and 75% of the participant group.



acceptable to 25%



acceptable to 50%



acceptable to 75%

Fig.3-14 Hue and Chroma based on Quartile

For the 25% of the group, their tolerance for colors can be divided into two stages: with use area under 3% and above 5% respectively. When the use area decreased, there was a certain change in

acceptable chroma for hue G. For 50% of the participant group, the acceptable chroma for various hues all changed with the change of area. For example, when the fascia area is smaller than 3%, the acceptable chroma for hue R was 10; when the area is greater than 5%, the acceptable chroma for R was below 6. For 75% of the participant group, I found that the acceptable chroma did not change according to the area.

3.3.9 Comparative analysis

Finally, a comparative analysis was made of the significant differences in reaction to the different color plans for the Chinese and Japanese buildings. As shown in Table 6, there was a significant difference in respondents' reactions to fascia color design for the Chinese and Japanese buildings only for the combination of 10% surface area and 10Y 5/6. However, for other combinations, there is no difference in reaction on the basis of region, implying a certain congruity between the visual characteristics of the vernacular architecture of the two countries.

Table 6 Reactions to Chroma Variations (Chroma)

	Hue	R			Y			G			B			P	
	Chroma	6	10	14	6	10	12	3	6	10	3	6	10	3	6
1%	Architecture of Japan	0.71	-0.34	-1.24	0.18	0.28	-0.75	0.04	-1.14	-1.48	0.85	0.01	-1.64	0.03	-0.89
	Architecture of China	0.86	-0.39	-1.41	0.55	0.09	-1.13	0.45	-1.08	-1.50	1.18	0.25	-1.59	0.38	-0.88
3%	Architecture of Japan							0.13	-1.25	-1.78				0.05	-0.68
	Architecture of China							0.13	-1.39	-1.89				0.03	-0.93
5%	Architecture of Japan	1.21	-0.51		0.80	0.39	-1.08	-0.18	-1.40		0.65	-0.06		0.51	-0.84
	Architecture of China	1.26	-0.66		0.63	0.08	-1.58	-0.30	-1.41		0.91	-0.24		0.30	-1.18
8%	Architecture of Japan	1.18	-0.59		0.25	0.03					0.73	-0.60			
	Architecture of China	0.76	-0.83		-0.03	-0.44					0.70	-0.76			
10%	Architecture of Japan	0.49	-0.81		0.31*	-0.25					0.65	-0.40			
	Architecture of China	0.14	-1.35		-0.41*	-0.70					0.30	-0.90			

* p<0.05 **p<0.01

3.4 Conclusion and Discussion

In this experiment, no differences in opinion could be discerned as resulting from different respondent attributes. In other words, attitudes to color design were not related to respondent's personal characteristics.

There was a strong correlation between traditional color matching, color coordination and evaluation factors. That is to say, if respondents thought color matching accorded with traditional or

coordinated color combination, the likelihood of being colors being considered acceptable would also increase.

The survey revealed that the degree of approval of fascia color was similiar for Japanese and Chinese building types, except for color 10Y 5/6 with a fascia size that was 10% of the total building façade.

Regarding value, acceptable values of R, Y, B and N were investigated, when chroma was 4. When the values of R, Y were greater than 8 and B was greater than 6, the acceptability ratings of chromatic colors were all less than 0. In other words, they were considered unacceptable. However, achromatic colors were not as significantly affected by changes in value. Generally, the use of achromatic colors in regions of historical value meet with comparatively high levels of approval.

For chromatic color, when fascia size was less than 3% of the façade, the value was less than 3 and chroma less than 6, reaction to hues R, Y and B were comparable. However, acceptance ratings for hues G and P were relatively lower.

As respondents' evaluations of acceptable color and fascia size for the two types of buildings' was not dissimilar, the following conclusions were reached (See Table 7).

However, differences in acceptability for the two types of buildings occurred for hue Y. When the facia was 10%, with value 5 and chroma 6, acceptance of hue Y was greater for the Japanese buildings than when used with the Chinese buildings. Since evaluation was in the negative range for the Chinese buildings, a comparatively larger surface area of hue Y was deemed acceptable for the buildings in Japan.

Table 7 Acceptable Color based on Fascia Area in Historical Area

	Value(chroma 4)		Chroma		
Area	< 5%	< 10%	< 3%	< 5%	< 10%
R	< 6	__			< 6
Y	< 6	__		< 10	X*
G	__	__		Below 3	__
B	< 3	__	< 6	< 3	< 3
P	__	__		< 3	__
N	○	__			

o Accepted for all values ; - Not tested ; X Rejected ;
* "< 10" for Japanese buildings but "X" for Chinese buildings

When the fascia was less than 10% of the façade, there were significant differences in reaction to

hue, value and chroma. However, there were no major differences in opinion for changes in fascia size with the same color, except 10R 5/10 and 10B 5/6 when applied to the Chinese buildings. In other words, when the fascia was less than 10%, the colors used had a greater influence on opinions of overall color matching as opposed to fascia size.

Currently, colors with a relatively high acceptability is concentrated on 'natural' background colors, e.g. R~Y earth and wood colors and the B stone color system, for both Japanese and Chinese buildings. Most vernacular architecture in areas of historical significance is constructed using natural materials, and the uniformity between materials and color systems has also been preserved. Furthermore, in Japan, noren, colored using natural dyes, are often used in traditional architecture. Thus, for historical areas with a comparatively uniform style, inherited colors of various traditional materials are more likely to be considered acceptable.

Due to the uniformity of historical areas, in the experiment, the area of outdoor advertising was controlled according to its percentage to the surface area of background building. In different historical areas, the surface area of building would have certain change. For example, buildings in Zhouzhuang and Kyoto would have different surface areas, but there is no change in the acceptable area of outdoor advertising. In other words, the experimental results can be applied to other areas with uniform architectural type and surface area to a certain extent.

As for colors used for fascia in areas of traditional vernacular architecture, the use of billboards usually prohibited, though some areas allow the use of accent colors and advertising hoardings within a given range. In terms of color planning, basic colors are preferred in some areas, e.g. dark brown, and relevant applications need to be submitted before the colors are actually used. Some regions only permit a relatively narrow usable range of colors within certain areas. This research has been aimed at showing that the use of colored fascia in areas of traditional vernacular architecture can be acceptable. Results showed that colors do not have to be so strictly limited in such areas. Furthermore, colors can be used more freely and effectively according to their particular characteristics.

The acceptability of colors was considered using an average value 0 as the standard. However, for some conservation areas, further verification should be conducted using an increased average value, e.g. using an average acceptance value of 1. In addition, the evaluation standard could be relatively lower for areas of less regulation, or districts adjacent to conservation areas. In addition to

determination based on average value, the acceptability of advertising color can also be determined according to the percentage of participant group. It can be determined according to different average values, such as with average value 0 or 1 as the benchmark; it can also be determined according to different quartiles of participant group, such as with 50% or 75% of the group as the benchmark; and corresponding result can be chosen for application.

Considering regional features and differences in building color, evaluations of traditional wooden buildings in Kyoto and white-wall buildings in Zhouzhuang were collated. As indicated by the resulting data, the acceptability of colored fascia for the two types of architecture were consistent. Therefore, I concluded that the experimental data had certain generality on historical blocks of wooden building and white walls. In addition, owing to consistent acceptability of two buildings, this chapter proposed a possibility that the acceptability of colored fascia was determined by atmosphere of historical urban but not the color of the building. However, further research will be conducted on other types of architecture.

The color planning trial was conducted with printed images of dimensions 15cm x 30cm. Considering the area effect of the color, value and chroma seem high when an area becomes large[3-3)]. I speculated that the allowable limit of the color may had a certain deviation when it used in buildings. However, the tendency findings of color using can be applied to actual use. Therefore, acceptability should be verified by actual use.

Variations in value and chroma were investigated, and in the experimentation with value, only colors with chroma 4 were used. But the result was proved in the experiment of “fascia surface area and chroma”. For example, it was found that the color Y with value 6 (chroma 4) was considered acceptable. However, 10Y 6/10 was used in a chroma variation and this was also considered acceptable. The value data can therefore be considered to be reliable to some extent, however, verification of the matching of value and chroma should be pursued in future research.

Fascia used in this trial were commonly-used rectangular boards and the trial was carried out based on the background color of the boards. Further research needs to be done on other possible formats, setting regions and the use of text. In future research examples of actual fascia will be used to investigate form, combinations of text and background color, the relationship between fascia design and color, etc.

Reference and Bibliography

(3-1) 庄怡，山本早里：景観計画における色のコントロール方法の抽出ーイタリア、フランス、日本、中国における町の色彩計画をもとにー，日本建築学会大会学術講演梗概集，環境工学 I，pp. 487-488，2015. 9

(3-2) 庄怡，山本早里：配色要素が建物の印象に及ぼす影響，日本色彩学会誌，第 39 号，pp. 22-24，2015. 9

(3-3) 佐藤仁人, 中山和美, 名取和幸:壁面色の面積効果に関する研究, 日本建築学計画系論文集，第 555 号，pp. 15-20，2002. 5

Chapter IV

Design and color combination of outdoor advertising in historical areas in Japan

4.1 Introduction and Purpose

In the experiment conducted in Chapter III, the acceptability for various colors on advertising fascia was tested in historical areas based on the usable size of advertising. I drew the following conclusion: different colors have different acceptable advertising areas. Then, based on the results of experiment pictures, I initially analyzed the relation between hue, value, chroma and the usable size. However, in the previous experiment, this chapter focused on the advertising size, and only conducted experiment on the background color of rectangular advertisings. There is no further research on the change of advertising fascia shape and color combination of background color and text color.

In the meantime, in the last experiment, I found that there is no significant difference on advertising acceptability of different types of buildings in Japan and China. Similarly, the buildings based on wooden color and white wall do not present difference on advertising color either. Based on that, this chapter concentrated the locations of experimental subjects in Japan. In the Japanese traditional areas with protective buildings, I further chose three different types of buildings to conduct further experiment on advertising acceptability.

In the experiment of last chapter, I also investigated the influence of various respondent factors on the advertising acceptability such as nationality, gender, major, field experience, etc. However, there was no analysis of the respondents' age. In this chapter, I will conduct experiment on acceptability of outdoor advertising based on respondents in different age groups.

Therefore, in this chapter, the historical areas will still be the research objects, and further experiment will be conducted on advertising shape design and the color combination of advertising background and text color. Based on consideration of the visual attractiveness and coordination of advertisings, I will evaluate the acceptability of advertising. Then, the relation between three evaluation items of advertising fascia have been analyzed: visual attractiveness, coordination and acceptability; based on the analysis result, the influence of shape design and color combination on outdoor advertising have been summarized. Finally, in accordance with respondents of different ages, I will determine the difference on outdoor advertising acceptability.

4.2 Methodology

This survey was conducted, using questionnaire, based on mock-up images of three buildings, and

different versions of advertising fascia depicted on the central building. There are several types of outdoor advertising in both commercial areas and historical areas such as pole signboards, roof advertising, advertising fascia et al. The type of advertising fascia which commonly used in historical areas was used in this questionnaire, and the design and color of the advertising fascia was varied, and the respondents evaluated the different designs and color combinations.

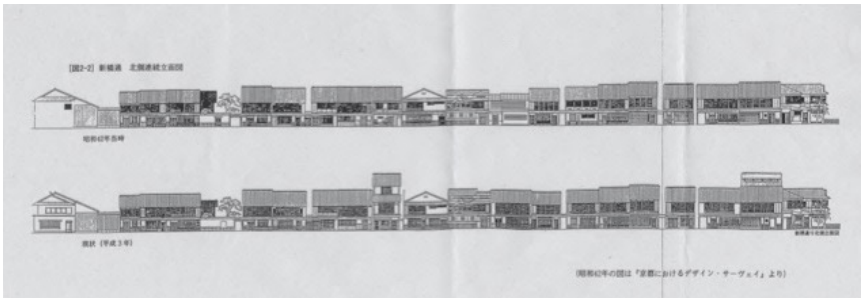
Three different types of protected historical street[4-1)] - Chaya machi in Kyoto- Gion Shinbashi, Shukuba machi in Nagisomachi- Tsumago and Shoka machi in Sanmachi- Kamisannomachi of Takayama City were targeted, from which the model structures were three randomly selected adjacent buildings from each street. Considering different geographical location and different building type, this study chose 3 blocks as the experimental subject. Figs.4-1~4-3 show the pictures of these three blocks.

Fig.4-1 Chaya Machi in Kyoto

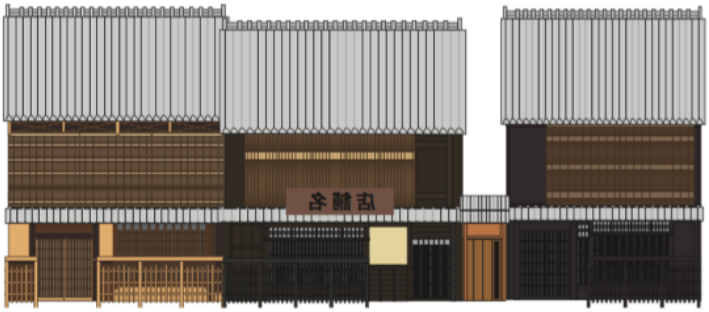
Fig.4-2 Shukuba Machi in Nagisomachi

Fig.4-3 Shoka Machi in Sanmachi

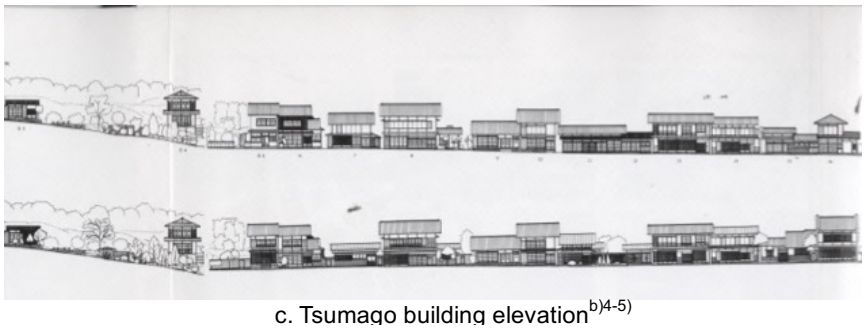
Images were produced based on official building elevations[a~c] as shown in Fig.4-4. The building colors were determined using Munsell color chart[d] in field research, as depicted in Table 1.



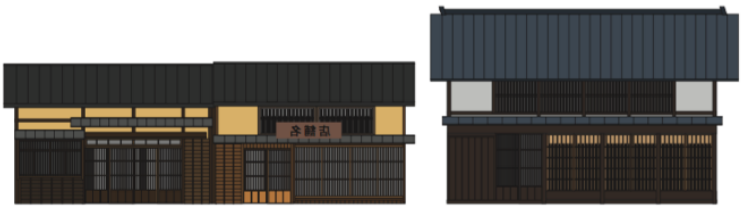
a. Gion Shinbashi building elevation[a]



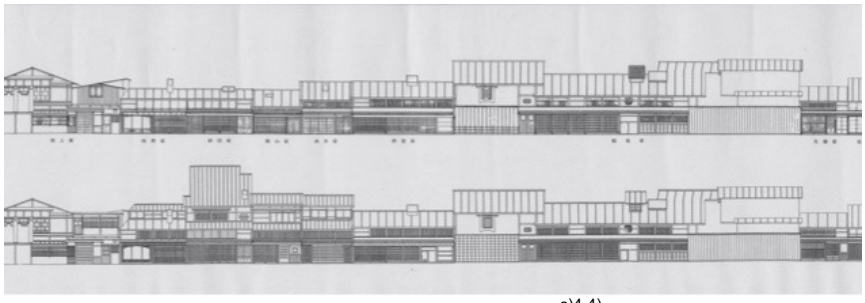
b. Gion Shinbashi mock-up (reference image)



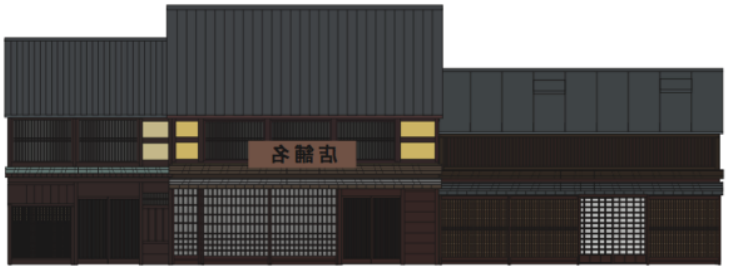
c. Tsumago building elevation[b]4-5]



d. Tsumago mock-up (reference image)



e. Sanmachi building elevation[c)4-4)]



f. Sanmachi mock-up (reference image)

Fig.4-4 Images Based on Gion Shinbashi, Tsumago and Sanmachi Elevations

As the advertising regulation in Takayama[4-2)], the surface area of advertising fascia was restricted under 20% of building surface in castle town. In previous research[4-3)], I explored the case that when the advertising fascia was restricted to being 5% of the building facade, wide range of the background color had no significant impact on acceptability. Then, acceptability of hue G, B and P were similar to each other. Therefore, for this experiment, the size of the advertising fascia was also set to 5% of the building facade. And hue B was chosen between G~P for the experiment.

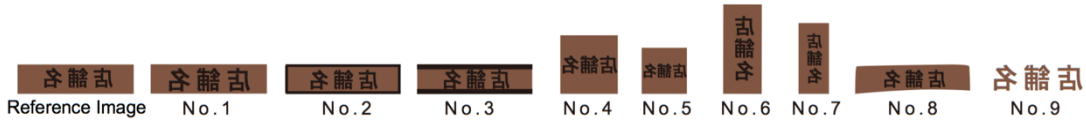


Fig.4-5 Advertising Fascia Designs

Based on using 5% building surface area, as shown in Fig.4-5, there were nine different designs, in which changes were mainly centered on altering the background board shape. The text was enlarged in No.1. In No.2 & 3 some traditional elements were added, such as battens and wooden frames. No.4~7 vary in shape and surface area. Considering the smaller surface area would increase the

acceptability, I experimented the same design and color of advertising fascia in different surface area. Surface area of No.4 & 6 was 5% and the No.5 & 7 was 3%. No.8 used a background board of a more natural, organic shape, and only text was used in No.9. All of nine designs used the same color combination as background color of 5YR 3/3 and text color of N1 as the reference image.

No. 10~43 as shown in table 1 and fig.4-6 used the same advertising fascia design as the reference image as. In terms of color, Munsell hues R, Y, B, N were used as background colors, and these and the text color were arranged as identity, similarity and contrast harmonies and matching with achromatic color. When R was used as the background color, 5R6/6 was used for the identity harmony, 5YR 6/6 for the similarity harmony, 5B 6/6 for the contrast harmony and achromatic color N1 for the text color. Color reversal was used in achromatic color combination.

Table 1 Building Color

	Architecture of Gion Shinbashi			Architecture of Tsumago			Architecture of Sanmachi		
	Left	Middle	Right	Left	Middle	Right	Left	Middle	Right
Roof	10B 8/1	5PB 8/3	5PB 8/3	N2	N2	10B 3/2	10B 3/1	5PB 3/1	5BG 6/2
Exterior wall	2.5YR 2/2; 5YR 3/6; 10YR 8/8	5R 2/2; 10YR 2/2; 5Y 9/4	5YR 2/2	7.5YR 2/3; 2.5Y 8/8	2.5Y 8/8	5YR 2/2; N8	10R 2/3; 10R 4/4	5R 2/3 5Y 8/8	5R 2/3, 2.5YR 3/3
Window frame	2.5Y 9/4; 2.5YR 2/2	5R 2/2; 10YR 8/2	10YR 3/4; 10YR 5/4	7.5YR 3/4; 7.5YR 2/2	7.5YR 3/2	5YR 2/2	7.5R 2/2; 2.5Y 8/10	5R 2/3	5R 2/3
Door	5YR 3/6; 2.5YR 2/2	5R 2/2	5YR 2/2	7.5YR 2/3	7.5YR 5/6; 7.5YR 6/10	5YR 2/2	7.5YR 6/10; 7.5YR 5/6	5R 2/3	5R 2/3

Fig.6 Color Combinations

Based on the preliminary experiment, I deleted the colors which evaluated in similar answer and there were a total of 34 different color combinations in formal experiment as shown in Table 2. Combined with 9 different advertising fascia designs and 34 color combinations, 43 different images were used for each street, making a total of 129 images. The images were shown to respondents

randomly, and questionnaires took 45 minutes to complete.

The personal background of the respondents was collated in our previous experiment[4-2)]. There was no significant difference in responses based on nationality, profession, first-hand knowledge of the locations, or attitude to advertising fascia in general. Most of the historic street have been developed as tourist destinations, and are visited by tourists of different age groups. In order to determine the preferences and acceptance of different advertising fascia in different age groups, and in order to validate the results from our previous research, responses were collated with respect to age group. Responses were organized according to gender, age, profession, whether respondents had actually visited the locations in question, whether they accepted the validity of our previous study, and the extent to which they accepted the notion of advertising fascia in areas of historical significance. Our respondents were 24 students from the University of Tsukuba and 21 elderlies[e)] from the Tsukuba Silver Human Resource Center. Unfinished questionnaires or those that had been filled in with the same response were discounted. The analysis was based on the valid responses returned by 20 students and 21 elderlies, making a total of 41 valid questionnaires.

Table 2: Background and Text Color Combinations

No.	10	11	12	13	14	15	16	17	18	19
Background Color	5R 3/3					5R 6/6				
Text Color	5R 6/6	5YR 6/6	5B 6/6	N1	N9	5R 3/3	5YR 3/3	5B 3/3	N1	N9

No.	20	21	22	23	24	25	26	27	28	29	30
Background Color	5Y 3/3			5Y 6/6			5B 3/3				
Text Color	5Y 6/6	5YR 6/6	5B 6/6	5Y 3/3	5YR 3/3	5B 3/3	5B 6/6	5PB 6/6	5YR 6/6	N1	N9

No.	31	32	33	34	35	36	37	38	39	40	41	42	43
Background Color	5B 3/6					N1			N6			N9	
Text Color	5B 3/3	5PB 3/3	5YR 3/3	N1	N9	5R 6/6	5B 6/6	N9	5R 3/3	5B 3/3	N1	5R 3/3	N1

In ensure accuracy and minimize subjective interpretation, results were evaluated using the ME method. Actual advertising fascia which uses the 5YR 3/3 as the background color and black N1 as the text color was used as a reference image. Also this color combination was approved by regulations in this 3 places. As that, reference image was given a value of 100 points and responses to the mock-ups were ranked accordingly. There were three values to evaluate (fig.4-7): visual attractiveness, coordination and acceptability[f)]. I explained on the questionnaire that the coordination means

coordination of advertising fascia color and background building color. Visual attractiveness means high recognition of advertising fascia. Acceptability means whether you can accept it in actual use. Also, acceptability of the advertising fascia should determine by considering visual attractiveness and coordination.

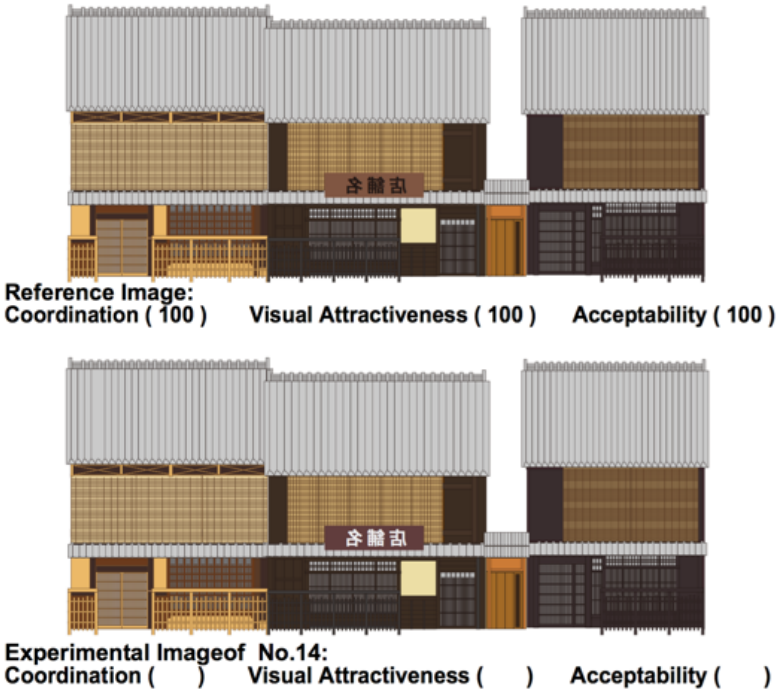


Fig.4-7 Evaluated Factors (Example: Image No.14)

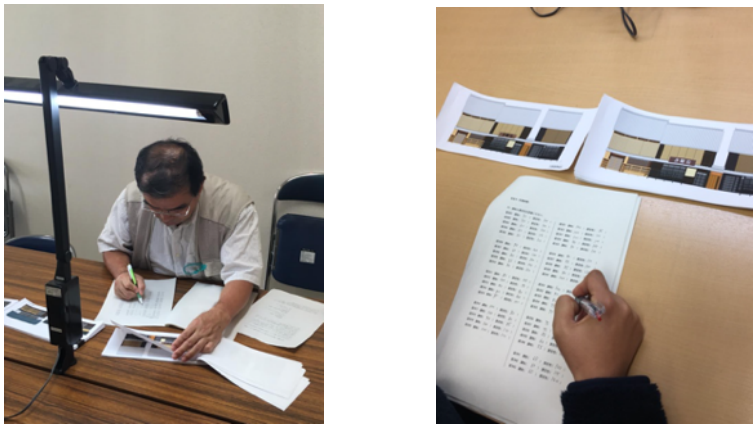


Fig.4-8 A Questionnaire Being Completed

The questionnaires were completed in the same environment as our previous research[4-3]; a standard

D65 luminous environment, at an illumination intensity of 1100 lx on a desk surface. In order to clearly indicate the overall color of the buildings, and provide a clear comparison with the reference image, I used 15cm x 30cm prints. An 8-color inkjet printer was used to print the images and the color was checked using a JIS color chart after printing. The experimental environment is shown in fig.4-8.

4.3 Analysis of Responses

Patterns in the responses were cross-checked with the background attributes of the respondents in order to identify possible contributing factors to their preferences. Correlation analysis were then performed for the three evaluated features. Finally, data analysis for the acceptability of advertising fascia, according to different data groups, was performed.

Box plotting and mean value were used in the analysis. However, when the mean and median values were significantly different, the individual data was checked. In analysis, the mean and median value did not show any significant differences, thus the acceptability of advertising fascia was divided and evaluated by mean and P value.

4.3.1 Assessment of Respondents' Backgrounds Information

Firstly, responses were collated according to respondents' background attributes. Respondents were either 20~30 years old or elderlies over 60. A significant difference was found in the responses of the two age groups (fig.4-9) in terms of the acceptability of advertising fascia. Accordingly, an analysis was carried on the basis of age group.

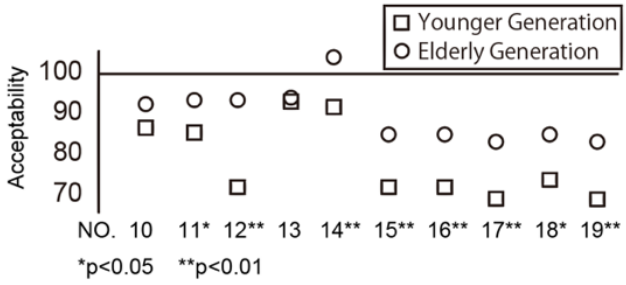


Fig. 4-9: Acceptability of Advertising Fascia by Age Group
(background color of R: No.10~No.19)

Table 3 shows the background of respondents. This study also compared the responses of younger respondents according to sex, whether they had actually visited the locations used in the survey,

whether they accepted the validity of the previous survey, and acceptance of the use of advertising fascia in historical areas in principle. For the responses of the elderly group, I compared the sex, whether they had actually visited the locations and acceptance of the use of advertising fascia in historical areas. There was no significant differences in response within the same age group. Thus, I focused on differences between the age groups.

Table 3: Respondents Background（field experiment of Kyoto）

		Students	Elderlies			
		20's	60's	70's	Over 80	Total
Generation		20	8	10	3	21
Sex	Male	10	4	6	3	13
	Female	10	4	4	-	8
Field Experiment	Yes	14	8	8	2	18
	No	6	-	2	1	3

4.3.2 Multiple Regression Analysis based on Age Group

Multiple regression analysis for visual attractiveness, coordination, and acceptability was performed. Table 4 showed the multiple regression coefficient of acceptability for the younger age group. With a value of 1%, coordination had a significant influence on the perceived acceptability of the advertising. However, visual attractiveness did not have an influence on acceptability. Table 5 showed the multiple regression coefficient of acceptability for the older age group. As shown in the table, with a value of 1%, both the visual attractiveness and coordination had a significant influence on acceptability.

Table 4 Multiple Regression Analysis of Acceptability for Younger Respondents

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	Std. Error	Beta	
(Constant)	-42.697	16.923		.016
Coordinated	1.420	.196	.795	.000
Visual Attractiveness	.038	.183	.023	.209

Table 5 Multiple Regression Analysis of Acceptability for Seniors

Model	Unstandardized Coefficients		Standardized Coefficients	Sig.
	B	Std. Error	Beta	
(Constant)	-5.957	3.944		.139
Coordinated	.941	.026	.971	.000
Visual Attractiveness	.108	.040	.074	.009

4.3.3 Correlation Analysis

The acceptability was determined combined the other 2 items of coordination and visual attractiveness. Therefore, correlation analysis was performed for these three factors. In terms of the younger age group, when P<0.01, the correlation coefficient between coordination and acceptability was 0.981. However, there was a nonlinear correlation between visual attractiveness and acceptability. In terms of the elderly group, the correlation coefficient between coordination and acceptability was 0.806, and the correlation coefficient between visual attractiveness and acceptability was 0.436.

Table 6 Correlation Coefficient

		Coordination	Visual Attractiveness
Acceptability	Younger Group	0.981**	0.223
	Elderly Group	0.806**	0.436**

* P<0.05 ** p<0.01

Because of the positive correlation between three evaluate factors, I analyzed the acceptability of the advertising fascia based on the data of acceptability in next section.

4.3.4 Acceptability Ratings for Younger Age Group

The age groups expressed different attitudes when it came to their tolerance of advertising fascia, so I analyzed the data from the younger respondents, first comparing the data for the three different locations. It can be concluded that there was no significant change in acceptability for the same advertising fascia when used in different locations. Then looked at acceptability by averaging the three locations. For this, the responses were categorized according to the 5 parameters of design, background color of R, background color of Y, background color of B and background color of N. Since a large number of responses were below the reference value of 100, I compared each response

with the average in these categories. When there were significant differences, the image was marked with an asterisk. Also, I prompted the reference value of 100 in fig.4-10 and fig.4-11.

(1) Reaction to advertising fascia shape

Acceptability for nine differently shaped designs of advertising fascia are shown in fig.4-10. As shown in fig.4-10a, based on the responses of the younger age group, it was clear that images No.1, No.2 and No.8 rated higher for acceptability than the others. The acceptability of image No.9, which was designed with channel letters, was the lowest. Images No.4, 5, 6 and 7 were the same shape but had different surface areas. However, there was no significant difference in response between them. In other words, adjusting the size of advertising fascia within a reasonable range did not affect its acceptability rating.

(2) Acceptability of color comination

When it came to the color combination, responses were analyzed according to the hue of background color. When R was used as the background color (fig.4-10b), the perceived acceptability was a little lower than the reference value of 100. The acceptability for hue R was divided: in the case of a background color of low value, low chroma as No.10~14 there was a higher acceptability rating than average, but for a background color of middle value, middle chroma as No.15~19 there was a lower acceptability rating. In fig.6b, it can be seen that the darker background had a higher rating for acceptability than a background color of middle value and middle chroma, with the exception of No.12 which used a contrasting blue text.

With hue Y(fig.4-10c), the acceptability rating for image No.22, which used low value, low chroma color for the background and contrasting blue for the text, was concentrated in the range of acceptability of 60~80, and was lower than that for other color combinations. When I used the B in background color (fig.4-10d), the acceptability rating for advertising fascia with low value and low chroma background color and black and white text was relatively higher. When achromatic colors were used for the base (fig.4-10e), a middle value grey was more acceptable than black or white. There was no significant difference in the changes of text color.

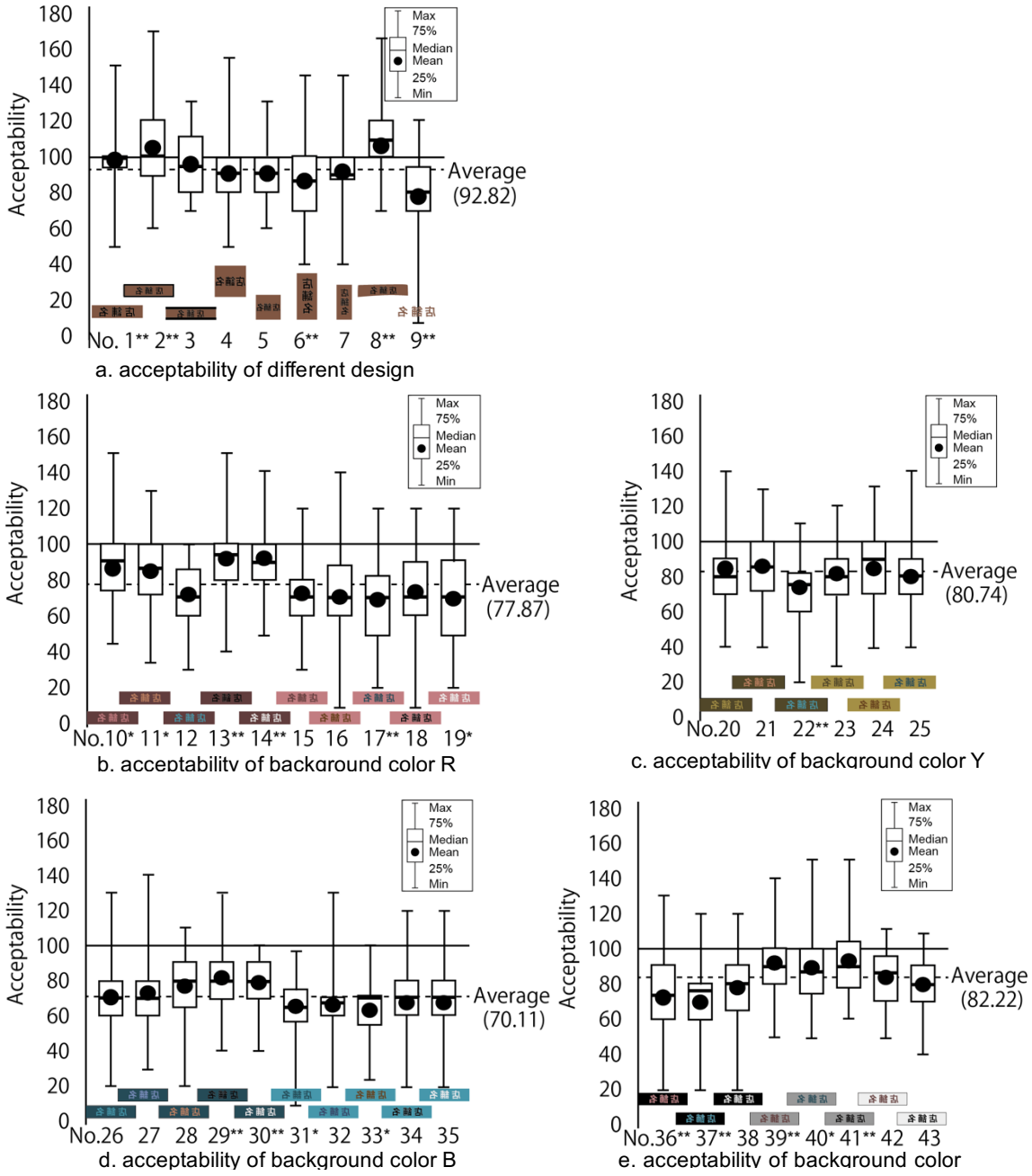


Fig.4-10 Acceptability of Advertising Fascia Based on Different Design and Color for Younger Age Group

4.3.5 Acceptability Ratings for Elderly Group

(1) Reaction to advertising fascia shape

Similarly, I checked the acceptability ratings in the responses from elderlies. From fig.4-11a it can be seen that the acceptability rating for images No.1 and No.8 were relatively high. The acceptability

ratings given by elderlies for other advertising fascia shapes was generally lower. As with the results mentioned above, there was no significant difference in the ratings of images No.4, 5, 6 and 7 which had different surface areas but were the same shape.

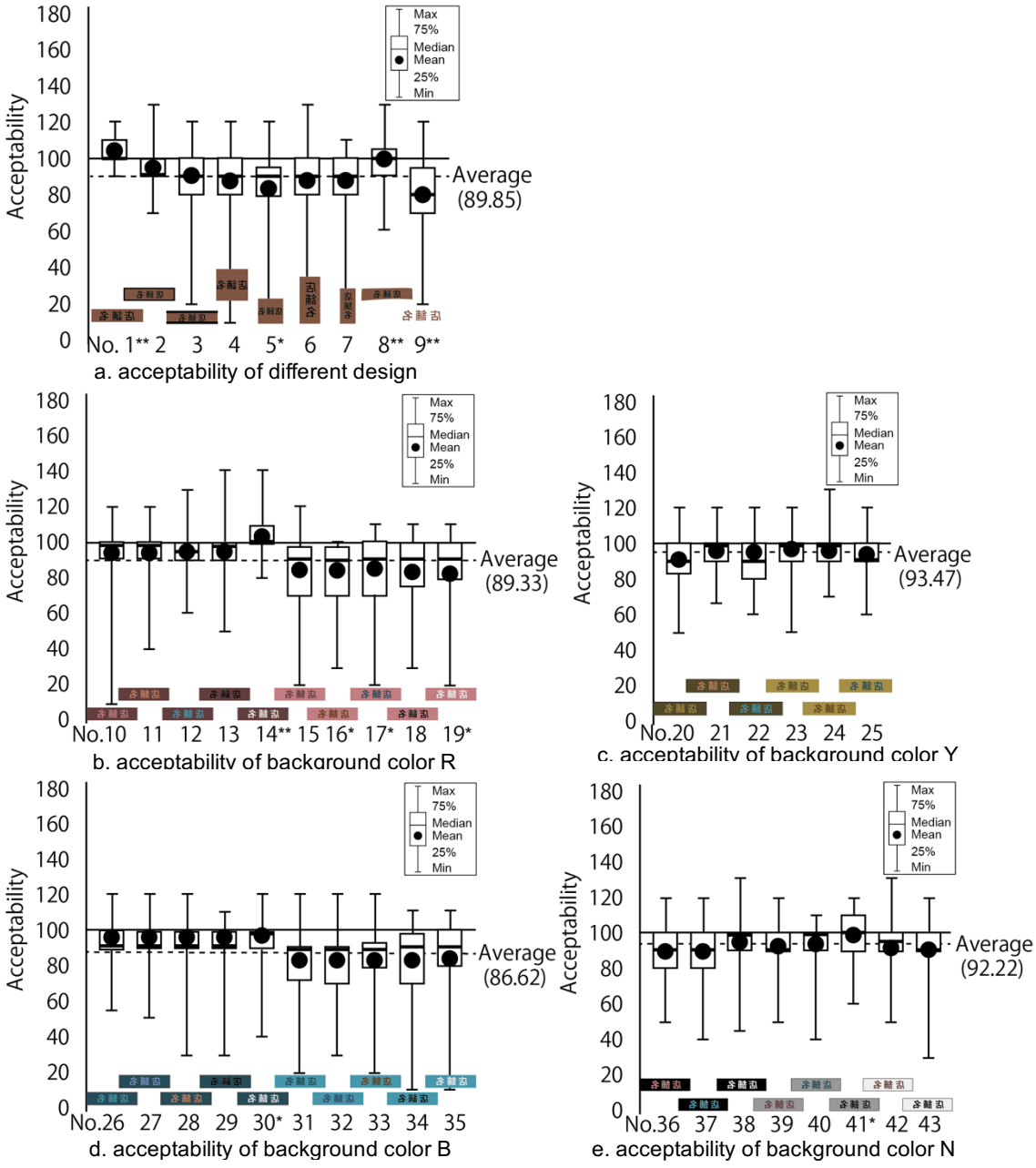


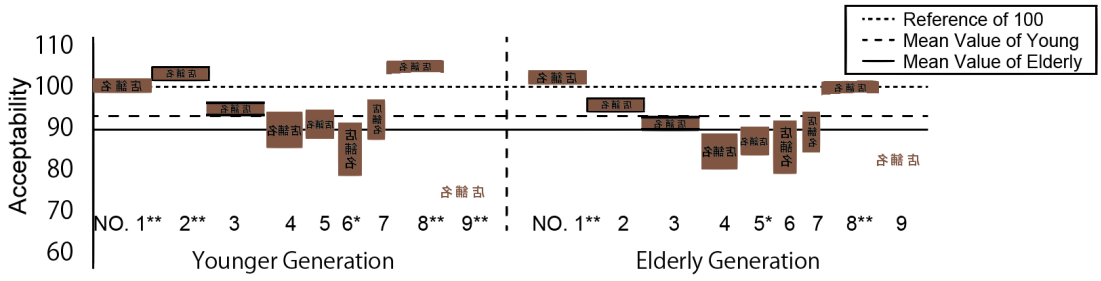
Fig.4-11 Acceptability of Advertising Fascia Based on Different Design and Color for Elderlies

(2) Acceptability of color combination

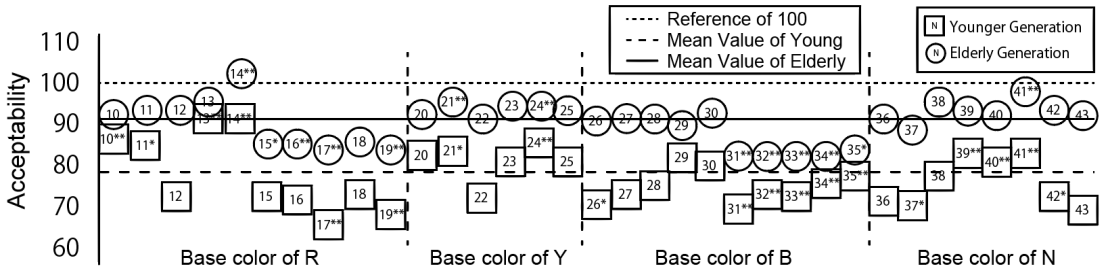
When R used as the background color(fig.4-11b), image No.14, which was a dark base with white text, had the highest acceptability rating - higher than the reference value of 100. Acceptability values for images No.15~19 were lower than the average. There was no significant difference in ratings for varying text colors. With hue Y, acceptability ratings for all images were concentrated in the 90~100 range and there was no significant variance. When the background color was B, the acceptablity rating of image No.30, with a dark base and white text was higher than others. When achromatic colors were used for the base, image No.41, with a gray base and black text had a higher acceptability rating. The acceptability of other colors was concentrated in the 85~95 range.

4.4 Comparing Responses of the 2 Age Groups

In this chapter, I compare the responses of the two different age groups (fig.4-10~4-12). First, based on the general responses, I found that the range of answers for people in their 20s was wider compared to that of elderly respondents. That is to say, compared with the elderly, younger respondents had stronger reactions.



a: acceptability of different design



b: acceptability of different color combination

Fig.4-12 Comparative Study between 2 Age Group

Experimenting different shaped fascia, based on mean value, younger respondents found natural or unfinished shapes more appealing. But for elderlies, the design that was viewed most positively was the one with larger text.

There were other notable differences between the two age groups; for advertising fascia with values higher than reference of 100 points, younger respondents favored the natural wooden board of No.2 and 8, which had a traditional wooden frame. Elderlies preferred the advertising fascia No.1 with larger text and No.14 which had a dark background color of R, and white text. In other words, elderlies were more inclined to accept advertising fascia which provided greater visual attractiveness.

With color combination variations of background color and text color, using the hue of R-Y as the background color, the advertising fascia which used contrasting text in blue was clearly unacceptable to younger respondents. However, there were no significant variance in responses from the elderly age group.

4.5 Conclusion and Discussion

From a comparative analysis of the data, I found there was a significant variance in the reactions of people in their 20s and those over 60 in terms of the acceptability of advertising fascia, that is to say, responses could be distinguished according age group. According to the results of correlation analyses, the factor that most influenced the younger age group was the degree of coordination of the advertising fascia with the background buildings. However, for the elderly it was both the degree of coordination and the visual attractiveness of the advertisements. Whether there were any other factors which affect the evaluation of younger respondents should be further explored. Similarly, data of middle age group should also be further supplemented.

For the same advertising fascia, there was no significant difference in acceptability rating when the location was changed. In previous research[4-3)], it was concluded that the acceptability of different colors and surface areas was not affected by whether the advertising fascia appeared on wooden or white walled buildings. This was also the case in this study. Therefore, I can posit that for historical urban areas, the style and the coloration of the building may not have an influence on the acceptability of advertising fascia, and that the more crucial factors are design and color.

Advertising fascia of the same shape, but of varying size were evaluated, such as No.4 and 5, which

were square, and No.6 and 7 which were rectangles in portrait orientation. Responses showed that, within the regulated limits, size did not influence the acceptability rating.

In experiments of different background board shapes, for the younger age group the most acceptable designs were No.1, 2 and 8, which rated higher than the reference value of 100. For the elderlies, No.1 and 8 achieved the highest acceptability ratings. Based on the design factors I can conclude that:

1) in terms of shape, uncut log or organic designs increase acceptability.

2) using traditional visual elements, such as wooden frames etc., can also increase acceptability

3) advertising fascia that does not use background boards, such as channel lettering, should be avoided.

4) for elderlies, the visual attractiveness of the advertising fascia was important. Increasing the size of the text, or using the white text for dark background boards had a positive effect on acceptability.

In a previous study of signs in Munich[4-6], channel lettering was suggested as being more suitable for buildings of stone construction. In this experiment, I confirmed that advertising fascia on Japanese traditional wooden buildings which did not use background boards was not well received.

Regarding color combinations, combining this current study with the results of our previous research:

1) using colors of hue R with low value and low chroma, and achromatic color with a middle value for the background received the best ratings for acceptability.

2) using colors of hue R~Y for the background, a base with low value and low chroma achieved higher acceptability ratings. For text, using a high chroma contrasting B color is not recommended.

3) using colors of hue B for the background, similarly background color of low value and low chroma rate higher for acceptability. In this case, achromatic colors are recommended for text.

4) when the background uses achromatic color, grey is more acceptable than black or white. In this case, there is a wide latitude of acceptable text color.

The main difference between younger and elderly age groups was that visual attractiveness was not an important factor for younger respondents. However, this difference should be seen in the context that all respondents were generally in agreement as to the acceptability of the mock ups overall, and that the purpose of this experiment was to refine our understanding as to how different factors contributed to their acceptability. Therefore, I suggested that the acceptability of design and color of advertising fascia can be judged according to the age of the user. When the users or observers vary in

age, the upper age range should be considered first.

During this experiment, 4 background colors was evaluated; R, Y, B, and N. In previous research on the relation of hue and surface area, we found that the acceptability of surface areas of hue G, B and P was the same. Thus, hue B was used during for the experiments in this study. Nine different basic geometric shapes were considered in this experiment. However, as different businesses continue to move into historical sightseeing areas, research on advertising fascia that uses specific logos and shape etc. should be conducted in the future.

In order to clearly indicate colors overall, and allow easy comparison with the reference image, mock-up images were 15x30mm. I can suggest how to enhance the acceptability of advertising fascia in the real world, but the base line should be determined on a case by case basis[4-7)].

I mainly evaluated acceptability by assigning scores. The surface area and color combinations used in this experiment had already been determined in previous research[4-2)]. Therefore, this study can be considered as an investigation of designs that already fall within the range of acceptability. Designs that were deemed unacceptable did not appeared in this experiment.

Respondents in this experiment were all either in their 20s, or over 60. Respondents in their 30s, 40s and 50s were not used. There was a significant difference in responses between the two age groups. I inferred that acceptability and the factors which influence this metric were different for each age group. Better coordination and greater attention to design could increase acceptability of advertising fascia for consumers in their 20s. Visual attractiveness was an important factor for elderly respondents. However, the division of age groups and the factors which affected their responses need to be further explored.

Finally, this experiment was mainly based on wooden buildings and painted buildings in historical areas, and only the billboards on the roof of first floor was used as the experiment objects. In urban environments, the type of outdoor advertising, building density and advertising fascia frequency influence the acceptability rating of advertising fascia. Then, material of buildings should also be further supplemented. However, some results of this research can also be used in other types of outdoor advertising or traditional building made of other material. For example, corresponding historical design elements can be used to improve acceptability of advertisings. Then. further research will therefore aim to explore advertising fascia more in context.

Note

a) Building elevations were obtained from Kyoto City Planning Division.

b) Building elevation according to "*Tsumago-juku - the Protection and Regeneration-"*, by Ota Hirotaro and Kodera Takehisa, published by Shokokusha, pp.80-81, 1989.

c) Building elevations obtained from Takayama Cultural Properties Protection Department.

d) As the Munsell color system was used in this survey, "Hue", "Value" and "Chroma" should be considered Munsell Hue. Munsell Value and and Munsell Chroma.

e) Initially we intended to survey people aged 50 and above. However, as the respondents were all aged 60 and above, in the conclusion the elderly age group appears as "over 60".

f) The survey was conducted in Japanese. 調和 in Japanese was translated as "coordination".誘目性 as "visual attractiveness", 許容度 as "acceptability".

Reference and bibliography

(4-1) 文化庁：重要伝統的建造物群保存地区一覧、http://www.bunka.go.jp/seisaku/bunkazai/shokai/hozonchiku/judenken_ichiran.html, 2014

(4-2) 高山市屋外広告物条例等早わかり，pp.18，2014

(4-3) Zhuang Yi and Yamamoto Sari：Testing the Acceptability of Changes to Advertising Fascia for Commercial Properties in Historic urban Areas in China and Japan，Journal of Environmental Engineering(Transactions of AIJ), Vol.82 No.732，pp.139-148，2017.2

(4-4) 奈良国立文化財研究所：高山２−伝統的建造物群保存対策調査報告−、高山市教育委員会、図５、1984.3

(4-5) 太田博太郎、小寺武久：妻籠宿―その保存と再生：彰国社、pp:80-81, 1989

(4-6) 西川潔,山本早里:ミュンヘン市の広告景観，サインズインジャパン，第 127 号, pp:46-51, 2008.4

(4-7) 佐藤仁人, 中山和美, 名取和幸:壁面色の面積効果に関する研究, 日本建築学計画系論文集, 第 555 号，pp. 15−20，2002. 5

Chapter V

Color planning of Outdoor Advertising Fascial in Historical Areas in China and Japan

5.1 Introduction and Purpose

In Chapter III, I conducted experiment of the relation between color and usable size based on the acceptability for outdoor advertising. In Chapter IV, I conducted research on the acceptability for shape design and color combination of outdoor advertisings based on the results obtained from Chapter III. In this chapter, by combining the experiment results obtained from Chapter III and Chapter IV, the color acceptability based on the outdoor advertising have been summarized and analyzed in Japanese and Chinese historical areas. Then, I will compare the similarity and difference between Japan and China on advertising acceptability by different buildings. In the meantime, this chpater will also combine the current situation of the implementation of outdoor advertising regulations in these two countries, and propose color restriction methods for outdoor advertising in Japan and China.

5.2 Methodology

In this chapter, O will compare and analyze various current regulations and experiment results collected above, and propose related method. In the current situation and background investigation in Chapter I and Chapter II, due to different development stages and city natures, it can be seen that although there is certain similarity between Japan and China on restriction for urban colors and outdoor advertising colors at current stage, but there is also significant difference. First of all, we will compare related regulations adopted by the two countries at present, and conduct comparative study on the restriction approaches used by them. I will investigate the possibility to implement regulations on outdoor advertising colors. Secondly, the experiment results obtained from Chapter III and Chapter IV based on country and building type have been compared and analyzed. Finally, based on the comparative study result of current situation and experiments, this chapter propose color restriction method for outdoor advertising by combining the actual situation of these two countries.

5.3 Comparison of Urban Colors and Outdoor Advertising Colors in Japan and China

5.3.1 Comparison of restriction regulations on urban color in Japan and China

Considering that restriction on outdoor advertising colors should be based on the planning of urban color, this study starts from comparing the similarity and difference between China and Japan in urban color planning. Secondly, I will further compare restrictive regulations on outdoor advertising colors.

During this process, I will combine the actual situation of Japan and China to conduct further exploration on the possibility to implement regulations on outdoor advertising colors.

First of all, this study compares the restrictive regulations on urban color adopted by these two countries on the aspect of restriction method[5-1)]. In Japan, the urban color is mainly restricted through corresponding regulations on color, and there is specific regulation on the restriction and modification opinion of urban color. For Chinese cities, the environment color is mainly implemented through the overall planning and color planning of various cities, and they may vary in the nature of regulation and the strength of implementation. Next, I will further analyze the specific restriction method.

Table 1 Comparison of Outdoor Advertising Color Restriction Method in Japan and China

Color Restriction Method	Italy	France	Japan	China
Regulations	○	○	○	○
Region Division	○	○	○	○
Characteristic Colors	△	△	△	△
Recommended Color	△	△	△	△
Color based on Landscape Objects	△	△	△	-
Color based on Usable Area	-	△	△	△
Position of Building Surface	○	△	△	-
Strict Degree of Restriction	△	-	-	△
Material Color	○	○	△	-
Application System	△	△	△	-
Color Restoration	△	△	-	-
Consulting Service	-	△	-	-
Information System	△	-	△	-

○ means all the cities used this color restriction method.

△means part of the cities used this color restriction method.

- means no city in this country used the color restriction method.

Among the 12 urban color planning methods summarized by us, the Japanese cities mainly use the 10 regulations listed in the table for restriction of urban colors. Based on related laws and city regulations, the urban color is guided through the Munsell color system. In the meantime, classified

management is conducted to city facilities, such as building and outdoor decorations. Some cities have more specific regulations, and they have stipulated separate regulations on different parts of the building, such as the roof color etc. On the other hand, in China, for the guidance of color, regulation of basic color or dominate tone is mainly conducted based on the goals like “highlighting the city characteristics” and “coordination”. As for the color expression, although several cities have used the Munsell color system, most cities describe the used colors with language, such as “grey tone” and “yellow tone”.

On the aspect to implement regulations on color, Japan mainly impose induction and improvement of current colors or colors of new buildings through reward and punishment system, and it has also specified the fine and punishment method in the punishment system. In comparison, China does not have a complete reward and punishment system. In other words, the implementation strength of color system is not sufficient.

On the aspect of city departments, in Japan, the color management is mainly conducted by the urban planning management department, and in the meantime, there are also special personnel responsible of urban color, and they can provide certain planning and opinions of building colors. In China, the color management is also conducted by the urban planning management department, but there are no professional planners who can provide guidance to actual practice.

Secondly, I will compare the main elements involved in the urban colors of these two countries. The urban colors in Japan mainly involve the following main elements: the color usable range, including the range of recommended and forbidden colors; the color usable size, planning of dominate and accent colors based on the size; used part, color used on different building part, such as the roof color etc. On the other hand, China mainly conducts urban color planning through the dominate color. During field investigation, it can be found that the frequency of dominate color has big influence on a city impression, but there is no specific introduction in actual regulations.

For outdoor advertisings, first of all, I will compare the overall restriction methods adopted by China and Japan. In the research of Chapter II, we can see that restriction on outdoor advertising is mainly conducted with 11 methods in Japan. Based on different types of advertising, regulations have been stipulated for the setting location, size and related maintenance system. Similarly, there is also related instruction for the lighting, color and setting time. Finally, there is a uniform application system for

advertisement setting, and a punishment system is also provided for violation of outdoor advertising regulations. The management of outdoor advertising is strong. Specific outdoor advertising management department has been established, and there are special personnel who can provide consultation and guidance for setting of advertising. Furthermore, the advertising operators must be registered, and they can only conduct outdoor advertising operation after learning related advertisement system.

Table 2 Color Elements of Outdoor Advertising in Japan and China

Color Elements		Italy	France	Japan	China
Usable range	Recommended color range	○	○	○	○
	Forbidden color range	-	-	△	△
Usable area	Usable area of base color	-	-	△	△
	Usable area of accent color	-	-	△	△
Position	height	-	△	△	-
	position	○	△	△	-
Use Frequency	Use frequency of base color	-	△	-	-
Shape and Design					
Number of Colors				△*	

○ means all the cities used this color restriction method.

△means part of the cities used this color restriction method.

- means no city in this country used the color restriction method.

* Number of colors just used in outdoor advertising color scheme in Kyoto.

In comparison, in China, the outdoor advertising is mainly managed through the outdoor advertising management method of each city. In this process, the department in charge has not made any announcement. Among related regulations, they have mainly specified the area and facilities forbidden to be set with outdoor advertisings, and there is a specific application system for setting advertising. However, there is no specific introduction of related design elements of advertising setting, such as its size, height, color and shape etc., and it is only mentioned that these elements must be considered in

the application system. Because there are no clear requirements for outdoor advertising, even though there is a related punishment system, its standards are unclear. In addition, the outdoor advertising is generally directly set by the advertiser, and there is lack of related guidance to the setting of outdoor advertising.

Secondly, for color-related elements involved in the outdoor advertising colors in Chinese and Japanese cities, in accordance with the diagram, we can see that Japan has regulated the color use scheme for outdoor advertising in a more specific way. The purpose of urban color planning is to recommend colors used in outdoor advertising. In the meantime, most cities impose intuitive restriction on advertising colors through hue and chroma in the Munsell color system. On the other hand, China only mentions color restriction in regulations at current stage, and that efforts should be made to conduct color restriction with different methods and elements, and no specific adjustment plan has been released.

As for color planning of historical areas, we can see that both China and Japan focus on protection. In Japan, for urban color planning or outdoor advertising color planning, compared to commercial districts, there is stricter restriction on both the range and usable size of color used in historical area. While in China, there are no specific regulations on colors used in historical areas in the urban color scheme, and the planning is mainly conducted through the review system.

5.3.2 Comparison of acceptability for outdoor advertising colors in Japanese and Chinese historical areas

In accordance with the experiment on color, usable size and advertising acceptability conducted in Chapter III, we can see that there is no significant difference in acceptability for most colors in Japan and China, while difference is shown on 10Y 5/6 color with a use area of 10%. The traditional Japanese wooden building accepts this color, while the traditional white-wall building used in China does not accept this color. In the meantime, I can also regard it as different acceptability of 10Y 5/6 color by the wooden building and white-wall building.

Because the acceptability for most colors is the same, I conducted further experiment on the shape design and color combination of outdoor advertising based on three types of Japanese historical buildings. The experiment results show that no significant difference can be found among these three types of Japanese historical buildings for advertisings with different design and color combinations.

5.3.3 Summary and discussion

As for color representation, Japan can basically provide specific color range in accordance with a uniform Munsell color system, and there are actual data that can be used as reference to conduct urban color planning. However, in China, the color planning is mainly described with ambiguous language, and the color guidance is not specific. On the implementation strength, because there are no professional personnel who can provide guidance, it is difficult to conduct color restriction. Furthermore, there are no specific regulations of a punishment system to handle related violations of laws and regulations, and it has increased the difficulty of urban color planning.

On the aspect of color-related elements, Japan has made specific regulations on the color use range, usable area and colors that can be used on different parts. While China has mainly planned the dominate color of city, and no specific color use methods have been announced.

Japan has a relatively more complete management system for outdoor advertisings. In comparison, the Chinese regulations are only for management of outdoor advertisings, while there are no detailed regulations on the specific implementation method.

Based on the actual national conditions, Japan has more mature management of urban environment, and there is high acceptability to related urban environment management methods at current stage. In comparison, the urban environment management is at its initial stage in China, and the awareness of urban environment management is weak. In addition, due to lack of professionals in related fields, it has also increased the difficulty to implement the management method. The management of urban color and outdoor advertising color can only be conducted based on the precondition of urban environment management. This is a complementary process. In Japan, the outdoor advertising colors can only be well implemented based common management of urban color. While in China, because there is no effective implementation of urban color management at present, the outdoor advertising management is also ambiguous.

For historical areas, both Japan and China focus on protection. In Japan, stricter regulations are imposed on outdoor advertisings in historical areas, but it is not entirely forbidden to set outdoor advertising. While in China, there are no specific regulations on outdoor advertising management in historical areas. There is certain difference between these two countries on outdoor advertising management method and maturity, but the importance of outdoor advertising management should not

be ignored.

Overall, through comparison of Japanese and Chinese regulations on urban color and outdoor advertising color, we can see that most Japanese regulations include the regulations adopted by China, and the implementation in China is not as complete as that in Japan. Therefore, we can believe that at current stage, China is gradually improving existing regulations by referring to the color restriction methods adopted in Japan. Based on that, in this chapter, when we propose restrictive methods for outdoor advertising colors in Japanese and Chinese historical areas, we can make proposals for both countries in accordance with their specific characteristics.

5.4 Color Planning of Outdoor Advertising in Japanese and Chinese Historical Areas

Based on above comparison and analysis, by comparing the actual implementation of urban color and outdoor advertising color restriction methods in these two countries, I will propose restrictive methods for outdoor advertising color in Japanese and Chinese historical areas. The proposal consists of 7 parts in total: object buildings of the color planning, introduction of the elements of color combination of outdoor advertising, background color and usable area, color combination planning, recommended design for outdoor advertising, implementation method for restriction of advertising colors, and proposal instruction.

In the first part, some types of buildings which can used the color planning was introduce. Then, I explain the color elements used in color planning. In third part, we mainly introduce the background colors recommended for different usable areas based on the usable area of outdoor advertisings[5-2)]. In the fourth part, based on different background colors, I will introduce the color combination corresponding to the text color in accordance with the acceptability degree in order[5-3)]. In the fifth part, I mainly discuss the shape design of outdoor advertising, and introduce the advertising design and shape with higher acceptability for the same area. In the sixth part, based on the color implementation situation at current stage, I will mainly introduce the method to carry out this proposal. In the last part, I will explain and introduce the implementation range for the outdoor advertising color restriction method in this proposal.

Purpose of regulations: this proposal is mainly based on the precondition to coordinate the urban atmosphere of historical areas, maximally maintain the personality of outdoor advertising, and aim at the acceptability of outdoor advertisings.

Part 1: Object buildings. This color planning applies mainly to historical buildings in Japan and China. Fig.5-1 shows the types of the buildings including the wooden building, painting buildings, masonry etc.

a: white painting buildings

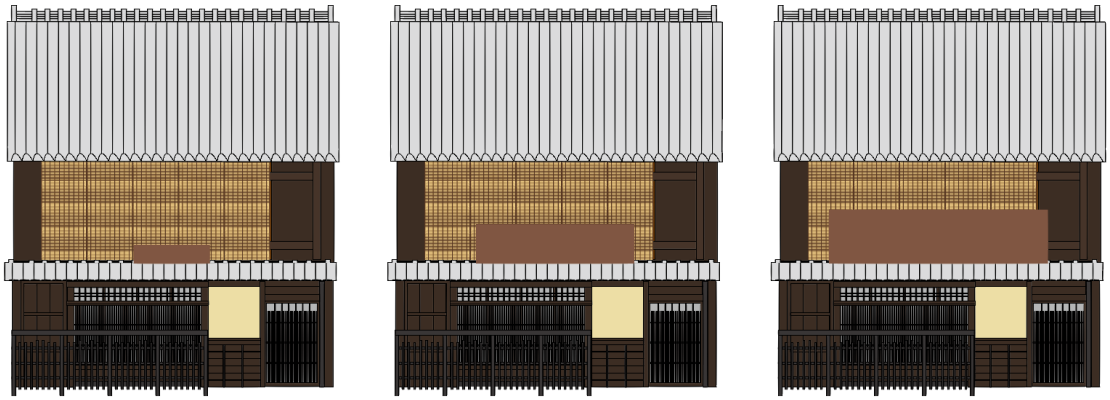
b: yellow painting buildings

c: painting and wooden buildings

d: wooden buildings

Fig.5-1 Object Types of Buildings

Part 2：Color elements used in color planning. In this color planning, the usable area, background color, text color and sharp design is designed for outdoor advertising. As shown in fig.5-2, the usable area of advertising is limited by the surface of buildings from 1% to 10%. Fig.2 shows the usable area of 1%, 5% and 10%.



Usable area 1%　　Usable area 5%　　Usable area 10%

Fig.5-2 Usable Area of Outdoor Advertising

Based on the different usable size of outdoor advertising, I propose the color combination of it. Munsell color system is used in this color planning as shown in fig.5-3. The color by munsell hue, munsell value and munsell chroma was decided. Color combination of outdoor advertising include the background color and text color as shown in fig.5-4.

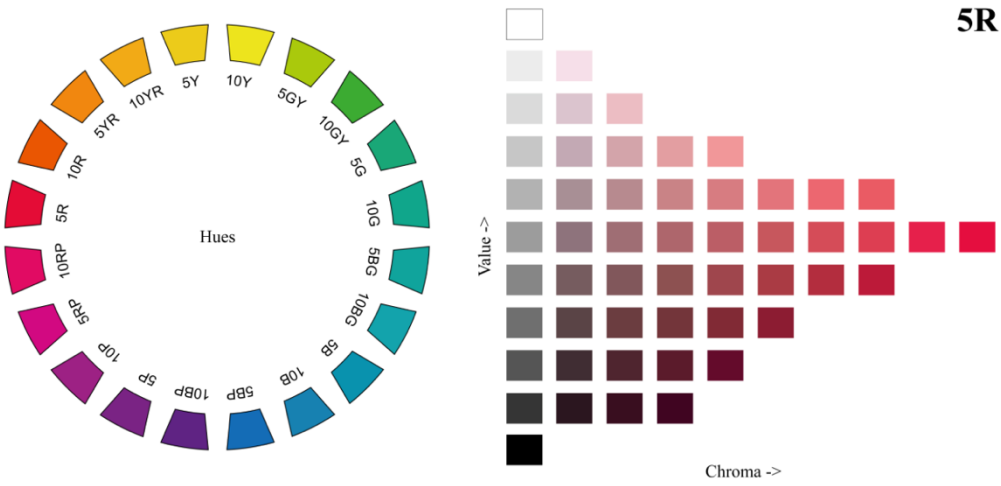


Fig.5-3 Hue, Value and Chroma in Munsell Color System

Fig.5-4 Color Combination of Background Color and Text Color for Outdoor Advertising

For the shape design of outdoor advertising, the different shape and some design items are used. As shown in fig.5-5, the different design including uncut log or organic designs, and traditional visual elements is proposed such as wooden frames etc.

uncut shape traditional visual

Fig.5-5 Design for Outdoor Advertising

Part 3: Based on different usable size, I recommend the hue, value and chroma for outdoor advertising. Background color and usable areas are shown in the following table 3:

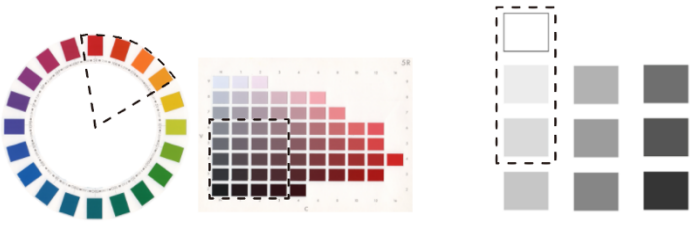
Table 3: Background Color and Usable Size

	Value	Chroma		
Usable size	< 10%	< 3%	< 5%	< 10%
R	< 6	< 6	< 6	< 6
Y	< 6	< 10	< 10	X
G	< 3	< 3	< 3	X
B	< 3	< 6	< 3	< 3
P	< 3	< 3	< 3	X
N	○			

o Accepted for all values； X Rejected；

Part 4: Based on background color, color combination for recommended text colors are provided. The color combinations are presented in accordance with the acceptability degree.

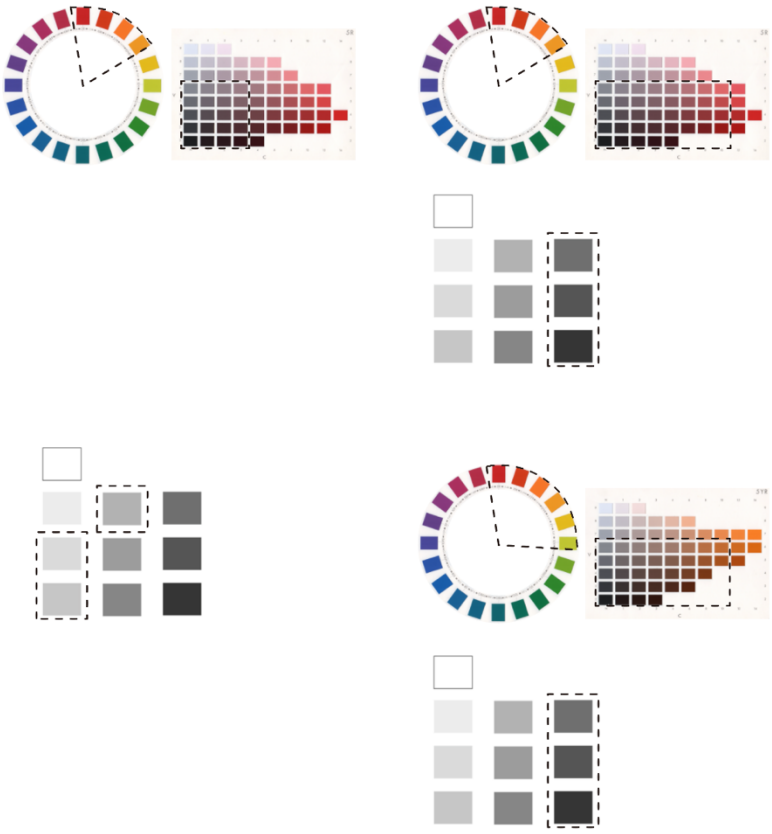
First of all, for the current historical buildings, the highest acceptance hue is in the range of R~YR. And the text color is white(fig.5-6).



background color text color

Fig.5-6 Color Combination of Outdoor Advertising with high Acceptability

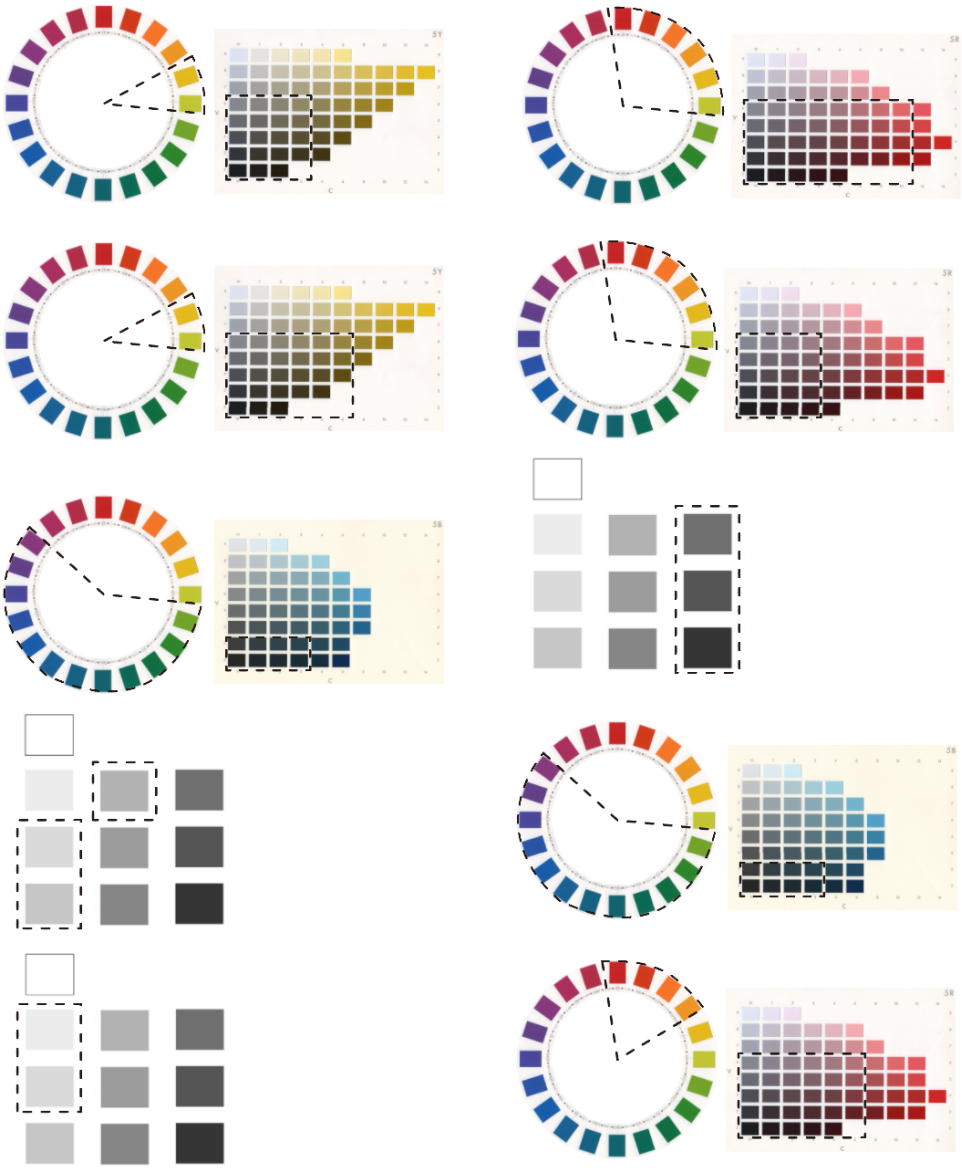
Then, the second recommendation range is in the background color of R~Y and N, and the text color also in the range of R~Y and N. The hue, value and chroma is proposed in the fig.5-7.



background color text color

Fig.5-7 Color Combination of Outdoor Advertising with Acceptability 2

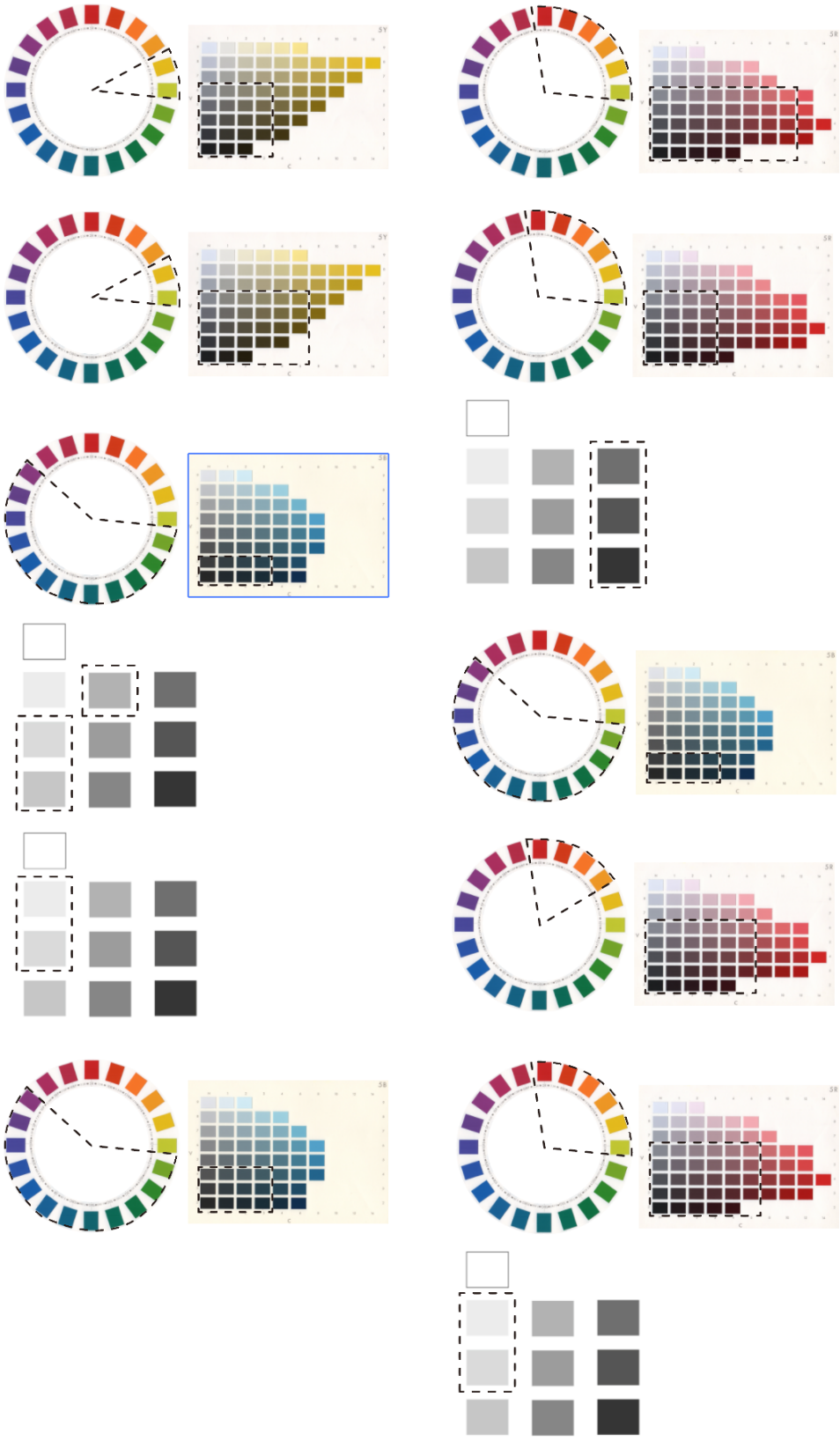
On the third recommendation step, color combination of outdoor advertising is showed in fig.5-8.



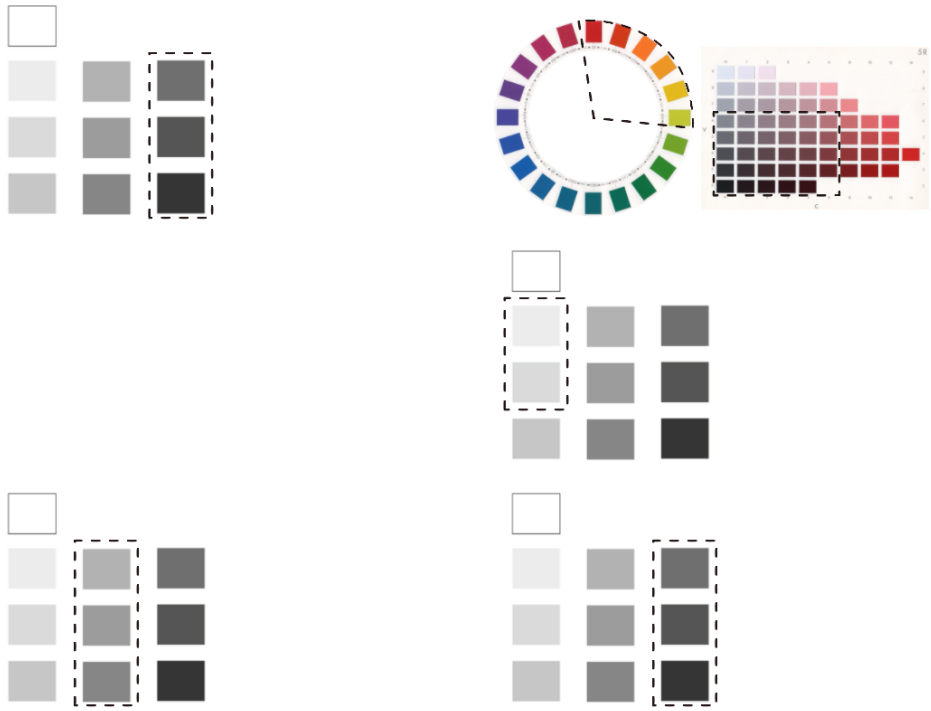
background color text color

Fig.5-8 Color Combination of Outdoor Advertising with Acceptability 3

Then, the following color combination are recommend (fig.5-9).



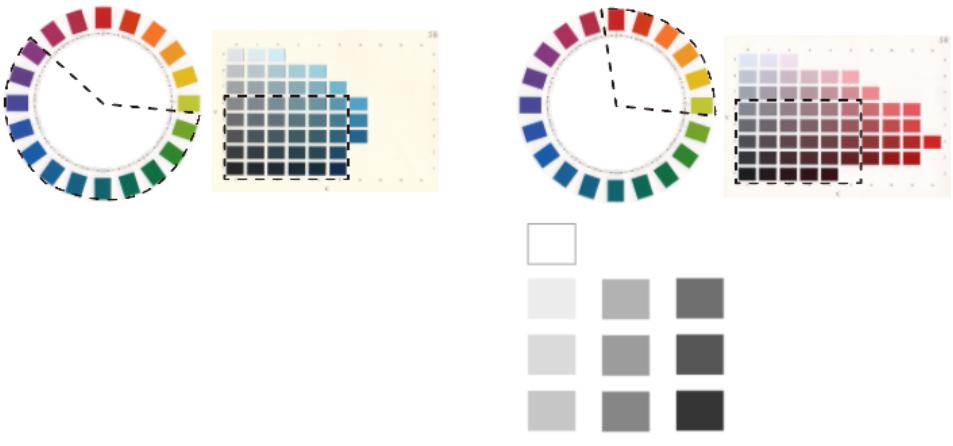
background color text color



background color text color

Fig.5-9 Color Combination of Outdoor Advertising with Acceptability 4

At last, the color combination also can be accepting in historical area, using the B~P for the background color and R~P, N for the text color(fig.5-10).



background color text color

Fig.5-10 Color Combination of Outdoor Advertising with Acceptability 5

Based on the acceptability of color combination, the recommendation colors are summarized in the fig.5-11.

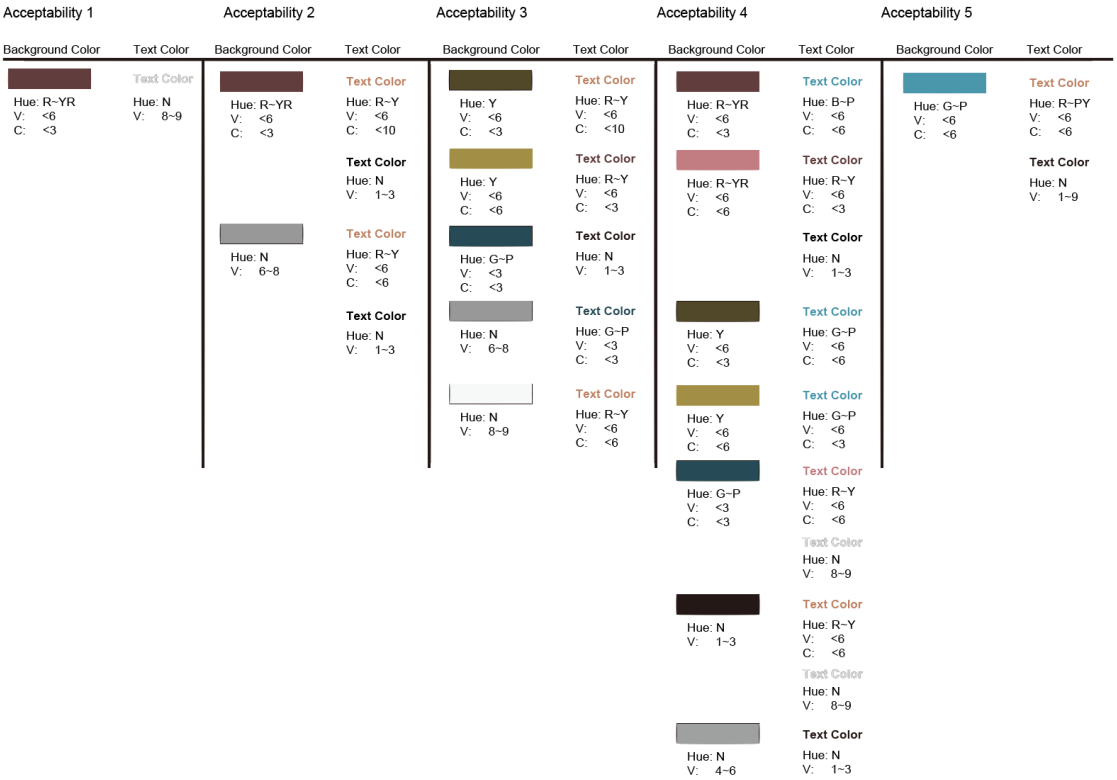


Fig.5-11 Recommendation Color Combinations based on Acceptability

Part 5: For the shape design of outdoor advertisings in historical areas, the main points are as follows:

(1) Recommend using advertisings with natural wood shape or certain variation in shape. Compared to the traditional advertisings on rectangular wood plate, the advertising with natural shape can increase the acceptability of advertising, and also improve the personality of advertising.

uncut shape traditional visual not recommended design

Fig.5-12 Shape Design Elements of Outdoor Advertisings

(2) On the design elements of outdoor advertising, recommend using traditional design elements, such as the traditional wooden frame and splint etc.

(3) For the design of advertising, recommend matching the advertising background board with the text in historical areas. Do not recommend using singular text board or modern board such as channel letter.

(4) During the advertising design, proper consideration should be given to the visual attractiveness of advertising. In order to improve the visual attractiveness of advertising, recommend the scheme of using dark background board and white text, or properly increase the size of text(fig.5-13).

Fig.5-13 Improving the Visual Attractiveness by Enlarging the Text

Part 6: Instruction of the implementation method for this proposal:

(1) During the color adjustment, the advertising usable size can be modified in accordance with the relation between “part 1: background color and usable area”. When the advertising background is R~Y color system, bigger advertising can be used; when the advertising of G~P color system is required, its acceptability can be increased by reducing the advertising size. Also, When the advertising background is the low value and chroma colors, bigger advertising can be used. For example, as shown in fig.5-14a, when the billboard with red background is used, a slightly bright red background can be chosen, but the billboard should have a relatively small size(fig.5-14b). If a bigger billboard is preferred, the value and chroma of red background should be further reduced as shown in fig.5-14c.

a: bright red, small size　　b: dark red, bigger size　　c: dark red, biggest size

Fig.5-14 Colors by Adjusting the Usable Area

(2) When fixed color combination is required, refer to the “part2: color combination planning”. For example, when green font is used(fig.5-15a), the font with lower value and chroma and can be considered (fig.5-15b), or the allowance of billboard can be improved by reducing the size of font. When bigger font is preferred, the chroma if word has to be further reduced. When green font is used, it is recommended to use background with low value and chroma, or colorless background. If the green background is used, consider matching it with colorless text as shown in fig.5-15c.

a: red background and white font　b: green background and black font　c: green background and white font

Fig.5-15 Color Combination by Adjusting the Usable Area

(3) When it is required to add other design elements to the advertising or change its shape, the added design elements can be modified by combining the historical elements to increases the acceptability of advertising(fig.5-16~5-17). It is not recommended to use completely modern advertising design in historical areas.

a: historical design items　b: uncut shape

Fig.5-16 Acceptability Design

a: bright red, small size　　b: uncut design, bigger size　　c: uncut design, small size

Fig.5-17 Color Combination and Design by Adjusting the Usable Area

(4) On the aspect of advertising usable area and color application, it is recommended to maximally increase the usable area within acceptable range, and use high-chroma colors within permissible range. In other words, the smaller advertising usable areas and darker color are not necessarily the better.

Part 7: Supplementary instruction to the implementation range of this proposal.

(1) This proposal applies to the historical areas, surrounding areas of historical reserves and the areas that to maintain their historical atmosphere(fig.5-18). It also applies to the areas with or without restrictive regulations on outdoor advertising. For areas with restrictive regulations on outdoor advertisings, supplementary instruction of outdoor advertising color combination can be provided in the form of supplementary regulations, or supplementary instruction of the design approach and color combination that can increased the acceptability of outdoor advertising can be provided; for areas without restrictive regulations on outdoor advertising, it can be used as reference.

(2) This proposal mainly aims at historical areas, surrounding areas of historical reserves or flavor street, and restrictions on color and usable area can be properly loosened based on the data of PART1 and PART2. Similarly, the proposal and implementation method for color design can also be used as reference.

(3) This proposal for outdoor advertising color restriction can be used by simultaneously improving the professional capacity on color restriction by related management department.

a: historical urban area　　b: surrounding regions

Fig.5-18 Outdoor Advertising in Historical Urban Area and Surrounding Regions

5.5 Conclusion and Discussion

In this chapter, I conduct comparison and analysis of the current situation of regulations on urban color planning and outdoor advertising color planning adopted by Japanese and Chinese cities. The implementation of regulations is more complete in Japan than that in China, and the regulations implemented by China present the tendency to refer to the Japanese regulations. These two countries present consistent overall trend in color planning. Furthermore, no difference is found in color acceptance between Chinese and Japanese cities. Therefore, in this proposal for outdoor advertising color planning in historical cities, this study propose outdoor advertising color planning methods based on the actual situation of these two countries.

Within the acceptable range of color, different colors correspond to different allowances. Therefore, for different colors, the allowance of outdoor advertising can be adjusted by adjusting its fascia size. Similarly, for outdoor advertising with the same size, the acceptability of outdoor advertising can be increased by adding design factors with historical elements.

In China, because regulations on urban color restriction and outdoor advertising are not very complete, and the implementation intensity is not strong, the proposal of color scheme in Chinese historical areas is provided in the form of guidance. The description of color combination should be provided in color language. Therefore, in PART2, I partially described color with language. In addition, in the supplementary instruction in PART5, I proposed improving the professional color capacity of related department.

This chapter made proposal mainly based on coordination, visual attractiveness and acceptability. In addition, during the proposal process, the maintenance of advertising personality was also considered based on color planning. However, although board advertisings are mainly used in historical areas, there are also many different types of outdoor advertisings used in historical areas. In addition, various aspects of advertising setting also directly affect the overall impression of a city, such as the height, lighting method and setting density etc. Similarly, the arrangement of outdoor advertisings would also affect acceptability of outdoor advertising. For example, if the same outdoor advertisings are used in the whole block, acceptance for these outdoor advertisings would improve. However, advertising might lose its uniqueness in this case. Therefore, in the future researches, I will also conduct further experiment and analysis of other types of advertisings, setting location, lighting and density of advertisings etc.

Reference and bibliography

(5-1) 庄怡，山本早里：景観計画における色のコントロール方法の抽出ーイタリア、フランス、日本、中国における町の色彩計画をもとにー，日本建築学会大会学術講演梗概集，環境工学 I，pp.487-488，2015.9

(5-2) 庄怡、山本早里、「TESTING THE ACCEPTABILITY OF CHANGES TO ADVERTISING FASCIA FOR COMMERCIAL PROPERTIES IN HISTORIC URBAN AREAS IN CHINA AND JAPAN」、日本建築学会環境系論文集 82(732)、pp.139-148、2017.02

(5-3) 庄怡、山本早里、「DETERMINING THE ACCEPTABILITY OF ADVERTISING FASCIA DESIGN AND COLOR, FOR BUILDINGS IN HISTORICAL URBAN AREAS」、日本建築学会環境系論文集、2017 年 12 月

Chapter VI

6.1 Conclusions

With the Japanese and Chinese historical urban areas as the research objects, based on the visual attractiveness, coordination with surrounding buildings and acceptability of actual use of advertising in historical area, this research conducted experiment of the color restriction method on the aspects of advertising color and design. Based on the result of questionnaire investigation, in order to preserve the impression of historical area, analysis was conducted to the advertising design and color that can maintain certain personality. Finally, the scheme of restriction methods for outdoor advertising based on historical area was proposed. Various chapters are summarized and the general conclusion is provided as follows.

In Chapter I, 4-5 cities were selected from each of the 4 countries of France, Italy, Japan and China, analyzed and summarized the urban color schemes released on their city websites. In the final part of Chapter I, I summarized the planning method and related elements of urban color scheme. The approach of urban color scheme can be summarized on 12 aspects：

1. Conduct regulation and guidance of colors through laws, government regulations or municipal regulations.

2. In accordance with the functions, divide the city into different sections, and adjust the overall color of city through control of section colors.

3. On the aspect of color regulation, determine the color use range through determination of main tone, regulation of use range and proposal of forbidden color etc.

4. On the aspect of urban color combination, the overall color combination of city is mainly controlled through the classification of dominate color, complementary color and embellishment color, and through the control of color area.

5. During construction and renovation of facility, the facility external wall color is mainly controlled through the methods of color guidance, urban color chart and color recommendation.

6. In the city, the strictness of color control is determined in accordance with the importance of area.

7. The facilities within city are divided into building, street furniture and outdoor advertising to conduct different color system management.

8. Corresponding color rules will be proposed for colors of all parts that have appeared in the city.

9. With material used in the city as the theme, regulate color based on the material. Similarly,

suggestions and regulations will also be provided for colors of different materials and forms.

10. For modification of outer wall color, application must be submitted to related department.

11. Within the required time, the building external façade must be cleaned and renovated to maintain persistent and beautiful color.

12. Certain punishment will be imposed for violation of regulations.

During this investigation, it can be found that district partition is a common color planning approach adopted by all cities, and all cities have the strictest color restriction on historical areas. Secondly, on the aspect of color elements, recommend colors were used as the common color planning method. Thirdly, I found that urban color planning is not restricted to the usable range of colors, and other color elements are also very important such as usable areas etc. Corresponding color-related elements and implementation approaches should be chosen by combining the city characteristics.

In Chapter II, through research on the outdoor advertising regulations in Japan and China, outdoor advertising regulations and related restriction methods for advertising colors were summarized and studied in the two countries. First of all, this chapter summarized the implementation methods of outdoor advertising regulations based on the outdoor advertising regulations of these two countries as shown in the fig.1. Secondly, this chapter conducted further exploration on how to restrict impression of outdoor advertising through related elements of color. It can be found that the restriction of outdoor advertising colors is mainly based on the usable color range, usable area, position, height, shape and quantity of color. Finally, based on the current situation research, this chapter discussed the existing problems: at present, strict restriction is imposed on the outdoor advertisings in historical areas, but the restriction methods are not clear. In addition, most outdoor advertising colors are restricted through Munsell hue and chroma, and there is no clear standard about the other color elements.

Table 1: Outdoor Advertising Restriction Approaches in Japan and China

Japan	China
Region Division	Area Needed to Restrict Outdoor Advertising
Forbidden Area	Forbidden Area
Advertising Classification	
Restriction on nature of outdoor advertising	
Safety Maintenance	Safety Maintenance
Restriction on advertising lighting	
Restriction on design elements of advertising	
Time Limited on advertising lighting	
Permission Application	Permission Application by Announcement System
Advertising Operator Registration System	
Punishment System	Punishment System
	Contact Information should be announced on outdoor advertising

In Chapter III, I conducted experiment on the acceptability of outdoor advertising colors in Japanese and Chinese historical areas, and the relation between usable area and color through questionnaire investigation. In addition to hue and chroma, this chapter also conducted experiment on value. In accordance with the experiment results, it can be founded that acceptability of outdoor advertising is not related to the gender, nationality or field experience of respondents, and the respondents presented uniform acceptability of outdoor advertising colors. Secondly, based on the Chinese white-wall buildings and Japanese wooden buildings, no significant difference was found in acceptability of advertising colors, which indicates uniform acceptability of outdoor advertising colors. Thirdly, the three evaluation items—historical color, coordinative color and acceptability—present positive correlation. In order words, when the respondents believed that this color was historical color or coordinative color, the acceptability of outdoor advertising would increase. Finally, in accordance with the result of experiment data, this chapter makes the following definition of color restriction based on usable area(Table 2).

Table 2 Acceptable Color based on Usable Area in Historical Area

	Value(chroma 4)		Chroma		
Area	< 5%	< 10%	< 3%	< 5%	< 10%
R	< 6	__			< 6
Y	< 6	__		< 10	X*
G	__	__		Below 3	__
B	< 3	__	< 6	< 3	< 3
P	__	__		< 3	__
N	○	__			

o Accepted for all values； - Not tested； X Rejected；
* ”< 10” for Japanese buildings but “X” for Chinese buildings

Chapter IV is the follow-up study of Chapter III. In Chapter IV, I conducted further experiment on the outdoor advertising design and color combination. Similarly, with three different types of historical buildings in Japan as the experimental objects, this chapter used the method of questionnaire investigation to conduct experiment of acceptability of outdoor advertisings with different design and color combination. The result shows that based on different buildings, no significant difference was presented in the acceptability of outdoor advertising with the same design and colors. Similarly, this conclusion is the same as that of Chapter III. In other words, the acceptability of outdoor advertising colors in historical areas presents certain universality, and the type and color of background building do not have significant influence on acceptability of outdoor advertisings.

In this experiment, I recruited respondents to answer the questionnaires, including college students in their 20s and elderly people above 60. It can be founded that respondents of different ages presented different acceptability of outdoor advertising. For college students in their 20s, the coordination between outdoor advertising and the surrounding environment directly affected their acceptability of advertising, but visual attractiveness did not have any influence on the acceptability of advertisings; for respondents above 60, the two elements of coordination and visual attractiveness simultaneously affected the respondents' acceptability of advertising.

The most acceptable design and color were summarized as following:

1) in terms of shape, uncut log or organic designs increase acceptability.

2) using traditional visual elements, such as wooden frames etc., can also increase acceptability

3) advertising fascia that does not use background boards, such as channel lettering, should be avoided.

4) for elderlies, the visual attractiveness of the advertising fascia was important. Increasing the size

of the text, or using the white text for dark background boards had a positive effect on acceptability.

5) using colors of hue R with low value and low chroma, and achromatic color with a middle value for the background received the best ratings for acceptability.

6) using colors of hue R~Y for the background, a base with low value and low chroma achieved higher acceptability ratings. For text, using a high chroma contrasting B color is not recommended.

7) using colors of hue B for the background, similarly background color of low value and low chroma rate higher for acceptability. In this case, achromatic colors are recommended for text.

8) when the background uses achromatic color, grey is more acceptable than black or white. In this case, there is a wide latitude of acceptable text color.

Finally, based on the results of questionnaire investigation, this chapter summarized the design method and color combination for outdoor advertising with high acceptability. Based on the research conducted in the first four chapters, in Chapter V, I conducted comparison and analysis of regulations on urban color schemes and outdoor advertising restriction adopted by Japanese and Chinese cities. It can be founded that the color schemes and implementation in China present the tendency to refer to the Japanese methods. Next, based on the experiments of Chapter III and Chapter IV, I conducted comparison and analysis of acceptability of outdoor advertising on different buildings. It can be seen that no significant difference in acceptability of outdoor advertisings between the Chinese and Japanese buildings, or between different types of Japanese buildings. Therefore, in the final part of Chapter V, I made proposal for the use method of outdoor advertising in the Japanese and Chinese historical areas based on the experiment results.

In this research, with the Japanese and Chinese historical areas as the research objects, based on the precondition of maintaining the street color coordination and protecting the advertising personality, and with the advertising acceptability as the standard, this research aims to specifying the color restriction method in advertising color regulations. Based on coordination, visual attractiveness and acceptability, I drew the following conclusions on the design and color combination conditions of advertising with high acceptability in historical areas.

1) First of all, based on the relation between hue, chroma, value and usable area, I proposed the

acceptable usable areas were different based on the colors in the historical areas.

2) In the traditional area, it generally has higher acceptability of achromatic color on advertisings. Within the area of 10%, colors of R, Y and B hues with chroma under 6 present similar acceptability; in comparison, colors of G and P hues have lower acceptability. When the use area is bigger than 5%, for high-chroma colors, acceptability of Y hue is higher than that of R hue.

3) Within the area of 10%, it can be founded significant difference between hue, value and chroma, while no significant difference was found in the usable area change of same colors. In other words, within the area of 10%, the colors used on advertising have higher influence on overall color than the usable area.

4）Using colors of hue R~Y for the background, a base with low value and low chroma achieved higher acceptability ratings. For text, using a high chroma contrasting B color is not recommended. When using colors of hue B for the background, similarly background color of low value and low chroma rate higher for acceptability. In this case, achromatic colors are recommended for text. when the background uses achromatic color, grey is more acceptable than black or white. In this case, there is a wide latitude of acceptable text color.

5) In terms of shape, uncut log or organic designs increase acceptability. Using traditional visual elements, such as wooden frames etc., can also increase acceptability. Advertising fascia that does not use background boards, such as channel lettering, should be avoided.

6) The visual attractiveness of the advertising fascia was also important. Increasing the size of the text, or using the white text for dark background boards had a positive effect on acceptability.

7) On the aspect of advertising usable area and color application, it is recommended to maximally increase the usable area within acceptable range, and use high-chroma colors within permissible range. In other words, the smaller advertising usable areas and darker color are not necessarily the better.

6.2 Achievements

The significance of this research consists of discussion on the two aspects of “regulations on outdoor advertising colors” and “historical area color protection and color coordination with surrounding economic and business districts”.

(1) Research significance based on regulations on outdoor advertising colors

At present, color restriction of outdoor advertising is mainly conducted through restriction of base color, such restriction of color used in more usable area of advertising. In addition, most outdoor advertising colors are restricted through hue and chroma, and the value is not very clear. This study conducted experiment on the relation between hue, value, chroma and usable area as shown in fig.1. Through proposal in our paper, related provisions of colors in current regulations on outdoor advertisings can be used flexibly. It should not be limited to the background color of advertising, but the color planning method with high acceptability should be proposed based on the color combination for advertising background color and text color, and the advertising design.

Fig.6-1 Color and Usable Area

This color planning should not be limited to currently implemented regulations on outdoor advertising, and in areas which have not implemented regulations on outdoor advertisings but have strict color restriction, it has certain reference value to color combination of advertising.

(2) Historical area color protection and color coordination with surrounding economic and business districts

At current stage, colors of historical areas are mainly restricted based on the precondition of protection. Some historical areas are developed as tourist area, and many brands and stores might settle here. There might be conflict between the bright brand colors and the colors of historical areas. In this research, the outdoor advertising color planning for historical area was proposed based on acceptability, and the advertising color planning can be conducted by simultaneously considering the coordination with historical areas and the brand personality. When the brand needs to use its own color combination, it can be modified with the value and chroma adjustment method proposed in this color,

or through change of usable area. In this way, it can not only maintain the original color combination of brand, but also maintain coordination with historical area. In other words, the contradiction between color restriction regulations and practical color use can be mediated through this color planning.

In addition, for outdoor advertising in historical areas, the regulations focus on restriction of chroma and usable area at current stage. However, in accordance with the results of this research, lower chroma and smaller size of advertisings are not necessarily the better. There is not just one evaluation standard for city advertisings, and I should impose restriction through diverse evaluation standards. As supplementation to regulations on outdoor advertising colors, I propose that advertising can adopt proper size and colors within acceptable degree, and this is also the significance of this research.

a: historical urban area　　b: surrounding regions

Fig.6-2 Color Restriction Method for Different Regions

Finally, there is certain color transition from the historical areas to the surrounding economic and business districts. In order to maintain a good atmosphere of historical area, certain restriction will also be imposed on the surrounding area of historical area. However, there is significant difference between the traditional colors and the advertising colors in business district, and consideration should be made on how to integrate the business street into historical city in a natural way. The experiment results can also be used to address this issue. As for the color regulations on business districts, the color combination or design approaches in this research can also be referred to, which can improve the acceptability of advertising on the aspect of historical atmosphere(fig.2).

6.3 Future Studies

In the research of Chapter III, I conducted experiment based on the traditional Japanese wooden building and Chinese white-wall building, and no significant difference was found. In the research of Chapter IV, I continued to conduct experiment on three types of historical buildings in Japan. However, this experiment did not include many historical buildings in China, and data of Chinese buildings should be further improved and verified.

In this experiment, the elevations of historical buildings were used, and conducted experiment by printing the experiment drawings. In accordance with the experiment results, I can obtain the relation between the color and usable area. However, the visual recognition of color changes accordingly when the usable area changes. Therefore, during practical application, the experiment results can provide certain reference. However, the threshold values of color and area should be further verified by combining the actual building and city background.

Furthermore, in this research, I conducted experiment on the design shape and color combination of advertising fascia based on coordination, visual attractiveness and acceptability. However, I only conducted experiment on advertising fascia, while did not conduct further discussion of other types of outdoor advertisings, and the location and height of advertising setting etc. I should further verify the experiment results based on the type and setting location of advertisings. In addition, in the color combination experiment, this study only conducted experiment on advertising fascia with single background color and single text color. During practical application, there are outdoor advertisings with more than 2 colors, and I should conduct further investigation of color quantity.

Then, according to the research background, there are many cases of various chain stores with their own brand colors, and their brand colors have caused problems. In this research, in order to prevent special color combination from affecting the participants' judgment, only rectangular billboards and mirror words were used in the experiment. Therefore, the results not only apply to chain stores with brand color combination, but also common stores. However, the specific color combination of stores with their own brand colors has left the users with a deep impression, so when the specific color matching is used, the acceptability might be higher or lower than the actual experiment result. In this case, the acceptance can be unified by adjusting the fascia area.

In order to better grasp the color combination of outdoor advertising in detail, I used the elevation

of 3 buildings, simulated advertising fascia on one of the buildings, and conducted questionnaire investigation of the drawings of simulation experiment. Besides wooden billboards, there are also some other kinds of outdoor advertising in historical areas, such as side signboard, noren, banner flag, standing signboard, poster, eaves signboard etc. Wooden billboard was used in the research and the color and design items with high acceptability was summarized. For example, the historical design elements can improve the acceptability of outdoor advertisings, and this result can be applied in various types of advertisings. However, the color and the fascia area can be applied in wooden advertisings, such as side signboard. Advertisings with other materials should be further verified.

In actual use, it could improve acceptance for outdoor advertising by using uniform outdoor advertisings. However, under this situation, the outdoor advertising might lose its unique features. According to the results of this experiment, the outdoor advertising in historical urban areas can maintain their maximum characteristics under the precondition of maintaining overall coordinated landscape. During practical use, I must also consider the frequency and density of advertisings used in the street, and the frequency and density of advertisings also have significant influence on the city impression. In the future research, I will conduct further experiment on the use frequency and density of advertising with street as the background.

REFERENCE AND BIBLIOGRAPHY

Introduction

(0-1) 吉田慎悟:環境色彩デザインの手法ーまちの色をつくる，建築資料研究社，p.1，1998.10

(0-2) 宮川理香:景観法施行とこれからの建築物に色彩，塗料の研究，第 146 号，pp.40-46,2006

(0-3) 石原麻子:景観法時代の色彩計画，Journal of the Japan Society of Colour Material，pp.285-289,2013

(0-4) 景観法の概要:国土交通省ホームページ，https://www.mlit.go.jp/crd/townscape/keikan/pdf/keikanhou-gaiyou050901.pdf，2005

(0-5) 山本早里、徐ミンジョン、槇究、熊澤貴之:地域の特色を活かした景観色彩計画に関する行政の考え方の変化，日本建築学会大会学術講演概論集，pp.517-520,2014

(0-6) 東京都市景観計画，東京都，2011

(0-7) 東京都景観色彩ガイドライン，東京都，2007

(0-8) 京都景観計画，京都市，2011

(0-9) 京の景観ガイドライン，京都市，2011

(0-10) 景観育成デザインマニュアル，長野県，p.129-133，2007.3

(0-11) 高山市景観計画，高山市，pp.18-30，2013

(0-12) 崔唯:城市环境色彩规划与设计,北京，中国建筑工业出版社，p.19，2006

(0-13) Gou Aiping，「Method of Urban color plan based on spatial congiguration」Color Research and Application, 38(1), PP.65-72, 2013

(0-14) 北京市建筑物外立面保持整洁管理规定，2000

(0-15) 武汉城市色彩技术导则，2003

(0-16) 广州城市色彩规划研究，2007

(0-17) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.410-411,1981.6

(0-18) 八巻俊雄：日本広告史、日本経済新聞社、pp.105-107,1992.10

(0-19) 地方公共団体屋外広告物担当課一覧，国土交通省，http://www.mlit.go.jp/crd/townscape/koukoku/seido/madoguchi.htm，2013

(0-20) 屋外広告物のしおり（東京都），p.21,2011.5

(0-21) 京の景観ガイドライン広告物編，pp.2-4〜2-24，2015

(0-22) 屋外広告物のしおり（長野県），p.6，2016.4

(0-23) 高山市屋外広告物条例等早わかり，pp.18，2014

(0-24) 户外广告登记管理规定，2006

(0-25) 中华人民共和国广告法，2015

(0-26) 上海市户外广告设施管理办法，2010
(0-27) 深圳市户外广告管理办法，2013
(0-28) 坂原弘也：実態調査による「騒色」のイメージ色について、日本色彩学会誌(26)、pp. 42-43、1996
(0-29) 谷口賛、桜井慎一、安達一慶：ウォーターフロントで許容される建築物の色彩の研究ー（その１）建築物の色彩の騒色基準ー、日本建築学会大会学術講梗概集(北陸)、pp. 413-414)、2002. 8
(0-30) 中野雄大、中井祐:景観色彩問題の事例分析に基づく色彩規制の在り方に関する考察、景観・デザイン研究講演集 10(5)、pp. 10-13)、2009
(0-31) 三星宗雄:日本における騒色公害とその解決、神奈川大学人文学研究所報 42，pp. 35-51、2011
(0-32) 李銀璡, 山本早里, 西川潔:都市景観要素としての屋外広告物デザインに求められる条件ー東京・ソウル・シンガポール・香港の中心商業地域を中心としてー，日本デザイン学会デザイン学研究, pp. 350-351, 2012. 6
(0-33) 野中勝利:景観行政団体の市町村による屋外広告物行政の取り組みー地方分権下の屋外広告物行政に関する研究その２ー, 日本建築学会計画系論文集， 第 638 号, pp. 871-879, 2009. 4
(0-34) 加藤光彦, 他３人:景観写真のメッシュデータによる屋外広告物の色彩分布に関する研究, 日本建築学会近畿支部研究報告集, pp：613-616, 2003
(0-35) 谷口みゆき, 澤一寛:屋外広告物の色彩研究ー地域別掲出傾向の調査ー、日色彩学会誌(23)， pp. 62-63, 1999. 5
(0-36) 山本陽子, 土久菜穂, 山本明:屋外広告物の規制・誘導に関する基礎的研究 その２ー長野県須坂市における建物属性別に見た広告物の特徴ー, 日本建築学会大会学術講演梗概集, 都市計画, pp. 311-312, 2006. 9
(0-37) 佐藤優, 金英美:屋外広告物の色彩の制御方法に関する研究, デザイン学研究（43）3, pp. 41-48, 1996. 5
(0-38) 渡辺安人, 他５名：京都にふさわしい屋外広告物の色彩, 日本色彩学会誌 34, pp. 30-31, 2010. 5
(0-39) 槇究:看板の色変更に関する研究ー街並みとの調和・視認性・ロゴアイデンティティの観点からー, 日本建築学会環境系論文, 第 682 号, pp. 941-948， 2012. 12
(0-40) 槇究:複数の看板を挿入した街並みの画像の印象評価−看板の色変更に関する研究その２−，日本建築学会環境系論文集， 第 695 号， pp. 55-62, 2014. 1
(0-41) 山本桂佑, 塩見弘幸:屋外広告物のデザインに関する一考察, 日本デザイン学会デザイン学研究, pp. 120-121, 2006. 6
(0-42) 宇於崎勝也, 他３名:屋外広告物の構成要素とその判読に関する実験研究, 日本建築学会

大会学術講演梗概集, 都市計画, pp. 525-526, 2007. 7

Chapter I: Urban Color Restriction Method based on the Landscape Color Scheme

(1-1) 崔唯：城市环境色彩规划与设计,北京，中国建筑工业出版社，p.16，2006

(1-2) 三星宗雄：色彩地理学の可能性，神奈川大学人文学会誌 05（175），pp.65-93，2013

(1-3) 崔唯：城市环境色彩规划与设计,北京，中国建筑工业出版社，p.19，2006

(1-4) 井晓鹏：历史文化名城城市色彩体系控制研究-以西安老城区为例，长安大学，p.9，2007

(1-5) Codice Dei Beni Culturali e del Paesaggio, 2004

(1-6) 吴晔：城市色彩规划与设计研究，湖南师范大学，p.11，2007

(1-7) Piano Del Colore, Citta'Di Torino, 1997

(1-8) Guida per la manutenzione delle facciate pulire colorare conservare, 2009

(1-9) Piano di tutela dell'immagine dell'area urbana del municipio roma 2 (pinao del colore e dell' arredo urbano), 2008

(1-10) Estratto dal verbale delle Deliberazioni del Consiglio del Municipio Roma 6,2013

(1-11) Deliberazione N.51: Piano Della Tutela Dell' Immagine Dell' Area Urbana Del Municipio Roma Ⅱ, 2007

(1-12) Variazioni ed integrazioni del Regolamento Edilizio di Roma Capitale: Piano del Colore di Roma Capitale, 2013

(1-13) Regolamento edilizio comune di Firenze, 2014

(1-14) Regolamento edilizio, 2014

(1-15) Guide delle norme per gli interventi del colore, 2013

(1-16) Jean-Philippe Lenclos: Colors of the World, W.W.Norton&Company, 2004

(1-17) Zone de protection du patrimoine architectural, urbain et paysager, 1983-2010

(1-18) Aire de mise en valeur de l'architecture et du patrimoine, 2010

(1-19) 崔唯：巴黎的城市色彩，广西城镇建设(6)，p.24，2010.6

(1-20) Pour les Acteurs de la Construction et de l'Amenagement, 2008

(1-21) Publicite, Enseignes, et Preenseignes, a Paris Cahier de Recommandations, 2011

(1-22) Caractere de la zone urbaine generale(UG), Reglement du PLU, 2013

(1-23) Mairie De Paris – Façade en Pierre Naturelle,2008

(1-24) Mairie De Paris – Concevoir sa Devanture Commerciale et son Enseigne, 2008

(1-25) 贾欣，城市色彩的地域特色研究-以防城港城市色彩专项规划为例（11），广西城镇建设，pp.118-122，2013.11

(1-26) Le ravalement de facades a Lyon, 2010

(1-27) Amenagement urbain, Grand Lyon, 2010

(1-28) Plan couleur de la ville de Lyon, 2003

(1-29) Zone de Protection du Patrimoine Architectural, Urbain et Paysager du Panier, 1997
(1-30) Preconisations pour la mise en couleur des facades, 2013
(1-31) Charte de la Construction Durable, 2009
(1-32) Catalogue du Mobilier Urbain, 2007
(1-33) La Charte du mobilier urbain de la ville de Bordeaux, 2007
(1-34) Nice Ville Verte de la Mediterranee, 2010
(1-35) Guide des Couleurs, Maririe de Nice, 2007
(1-36) Ravaler a Nice, Ville de Nice, 2008
(1-37) 景観法：http://law.e-gov.go.jp/htmldata/H16/H16HO110.html，2004
(1-38) 東京都景観計画：東京都，2011 年 4 月改訂版
(1-39) 東京都景観色彩ガイドライン，2007
(1-40) 京都景観計画，2011
(1-41) 京の景観ガイドライン，2011 年
(1-42) 町並を考える（都市景観のデザイン指針），2013
(1-43) やわらぎ　大阪・町の色（大阪市色彩景観計画ガイドブック），2013
(1-44) 福岡都市景観形成基本計画，1988
(1-45) 福岡市景観計画，2012
(1-46) 札幌市都市景観条例，2007
(1-47) 色彩景観基準運用指針（札幌の景観色 70 色），2007
(1-48) 崔唯：城市环境色彩规划与设计,北京，中国建筑工业出版社，p.19，2006
(1-49) 北京市城市总体规划，2004-2020
(1-50) 北京市建筑物外立面保持整洁管理规定，2000
(1-51) 上海市城市总体规划，1999-2020
(1-52) 上海市城市容貌标准规定，2005
(1-53) 刘梦圆：上海城市色彩景观研究与对策，华东大学，pp.？-？，2010
(1-54) 广州城市总体规划，2011-2020
(1-55) 广州城市色彩规划研究，2007
(1-56) 武汉市总体规划，2010-2020
(1-57) 武汉城市色彩技术导则，2003
(1-58) 成都市城市总体规划，2011-2020
(1-59) 成都色彩研究报告，2004
(1-60) 庄怡、山本早里、「景観計画における色のコントロール方法の抽出ーイタリア、フランス、日本、中国における町の色彩計画をもとにー」、日本建築学会学術講演梗概集(環境工学 I)、日本建築学会、pp.487-488、2015

Chapter II: Current Situation of Chinese and Japanese Regulations on Outdoor Advertising

(2-1) 国土交通省：http://www.mlit.go.jp/common/001011830.pdf，2013

(2-2) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.118-119, 1981.6

(2-3) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.120-123, 1981.6

(2-4) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.72-73, 1981.6

(2-5) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.125-126, 1981.6

(2-6) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.410-411, 1981.6

(2-7) 八巻俊雄：日本広告史、日本経済新聞社、pp.105-107, 1992.10

(2-8) 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.257-258, 1981.6

(2-9) 三星宗雄:日本における騒色公害とその解決、神奈川大学人文学研究所報 42，pp.35-51、2011

(2-10) 違反広告物をなくす運動、名古屋市、2017

(2-11) 屋外広告法：http://law.e-gov.go.jp/htmldata/S24/S24HO189.html, 2011 年改正

(2-12) ルールを守って美しい広告景観を一北海道屋外広告物条例のあらまし，2016

(2-13) 屋外広告物規制のあらまし（青森県），2014

(2-14) 屋外広告物の手引（岩手県），2013

(2-15) 屋外広告物の手引（群馬県），2017

(2-16) 埼玉県屋外広告物のしおり，2017

(2-17) 宮城県屋外広告物関係例規集，2016

(2-18) 屋外広告物のてびき（茨城県），2007

(2-19) 東京都景観景観に基づく屋外広告物の規制，2008

(2-20) 屋外広告物のしおり（東京都），2016

(2-21) 神奈川県屋外広告物条例のあらまし，2016

(2-22) 京都府屋外広告物条例：http://www.pref.kyoto.jp/toshi/okugaikoukokubutu.html，1953

(2-23) 屋外広告物のしおり一長野県屋外広告物条例の概要，2016

(2-24) 富山県屋外広告物条例，2012 年改正

(2-25) 屋外広告物の手引き（石川県）～美しい景観づくりのために～，2016

(2-26) 愛知県屋外広告物条例のしくみ，2017

(2-27) 屋外広告物の手引き（三重県），2017

(2-28) より美しく魅力ある札幌へ一札幌市屋外広告物条例の手引，2012

(2-29) 景観保全型広告整備地区の手引（札幌），2011

(2-30) 仙台市屋外広告物条例のしおり，2017 年改定

(2-31) うるおいのあるまちづくり一千葉市屋外広告物条例のしおり，2002

(2-32) 時を超え光り輝く京都の景観づくり一屋外広告物の制度，2011

(2-33) 名古屋市屋外広告物条例のしおり一広告は街の感性です，2016

(2-34) 屋外広告物のしおり（大阪），2016
(2-35) 屋外広告物ガイドライン（堺市），2016
(2-36) もっとよいまち　よい広告ー屋外広告のてびきー（熊本市），2010
(2-37) 川越市屋外広告物条例のしおり，2016
(2-38) 東大阪市屋外広告物のてびき，2010 改定
(2-39) 屋外広告物のしおり（豊中市），2015
(2-40) 姫路市屋外広告物条例の手びき，2014
(2-41) 熱海市屋外広告物条例の手びき，2009
(2-42) 屋外広告物の手引き（萩），2008
(2-43) 官公署等における屋外広告物の掲出ガイドライン（大阪府），2015
(2-44) 福岡県屋外広告物のしおり，2017
(2-45) 福岡市屋外広告物の手びき，2017
(2-46) 中华人民共和国广告法，
http://www.npc.gov.cn/npc/cwhhy/12jcwh/2015-04/25/content_1934594.htm，　2015
(2-47) 广告管理条例实行细则，
http://lbzhzf.dg.gov.cn/News_view.asp?Newsid=645，1987
(2-48) 广东省户外广告管理办法，
http://zwgk.gd.gov.cn/006939748/201304/t20130417_372369.html，2013
(2-49) 江苏省户外广告管理办法，
http://www.ntgsj.gov.cn/baweb/show/shiju/bawebfile/158403.html，1997
(2-50) 湖北省户外广告设置管理办法，
http://www.hbad.org.cn/flfg/153290.htm，2013
(2-51) 深圳市户外广告管理办法，
http://www.sz.gov.cn/zfgb/2013/gb846/201308/t20130814_2183415.htm，2013
(2-52) 上海户外广告设施管理办法，
http://cgzf.sh.gov.cn/main/news_140.html，2010
(2-53) 南京市户外广告设置管理办法，南京市人民政府公报（12），2011
(2-54) 重庆市户外广告管理条例，
http://www.bngs.gov.cn/html/xxgk/zcfg/16/05/156.html，2013 年改定
(2-55) 武汉市户外广告设置管理办法，
http://www.wuhan.gov.cn/hbgovinfo_47/szfggxxml/zcfg/zfgz/201702/t20170209_100727.html，
2016
(2-56) 高轩：论我国户外广告行政立法的缺陷及其完善，时代法学 6（5），pp.67-72，2008
(2-57) 夏亚灵：我国城市经营型户外广告管理法规研究，广告管理（5），pp.59-72,2006
(2-58) 黄渊：城市户外广告设置规划的方法体系，规划师 22（10），pp.38-40,2006

(2-59) 邱晓红：城市户外广告设置规划初探，城市问题（6），pp.70-74,2006
(2-60) 伦志晖：中国户外广告发展现状及发展趋势研究，媒体时代（2），pp.42-45,2013
(2-61) 吴海燕，戴瑞卿：城市建设中户外广告色彩乱象及规划整治，人民论坛（2），pp.91-93,2016
(2-62) 刘蕾：城市户外广告色彩制定对其整体色彩规划的影响，现在装饰：理论（2），p.133，2012
(2-63) 严正：城市街区户外广告色彩规划设计，新视觉艺术（5），pp.74-75,2016
(2-64) 王千：城市街区美观与户外广告色彩规划，艺海（8），pp.114-116，2016
(2-65) 赵君：苏州河历史风貌区广告牌规划控制研究，中国市场（39），p.137，2011
(2-66) 朱昌萍：浅析历史商业街广告牌设计，山西建筑 34（30），pp.49-50,2008
(2-67) 刘生军，江雪梅：城市新区户外广告空间总体布局及其导控-以哈尔滨市群力新区户外广告规划设计为例，规划师（6），pp.70-77,2014
(2-68) 张越，潘蓉 :户外广告设置规划初探-以杭州市区户外广告设置为例，浙江建筑 26（1），pp.10-14，2009
(2-69) 王磊：上海户外广告设施设置阵地规划探索和实践，城市规划 38（4），pp.46-53，2014
(2-70) Gou Aiping,「Method of Urban color plan based on spatial congiguration」Color Research and Application, 38(1), PP.65-72, 2013

Chapter III: Color and Fascia Area of Outdoor Advertising in Historical Areas in Japan and China

(3-1) 庄怡，山本早里：景観計画における色のコントロール方法の抽出ーイタリア、フランス、日本、中国における町の色彩計画をもとにー，日本建築学会大会学術講演梗概集，環境工学 I，pp. 487-488，2015. 9
(3-2) 庄怡，山本早里：配色要素が建物の印象に及ぼす影響，日本色彩学会誌，第 39 号，pp. 22-24，2015. 9
(3-3) 佐藤仁人, 中山和美, 名取和幸:壁面色の面積効果に関する研究, 日本建築学計画系論文集，第 555 号，pp. 15-20，2002. 5

Chapter IV: Design and Color Combination of Outdoor Advertising in Historical Areas in Japan

(4-1) 文化庁：重要伝統的建造物群保存地区一覧、http://www.bunka.go.jp/seisaku/bunkazai/shokai/hozonchiku/judenken_ichiran.html, 2014
(4-2) 高山市屋外広告物条例等早わかり，pp.18，2014
(4-3) Zhuang Yi and Yamamoto Sari：Testing the Acceptability of Changes to Advertising Fascia for Commercial Properties in Historic urban Areas in China and Japan，Journal of Environmental Engineering(Transactions of AIJ), Vol.82 No.732，pp.139-148，2017.2
(4-4) 奈良国立文化財研究所：高山２−伝統的建造物群保存対策調査報告−、高山市教育委員会、図５、1984.3
(4-5) 太田博太郎、小寺武久：妻籠宿―その保存と再生：彰国社、pp:80-81, 1989

(4-6) 西川潔,山本早里:ミュンヘン市の広告景観, サインズインジャパン, 第 127 号, pp:46-51, 2008.4

(4-7) 佐藤仁人, 中山和美, 名取和幸:壁面色の面積効果に関する研究, 日本建築学計画系論文集, 第 555 号, pp. 15-20, 2002. 5

Chapter V: Color Planning of Outdoor Advertising Fascial in Historical Areas in China and Japan

(5-1) 庄怡, 山本早里：景観計画における色のコントロール方法の抽出ーイタリア、フランス、日本、中国における町の色彩計画をもとにー, 日本建築学会大会学術講演梗概集, 環境工学 I, pp.487-488, 2015.9

(5-2) 庄怡、山本早里、「TESTING THE ACCEPTABILITY OF CHANGES TO ADVERTISING FASCIA FOR COMMERCIAL PROPERTIES IN HISTORIC URBAN AREAS IN CHINA AND JAPAN」、日本建築学会環境系論文集 82(732)、pp. 139-148、2017. 02

(5-3) 庄怡、山本早里、「DETERMINING THE ACCEPTABILITY OF ADVERTISING FASCIA DESIGN AND COLOR, FOR BUILDINGS IN HISTORICAL URBAN AREAS」、日本建築学会環境系論文集、2017 年 12 月

PICTURE REFERENCE

Fig.0-1~0-3 drawn by the author

Fig.1-1 drawn by the author

Fig.1-2 Piano Del Colore, Citta'Di Torino, pp:1-2, 1997

Fig.1-3 Guida per la manutenzione delle facciate pulire colorare conservare, p.12, 2009

Fig.1-4 Piano Del Colore Dell' Edilizia Storica Di Prato, p.1, 2013

Fig.1-5 drawn by the author

Fig.1-6 Mairie De Paris – Façade en Pierre Naturelle, pp:1-2, 2010

Fig.1-7 Preconisations pour la mise en couleur des facades, p.7, 2013

Fig.1-8 Catalogue du Mobilier Urbain, p.39, 2007

Fig.1-9 Ravaler a Nice, Ville de Nice, p.2, 2008

Fig.1-10 drawn by the author

Fig.1-11 東京都景観色彩ガイドライン、pp:5-7, 2007

Fig.1-12 大阪府景観色彩ガイドライン, p.7, 2013

Fig.1-13 福岡市景観計画, p.0-6, 2012

Fig.1-14 札幌の景観色 70 色, pp:8-14, 2014

Fig.1-15 drawn by the author

Fig.1-16 http://www.gzpi.com.cn/p_planning_149.html, 2007

Fig.1-17 武汉城市建筑色彩技术导则，pp:3-5, 2003

Fig.1-18~1-22 drawn by the author

Fig.2-1 春山行夫：西洋広告文化史「上」−広告の歴史をつくった人々、講談社、pp.125-126, 1981.6

Fig.2-2 photo taken by the author

Fig.2-3 屋外広告物規制のあらまし（青森県），p.8, 2014

Fig.2-4 屋外広告物のしおり（東京）， p.25, 2016

Fig.2-5 京の景観ガイドライン, p.2-17, 2014

Fig.2-6 川越市屋外広告物条例のしおり, p.9, 2016

Fig.3-1~3-2 photo taken by the author

Fig.3-3~3-4 drawn by the author

Fig.3-5 photo taken by the author

Fig.3-6 drawn by the author

Fig.3-7 photo taken by the author

Fig.3-8~3-14 drawn by the author

Fig.4-1~4-3 photo taken by the author

Fig.4-4 drawn by the author based on the building elevation

Fig.4-5~ 4-7 drawn by the author

Fig.4-8~ 4-12 photo taken by the author

Fig.5-1~ 5-18 drawn by the author

Fig.6-1~ 6-2 drawn by the author

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APPENDIX

Appendix I | Chapter III

Appendix II | Chapter IV

Appendix I

色彩を制限した景観における色の取り入れ方に関する研究
回答用紙

1　性別

☐ 女性　　☐ 男性

2　年齢

☐ 10 代　　☐ 20 代　　☐ 30 代　　☐ 40 代　　☐ 50 代以上

3　国籍

☐ 日本　　☐ 中国　　☐ その他

4　専門

☐ 環境デザイン　　☐ 建築デザイン　　☐ 他のデザイン領域_____

☐ 都市計画（社会工学）　　☐ その他_____

5　日本・京都を知っていますか？　　中国・蘇州（周庄）を知っていますか？

☐ 知っています　　☐ 知りません　　☐ 知っています　　☐ 知りません

6　日本・京都に行ったことがありますか？

☐ ない　　☐ たまに（旅行、出張）

☐ よく行きます／よく行きました（大学、仕事のため）　　☐ 住民

中国・蘇州（周庄）に行ったことがありますか？

☐ ない　　☐ たまに　　☐ よく行きます／よく行きました　　☐ 住民

7　伝統的な町並に新しい色を入れることは許容できますか？

☐ 許容できます　　☐ 許容できません　　☐ 分かりません

理由を教えてください：(複数回答可。回答は複数の場合、その重要度を 1 から順に付けてください)

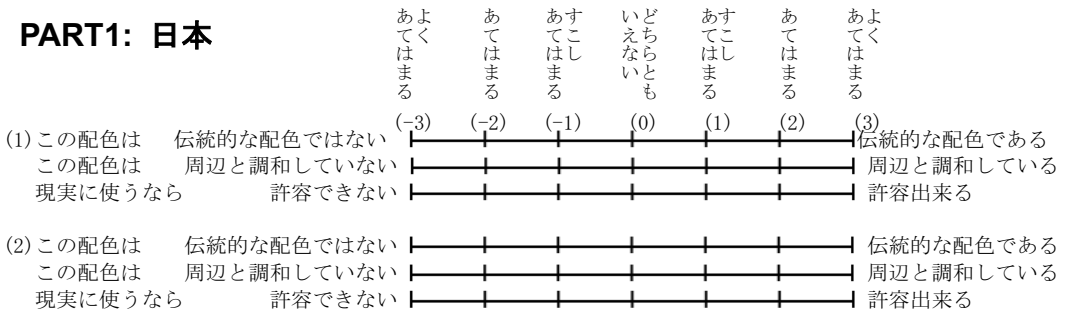
☐ 伝統を守るため

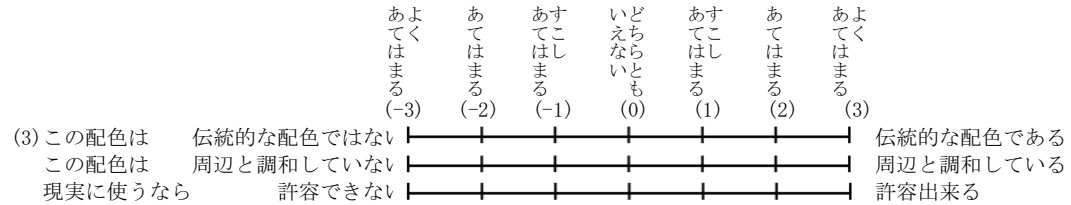
☐ 生活の便利性を向上するため

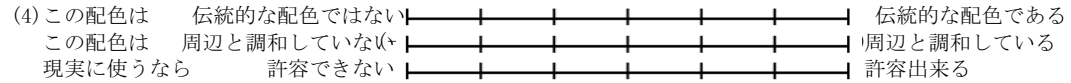
☐ その他_____

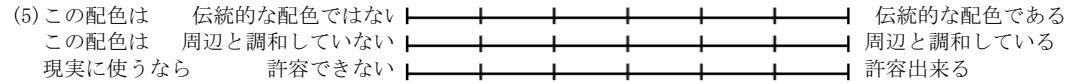
8　シミュレーション画像のアンケート

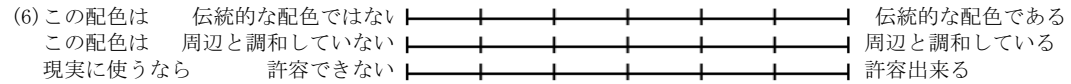
PART1: 日本

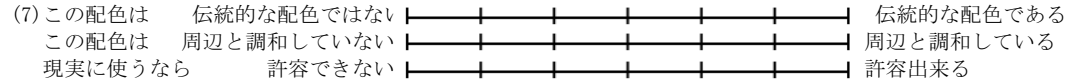


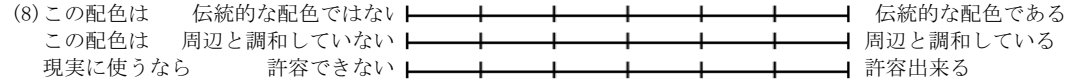

よくあてはまる (−3)
あてはまる (−2)
すこしあてはまる (−1)
どちらともいえない (0)
すこしあてはまる (1)
あてはまる (2)
よくあてはまる (3)
(3) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

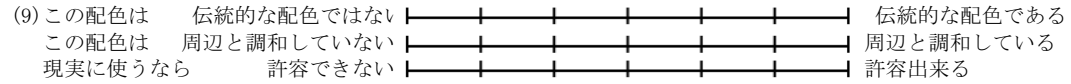

(4) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

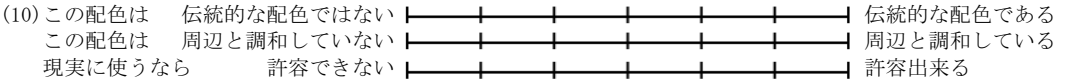

(5) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

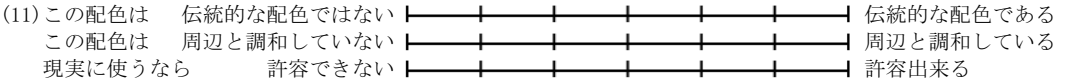

(6) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

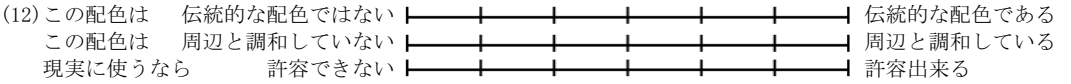

(7) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

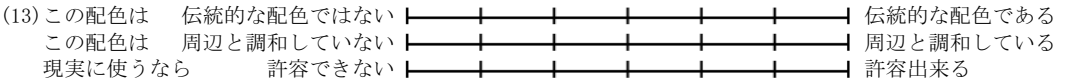

(8) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る


(9) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

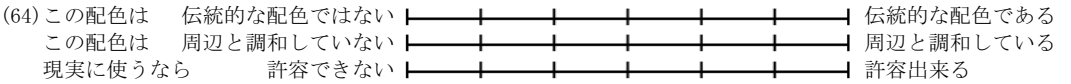

(10) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

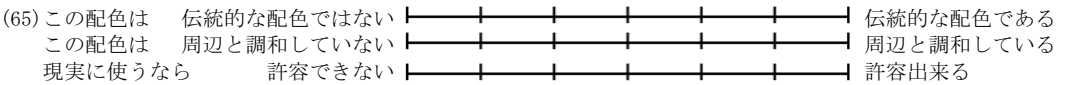

(11) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

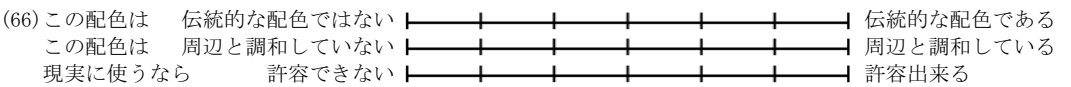

(12) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る


(13) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

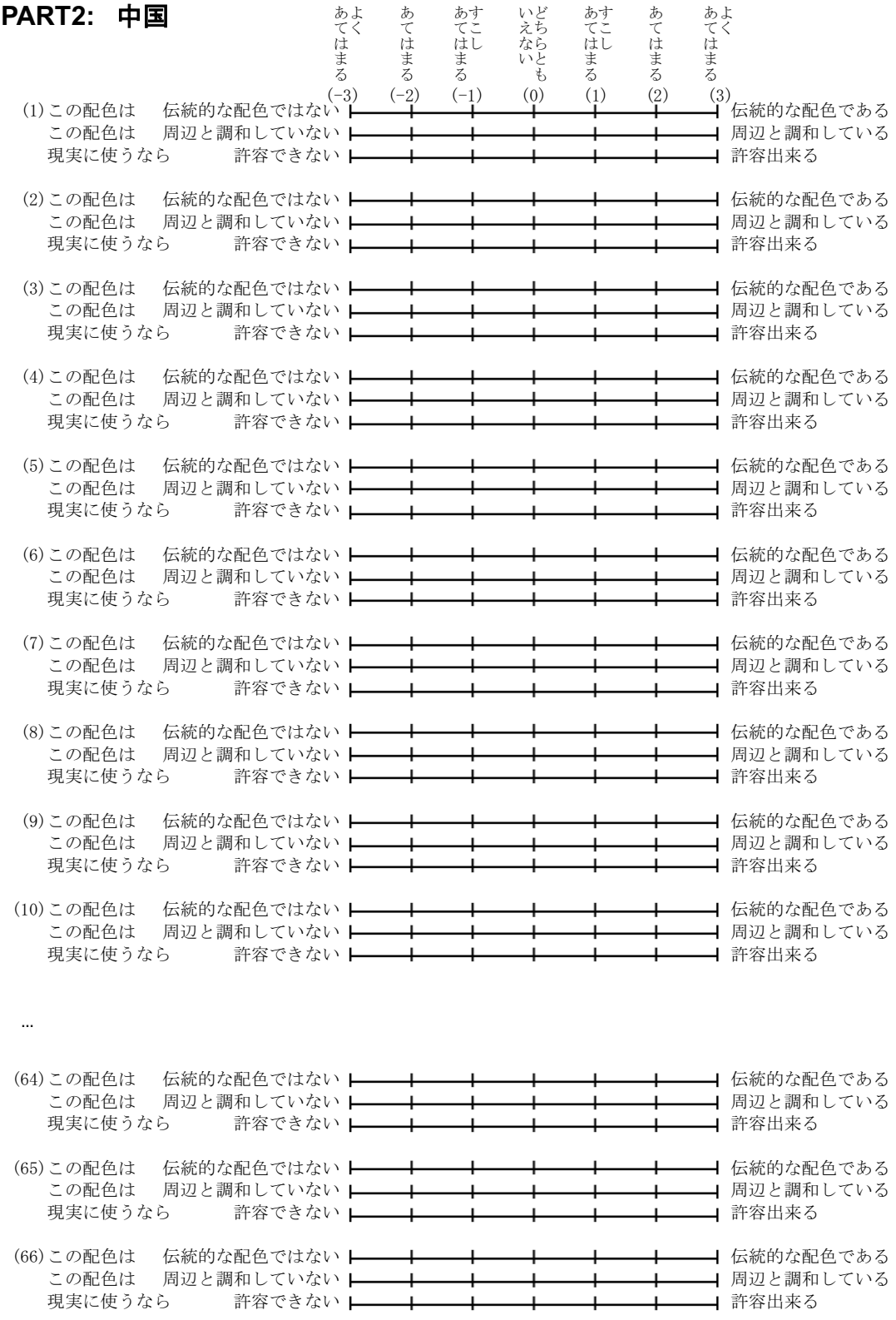
...


(64) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る


(65) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る


(66) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る

PART2: 中国


よくあてはまる (-3)
あてはまる (-2)
すこしあてはまる (-1)
どちらともいえない (0)
すこしあてはまる (1)
あてはまる (2)
よくあてはまる (3)
(1) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る
(2) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る
(3) この配色は 伝統的な配色ではない
この配色は 周辺と調和していない
現実に使うなら 許容できない
伝統的な配色である
周辺と調和している
許容出来る
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許容出来る
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許容出来る
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伝統的な配色である
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許容出来る
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伝統的な配色である
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許容出来る
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許容出来る
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伝統的な配色である
周辺と調和している
許容出来る

9　回答に影響を与えた理由を選んでください。
（複数回答可。回答は複数の場合、その重要度を 1 から順に付けてください）
☐ 新しい色が伝統的な色であるから。
☐ 新しい色が伝統的な色ではないが、周辺の環境と調和しているから。
☐ 新しい色の使用面積が小さくて、目立たないから。
☐ 新しい色を使ったら、生活の利便性が向上するから。
☐ 個人の好みの色だから。
☐ その他＿＿＿＿＿＿＿＿

ご協力ありがとうございました！
最後に、環境色彩や今回のアンケートに関して意見や気付いたことなどがあればご記入ください。

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Appendix II

被験者番号：

回答用紙

1　性別

☐ 女性　　☐ 男性

2　年齢

☐ 10 代　　☐ 20 代　　☐ 30 代　　☐ 40 代　　☐ 50 代以上

3　専門

☐ 環境デザイン　　☐ 建築デザイン　　☐ 他のデザイン領域_____

☐ 都市計画（社会工学）　　☐ その他_____

4　京都に行ったことがありますか？

☐ ない　　☐ たまに（旅行、出張）

☐ よく行きます／よく行きました（大学、仕事のため）　　☐ 住民

妻籠に行ったことがありますか？

☐ ない　　☐ たまに　　☐ よく行きます／よく行きました　　☐ 住民

高山市三町に行ったことがありますか？

☐ ない　　☐ たまに　　☐ よく行きます／よく行きました　　☐ 住民

5　2015 年 11 月に実施された「色彩を制限した景観における色の取り入れ方に関する研究」の実験を参加しましたか。

☐ 参加しました　　☐ 参加していません

6　伝統的な街並に屋外広告物を入れることは許容できますか？

☐ 許容できます　　☐ 許容できません　　☐ 分かりません

理由を教えてください：

（複数回答可。回答は複数の場合、その重要度を 1 から順に付けてください）

☐ 伝統を守るため

☐ 生活の便利性を向上するため

☐ その他_____

7 図版評価

実験図版の３件の建物の中央の１件に広告物が付いています。この広告物の周辺環境との調和、広告物の誘目性を評価してください。基準図版を 100 に設定した場合、他の実験図版の点数を付けてください。基準図版よりよいものがありましたら、100 以上の点数を付けても構いません。その後、同じように基準図版を 100 として、広告物の許容度を評価してください。

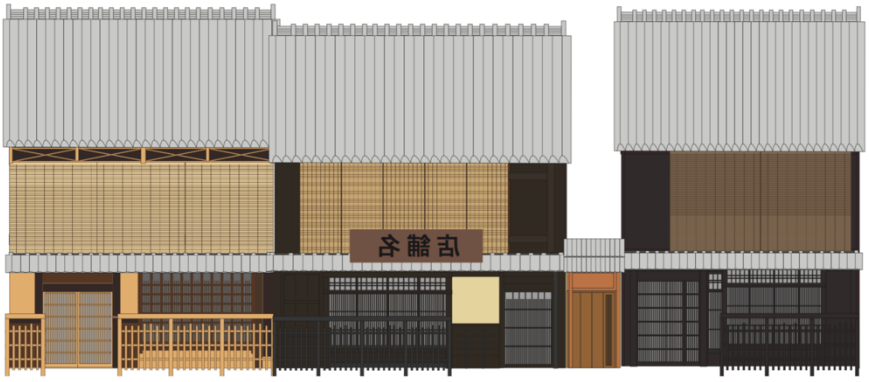
評価項目の調和、誘目性、許容度に関して：

調和は　広告物の配色と背景建築の色との調和をいいます。

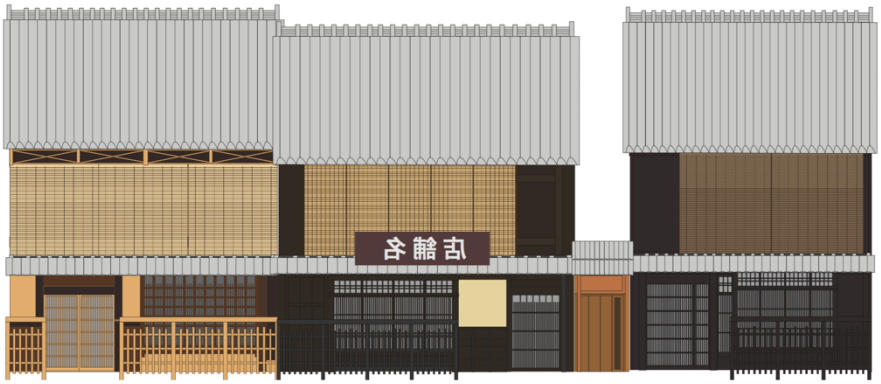
誘目性は　広告物の探しやすさや、見えやすさのことをいいます。

許容度は　実際にこの広告物を使ったら、許容できるかどうかということをいいます。

評価方法：実験図版は現地の建物をもとに作成したものです。評価も現地の雰囲気を考えた上で、広告物の調和、誘目性と許容度を評価してください。



Reference Images: Coordination (100)　Visual Attraction (100)　Acceptable (100)



Coordination (　　)　Visual Attraction (　　)　Acceptable (　　)

街並 A（京都新橋）

P1: 調和と誘目性を評価ください。

図 A01　調和(　　)　誘目性(　　)
図 A02　調和(　　)　誘目性(　　)
図 A03　調和(　　)　誘目性(　　)
図 A04　調和(　　)　誘目性(　　)
図 A05　調和(　　)　誘目性(　　)

図 A06　調和(　　)　誘目性(　　)
図 A07　調和(　　)　誘目性(　　)
図 A08　調和(　　)　誘目性(　　)
図 A09　調和(　　)　誘目性(　　)
図 A10　調和(　　)　誘目性(　　)

図 A11　調和(　　)　誘目性(　　)
図 A12　調和(　　)　誘目性(　　)
図 A13　調和(　　)　誘目性(　　)
図 A14　調和(　　)　誘目性(　　)
図 A15　調和(　　)　誘目性(　　)

図 A16　調和(　　)　誘目性(　　)
図 A17　調和(　　)　誘目性(　　)
図 A18　調和(　　)　誘目性(　　)
図 A19　調和(　　)　誘目性(　　)
図 A20　調和(　　)　誘目性(　　)

図 A21　調和(　　)　誘目性(　　)
図 A22　調和(　　)　誘目性(　　)
図 A23　調和(　　)　誘目性(　　)
図 A24　調和(　　)　誘目性(　　)
図 A25　調和(　　)　誘目性(　　)

図 A26　調和(　　)　誘目性(　　)
図 A27　調和(　　)　誘目性(　　)
図 A28　調和(　　)　誘目性(　　)
図 A29　調和(　　)　誘目性(　　)
図 A30　調和(　　)　誘目性(　　)

図 A31　調和(　　)　誘目性(　　)
図 A32　調和(　　)　誘目性(　　)
図 A33　調和(　　)　誘目性(　　)
図 A34　調和(　　)　誘目性(　　)
図 A35　調和(　　)　誘目性(　　)

図 A36　調和(　　)　誘目性(　　)
図 A37　調和(　　)　誘目性(　　)
図 A38　調和(　　)　誘目性(　　)
図 A39　調和(　　)　誘目性(　　)
図 A40　調和(　　)　誘目性(　　)

図 A41　調和(　　)　誘目性(　　)
図 A42　調和(　　)　誘目性(　　)
図 A43　調和(　　)　誘目性(　　)

P２: 許容度を評価ください。

図A01　許容度(　　)	図A16　許容度(　　)	図A31　許容度(　　)
図A02　許容度(　　)	図A17　許容度(　　)	図A32　許容度(　　)
図A03　許容度(　　)	図A18　許容度(　　)	図A33　許容度(　　)
図A04　許容度(　　)	図A19　許容度(　　)	図A34　許容度(　　)
図A05　許容度(　　)	図A20　許容度(　　)	図A35　許容度(　　)
図A06　許容度(　　)	図A21　許容度(　　)	図A36　許容度(　　)
図A07　許容度(　　)	図A22　許容度(　　)	図A37　許容度(　　)
図A08　許容度(　　)	図A23　許容度(　　)	図A38　許容度(　　)
図A09　許容度(　　)	図A24　許容度(　　)	図A39　許容度(　　)
図A10　許容度(　　)	図A25　許容度(　　)	図A40　許容度(　　)
図A11　許容度(　　)	図A26　許容度(　　)	図A41　許容度(　　)
図A12　許容度(　　)	図A26　許容度(　　)	図A42　許容度(　　)
図A13　許容度(　　)	図A28　許容度(　　)	図A43　許容度(　　)
図A14　許容度（　　）	図A29　許容度（　　）	
図A15　許容度（　　）	図A30　許容度（　　）	

街並 B（妻籠）

P1: 調和と誘目性を評価ください。

図 B01　調和(　　)　誘目性(　　)
図 B02　調和(　　)　誘目性(　　)
図 B03　調和(　　)　誘目性(　　)
図 B04　調和(　　)　誘目性(　　)
図 B05　調和(　　)　誘目性(　　)

図 B06　調和(　　)　誘目性(　　)
図 B07　調和(　　)　誘目性(　　)
図 B08　調和(　　)　誘目性(　　)
図 B08　調和(　　)　誘目性(　　)
図 B10　調和(　　)　誘目性(　　)

図 B11　調和(　　)　誘目性(　　)
図 B12　調和(　　)　誘目性(　　)
図 B13　調和(　　)　誘目性(　　)
図 B14　調和(　　)　誘目性(　　)
図 B15　調和(　　)　誘目性(　　)

図 B16　調和(　　)　誘目性(　　)
図 B17　調和(　　)　誘目性(　　)
図 B18　調和(　　)　誘目性(　　)
図 B19　調和(　　)　誘目性(　　)
図 B20　調和(　　)　誘目性(　　)

図 B21　調和(　　)　誘目性(　　)
図 B22　調和(　　)　誘目性(　　)
図 B23　調和(　　)　誘目性(　　)
図 B24　調和(　　)　誘目性(　　)
図 B25　調和(　　)　誘目性(　　)

図 B26　調和(　　)　誘目性(　　)
図 B27　調和(　　)　誘目性(　　)
図 B28　調和(　　)　誘目性(　　)
図 B29　調和(　　)　誘目性(　　)
図 B30　調和(　　)　誘目性(　　)

図 B31　調和(　　)　誘目性(　　)
図 B32　調和(　　)　誘目性(　　)
図 B33　調和(　　)　誘目性(　　)
図 B34　調和(　　)　誘目性(　　)
図 B35　調和(　　)　誘目性(　　)

図 B36　調和(　　)　誘目性(　　)
図 B37　調和(　　)　誘目性(　　)
図 B38　調和(　　)　誘目性(　　)
図 B39　調和(　　)　誘目性(　　)
図 B40　調和(　　)　誘目性(　　)

図 B41　調和(　　)　誘目性(　　)
図 B42　調和(　　)　誘目性(　　)
図 B43　調和(　　)　誘目性(　　)

P２：許容度を評価ください。

図B01　許容度(　　)	図B16　許容度(　　)	図B31　許容度(　　)
図B02　許容度(　　)	図B17　許容度(　　)	図B32　許容度(　　)
図B03　許容度(　　)	図B18　許容度(　　)	図B33　許容度(　　)
図B04　許容度(　　)	図B19　許容度(　　)	図B34　許容度(　　)
図B05　許容度(　　)	図B20　許容度(　　)	図B35　許容度(　　)
図B06　許容度(　　)	図B21　許容度(　　)	図B36　許容度(　　)
図B07　許容度(　　)	図B22　許容度(　　)	図B37　許容度(　　)
図B08　許容度(　　)	図B23　許容度(　　)	図B38　許容度(　　)
図B09　許容度(　　)	図B24　許容度(　　)	図B39　許容度(　　)
図B10　許容度(　　)	図B25　許容度(　　)	図B40　許容度(　　)
図B11　許容度(　　)	図B26　許容度(　　)	図B41　許容度(　　)
図B12　許容度(　　)	図B27　許容度(　　)	図B42　許容度(　　)
図B13　許容度(　　)	図B28　許容度(　　)	図B43　許容度(　　)
図B14　許容度（　　）	図B29　許容度（　　）	
図B15　許容度（　　）	図B30　許容度（　　）	

街並 C（高山三町）

P1: 調和と誘目性を評価ください。

図 C01　調和(　　)　誘目性(　　)
図 C02　調和(　　)　誘目性(　　)
図 C03　調和(　　)　誘目性(　　)
図 C04　調和(　　)　誘目性(　　)
図 C05　調和(　　)　誘目性(　　)

図 C06　調和(　　)　誘目性(　　)
図 C07　調和(　　)　誘目性(　　)
図 C08　調和(　　)　誘目性(　　)
図 C09　調和(　　)　誘目性(　　)
図 C10　調和(　　)　誘目性(　　)

図 C11　調和(　　)　誘目性(　　)
図 C12　調和(　　)　誘目性(　　)
図 C13　調和(　　)　誘目性(　　)
図 C14　調和(　　)　誘目性(　　)
図 C15　調和(　　)　誘目性(　　)

図 C16　調和(　　)　誘目性(　　)
図 C17　調和(　　)　誘目性(　　)
図 C18　調和(　　)　誘目性(　　)
図 C19　調和(　　)　誘目性(　　)
図 C20　調和(　　)　誘目性(　　)

図 C21　調和(　　)　誘目性(　　)
図 C22　調和(　　)　誘目性(　　)
図 C23　調和(　　)　誘目性(　　)
図 C24　調和(　　)　誘目性(　　)
図 C25　調和(　　)　誘目性(　　)

図 C26　調和(　　)　誘目性(　　)
図 C27　調和(　　)　誘目性(　　)
図 C28　調和(　　)　誘目性(　　)
図 C29　調和(　　)　誘目性(　　)
図 C30　調和(　　)　誘目性(　　)

図 C31　調和(　　)　誘目性(　　)
図 C32　調和(　　)　誘目性(　　)
図 C33　調和(　　)　誘目性(　　)
図 C34　調和(　　)　誘目性(　　)
図 C35　調和(　　)　誘目性(　　)

図 C36　調和(　　)　誘目性(　　)
図 C37　調和(　　)　誘目性(　　)
図 C38　調和(　　)　誘目性(　　)
図 C39　調和(　　)　誘目性(　　)
図 C40　調和(　　)　誘目性(　　)

図 C41　調和(　　)　誘目性(　　)
図 C42　調和(　　)　誘目性(　　)
図 C43　調和(　　)　誘目性(　　)

P２：許容度を評価ください。

図C01　許容度(　　)	図C16　許容度(　　)	図C31　許容度(　　)
図C02　許容度(　　)	図C17　許容度(　　)	図C32　許容度(　　)
図C03　許容度(　　)	図C18　許容度(　　)	図C33　許容度(　　)
図C04　許容度(　　)	図C19　許容度(　　)	図C34　許容度(　　)
図C05　許容度(　　)	図C20　許容度(　　)	図C35　許容度(　　)
図C06　許容度(　　)	図C21　許容度(　　)	図C36　許容度(　　)
図C07　許容度(　　)	図C22　許容度(　　)	図C37　許容度(　　)
図C08　許容度(　　)	図C23　許容度(　　)	図C38　許容度(　　)
図C09　許容度(　　)	図C24　許容度(　　)	図C39　許容度(　　)
図C10　許容度(　　)	図C25　許容度(　　)	図C40　許容度(　　)
図C11　許容度(　　)	図C26　許容度(　　)	図C41　許容度(　　)
図C12　許容度(　　)	図C27　許容度(　　)	図C42　許容度(　　)
図C13　許容度(　　)	図C28　許容度(　　)	図C43　許容度(　　)
図C14　許容度（　　）	図C29　許容度（　　）	
図C15　許容度（　　）	図C30　許容度（　　）	

ご協力ありがとうございました。

最後に、環境色彩や今回のアンケートに関してご意見やお気付きの点などがあればご記入ください。