

DETERMINING THE ACCEPTABILITY OF ADVERTISING FASCIA DESIGN  
AND COLOR, FOR BUILDINGS IN HISTORICAL URBAN AREAS

歴史的な街並における屋外広告物のデザインと配色

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This paper examined how varying the shape and color combination of the background and text affected subjective perception of advertising fascia for use on traditional buildings. A survey was conducted, using questionnaires, to evaluate reactions to advertising fascia of different shape and color; the results were then collated and analyzed, in order to gauge the acceptability of advertising fascia based on visual attractiveness and the degree of coordination with the surrounding environment. Also, using varying background colors of different Munsell hues, different color combination of background and text color were explored. The results showed that: 1) a significant difference in the acceptance of advertising fascia was found according to age group, and that the visual attractiveness of advertising fascia affected elderly respondents more; 2) in terms of material and shape of the fascia, using wood in unfinished organic forms, or adding a traditional wooden frame was seen to increase the acceptability of advertising fascia; 3) within the surface area permitted for advertising fascia by local ordinance for historical buildings, appropriate changes to the size of the area did not negatively impact the acceptance of advertising fascia; 4) 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.

**Keywords :** *Outdoor Advertising Fascia, Color Allowance, Color Combination, Design, Shape of Advertising*

屋外広告物, 許容色, 配色, デザイン, 広告物の形

## 1. Introduction

## 1.1 Background and purpose

In order to confirm the effect of advertising color regulations in the municipalities of Kyoto, Takeyama<sup>1)</sup> conducted an evaluation experiment comparing advertisings before and after re-color according to local regulation. The results indicated that the advertising color palette, after being adjusted for compliance with regulations, were considered to be more suitable with the character of Kyoto. However, the acceptability of advertising was not positive. This discussion follows on from a previous paper<sup>2)</sup>, in which we investigated the relationship between color plans and the degree of acceptability of advertising fascia in historical regions. The variables were different uses of Munsell hue, value and chroma combined with varying degrees of fascia coverage. However, fascia used in this experiment were only basic rectangular-shaped boards; other shapes were not considered, nor

were different background or text colors.

Different aspects of color schemes for outdoor advertising regulations in Kyoto City are restricted in different ways; background is strictly controlled, while text color should be coordinated with this background color. In addition, for other forms of advertising, such as channel letters, surface area was calculated by the maximum length and width<sup>3)</sup>. In Nagano prefecture, only the background color of outdoor advertising is restricted<sup>4)</sup>. In the historic region of Sanmachi in Takayama City, there are specific restrictions on different aspects of advertising; backgrounds cannot be in primary or fluorescent colors, and text should be used in 2 colors<sup>5)</sup>. Tokyo Metropolitan Government also has regulations on the use of color in advertising<sup>6)</sup>. The published color guidelines and regulations for outdoor advertising calculates usable surface area from the longest side in most cities, regardless of shape. In terms of color restrictions, the background

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color is restricted and there are also separate restrictions on background color and text color. Restrictions for outdoor advertising in areas of historic significance are more stringent. However, there are no specific discussions on the acceptability of advertising fascia, according to shape or the color combination of background and text.

This being the case, we decided to continue investigating reactions to advertising fascia on traditional buildings this time. Evaluating people's reactions to advertising fascia of different shapes, and in different color combinations of background and text color that used the same surface area, this survey was conducted on the acceptability of advertising fascia of varying shapes and different color combinations in consideration of their visual attractiveness and coordination with the surrounding environment. Finally, based on the acceptability of advertising fascia, some suggestions are proposed for shape and color combinations.

## 1.2 Relevancy

Current research on relevant issues can be summarized as follows: 1) discussions of the present situation of outdoor advertising; 2) evaluations of experimental outdoor advertising designs.

### 1) Discussions of the present situation of outdoor advertising

Current research mainly focuses on advertising regulations or the actual appearance of advertising in urban areas.

Lee *et al.*<sup>7)</sup> conduct a comparative study of regulations of outdoor advertisement in Tokyo, Seoul, Singapore and Hong Kong. It discusses four aspects of outdoor advertisement design: order, individual expression, harmony and identity. However, the role of color is not examined. Also, the results did not relate to the actual use of advertising. In terms of advertising regulations, Nonaka<sup>8)</sup> summarizes the status and content of advertising regulations. Again, however, the results are not discussed in terms of use in the real world.

In terms of the actual appearance of advertising, Kato *et al.*<sup>9)</sup> compare the colors of signs in Kyoto, Osaka, Kobe and the Noji in Shiga prefecture using photography documentation. From this they note that signs in historical urban areas are generally smaller, and most of them use achromatic color. However, there is no discussion of the rationality behind the color design and the local regulations.

Taniguchi *et al.*<sup>10)</sup>, Yamamoto *et al.*<sup>11)</sup>, Sato *et al.*<sup>12)</sup> and Watanabe *et al.*<sup>13)</sup> all similarly investigate advertising color design used in different urban areas in Japan, amassing data but, again, there is no discussion of the color design and the relation with local regulations.

Most of the current surveys and research concentrate on commercial districts, rather than the use of outdoor advertising in areas of historical significance. Moreover, the current research does not focus on discussing the relationship of real world

application and current local ordinance.

### 2) Evaluations of experimental outdoor advertising designs

Maki<sup>14-15)</sup> discusses the suitability, visibility and identity of existing signboards by gauging reactions to the placement of free-standing signboards in streets in historical urban areas, business districts, and along country roads. The perception of signboards is found to vary according to location, in this study. However, there is no discussion of what particular aspects of signboards, placed in historical areas, received a positive reaction. Also the colors used in this research are not based on the Munsell Color System, and, in fact, the use of free-standing signboards in historical areas is not common.

There is also some research on the visual attractiveness of advertising. Yamamoto *et al.*<sup>16)</sup> discuss color combinations used for billboards rated highly for visual attractiveness, concluding that the visual attractiveness of achromatic color is higher than for chromatic color. However, only one background color was used, without considering the impact of surrounding buildings. Also there is no investigation of what effect of changes in Munsell values and Munsell chroma would have.

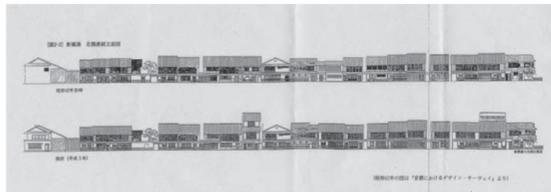
Uozaki *et al.*<sup>17)</sup> discuss the legibility of advertisements depending on different design issues. They propose that evaluations change according to the different colors used. However, the colors used in the paper are only described using the broadest terms, such as green, yellow, etc., and exactly how color influences advertising is not explored.

Surveys of test designs mostly focus on visual attractiveness and legibility, however, these should not be the only criteria for evaluation. In the case of restrictions regarding color, further research should be conducted on visual attractiveness, coordination and other factors.

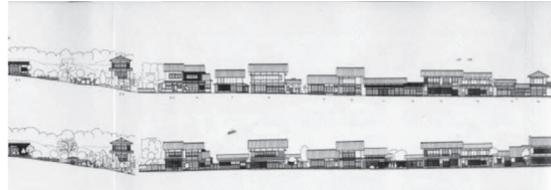
According to previous studies, advertising has a considerable effect on the urban landscape, and different parts of the urban environment should be regulated differently. However, there is a lack of research on how to revise advertising regulations which takes into account the actual appearance of signboards in the real world. Also, due to the strict restrictions on the use of color in advertising in historical areas, most researches focus on modern cities. Outdoor advertising colors are also needed in historical areas, and the regulations on outdoor advertising colors in historical areas are proposed. However, there are no specific restriction method on design and color combination. 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.

## 2. Methodology of study

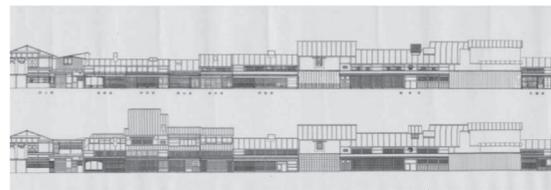
This survey was conducted, using questionnaire, based on mock-up images of three buildings, and different versions of



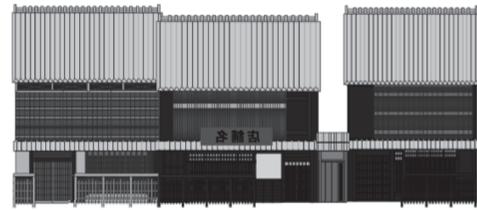
a. Gion Shinbashi building elevation<sup>a)</sup>



b. Tsumago building elevation<sup>b)</sup>



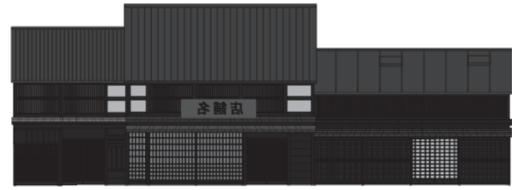
c. Sanmachi building elevation<sup>c)</sup>



d. Gion Shinbashi mock-up (reference image)



e. Tsumago mock-up (reference image)



f. Sanmachi mock-up (reference image)

Fig.1 Images Based on Gion Shinbashi, Tsumago and Sanmachi Elevations

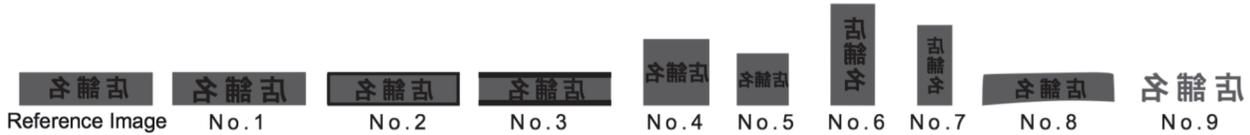


Fig.2 Advertising Fascia Designs

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

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

advertising fascia depicted on the building in the middle of the three. There are several types of outdoor advertising in both commercial areas and historical areas such as free-standing signboards, roof advertising, advertising fascia and so on. The type of advertising fascia which is commonly used in historical areas was used in this questionnaire, and the design and color of the advertising fascia was varied. The respondents then evaluated the different designs and color combinations.

The street scenes used in this research were based on three

different types of conservation area - Chaya machi in Kyoto- Gion Shinbashi, Shukuba machi in Nagisomachi- Tsumago and Shoka machi in Sanmachi- Kamisannomachi of Takayama. The model structures were three randomly selected adjacent buildings from these street. Images were produced based on official building elevations<sup>a-c)</sup> as shown in Fig.1. The building colors were determined using Munsell color chart<sup>d)</sup> in field research, as depicted in Table 1.

In keeping with the advertising regulations in Takayama<sup>5)</sup>, a

castle town, the surface area of the advertising fascia was limited to a maximum of 20% of the building surface. In previous research<sup>2)</sup>, we explored the case that when the advertising fascia was restricted to being 5% of the building facade, using a wide range of different background colors had no significant impact on perceived acceptability. The acceptability of hue G, B and P were quite similar. Therefore, for this experiment, the size of the advertising fascia was also set to 5% of the building façade, and hue B was chosen between G~P.

Based on using 5% building surface area, as shown in Fig.2, 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. In order to establish whether the smaller surface area would increase the acceptability, we tested the same design and color with different fascia surface area. The surface area of No.4 & 6 was 5% and 3% for No.5 & 7. No.8 used a background board of a more natural, unfinished timber look, and only text was used in No.9. All of nine designs used the same color combination of background color 5YR 3/3 and text color N1 and same with the reference image.

No. 10~43 used the same advertising fascia design with the reference image. In terms of color, Munsell hues R, Y, B, N were used as background colors, and with the text color were arranged as identity, similarity and contrast harmonies as per Moon & Spencer's color harmony theory 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.

Based on the preliminary experiment, we dropped the colors which evaluated in similar answer and there were a total of 34 different color combinations in the final 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<sup>2)</sup>. 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<sup>6)</sup> 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.

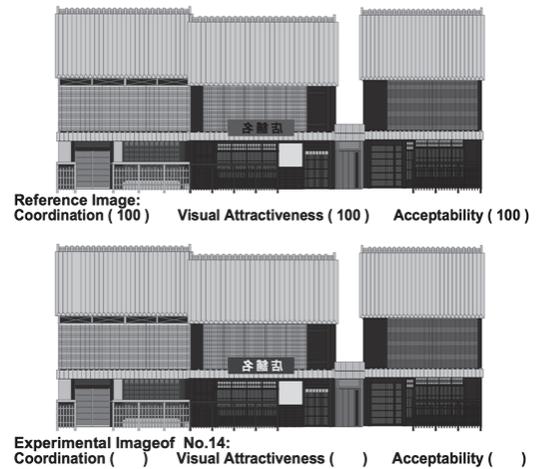


Fig. 3 Evaluated Factors (Example: Image No.14)



Fig.4 A Questionnaire being Completed

To 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 known to conform with local regulations of the three locations in question. Consequently, the 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.3): *coordination*, *visual attractiveness*, and *acceptability*<sup>6)</sup>. We explained in the questionnaire that *coordination* meant “the degree to which the advertising fascia color coordinated well with the color of surrounding buildings”. *Visual attractiveness* meant “high recognition of advertising fascia”, and *acceptability* meant “how acceptable was the design and color scheme, given the context”. Also, that the *acceptability* of the advertising fascia should be determined by considering the *coordination* and *visual*

attractiveness.

The questionnaires were completed in the same environment as our previous research<sup>2)</sup>; 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, we 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.

### 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.

#### 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.5) in terms of the *acceptability* of advertising fascia. Accordingly, an analysis was carried on the basis of age group.

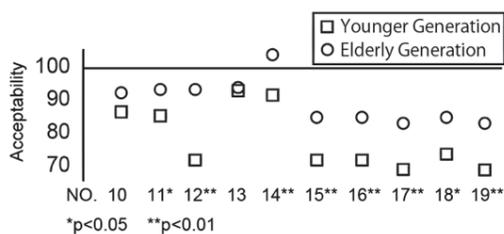


Fig. 5 Acceptability of Advertising Fascia by Age Group (background color of R: No.10~No.19)

Table 3 Respondents Background (field experiment of Kyoto)

		Students	Elderlies			Total
		20's	60's	70's	Over 80	
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

Table 3 shows the background of respondents. We 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, we compared the sex, whether they had actually visited the locations and acceptance of the use of advertising fascia in historical areas. There were no significant differences in response within the same age group. Thus, we focused on differences between the age groups.

#### 3.2 Correlation Analysis

Correlation analysis was performed for these three factors: *Coordination*, *Visual Attractiveness* and *Acceptability*. In terms of the younger age group, when  $P < 0.01$ , the correlation coefficient between *coordination* and *acceptability* was 0.981. However, correlation coefficient between the *visual attractiveness* and *acceptability* was low and not significant. 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.

Because of the positive correlation between the three evaluation factors (excluding the *visual attractiveness* and *acceptability* of younger age group), we checked the *acceptability* of the advertising fascia based on the responses in next section.

Table 4 Correlation Coefficient

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

\*  $P < 0.05$  \*\*  $p < 0.01$

#### 3.3 Acceptability of Advertising Fascia for Younger Age Group

The age groups expressed different attitudes when it came to their *acceptability* of advertising fascia, so we analyzed the data from the younger respondents, first comparing the data for the three different locations. We found that there was no significant change in *acceptability* for the same advertising fascia when used in different locations. We 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, we compared each response with the average in these categories. We prompted the reference value of 100 and average in fig.6 and fig.7. When there were significant differences, the image was marked with an asterisk.

##### 3.3.1 Reaction to advertising fascia shape

*Acceptability* for nine differently shaped designs of advertising fascia are shown in fig.6. As shown in fig.6a, 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

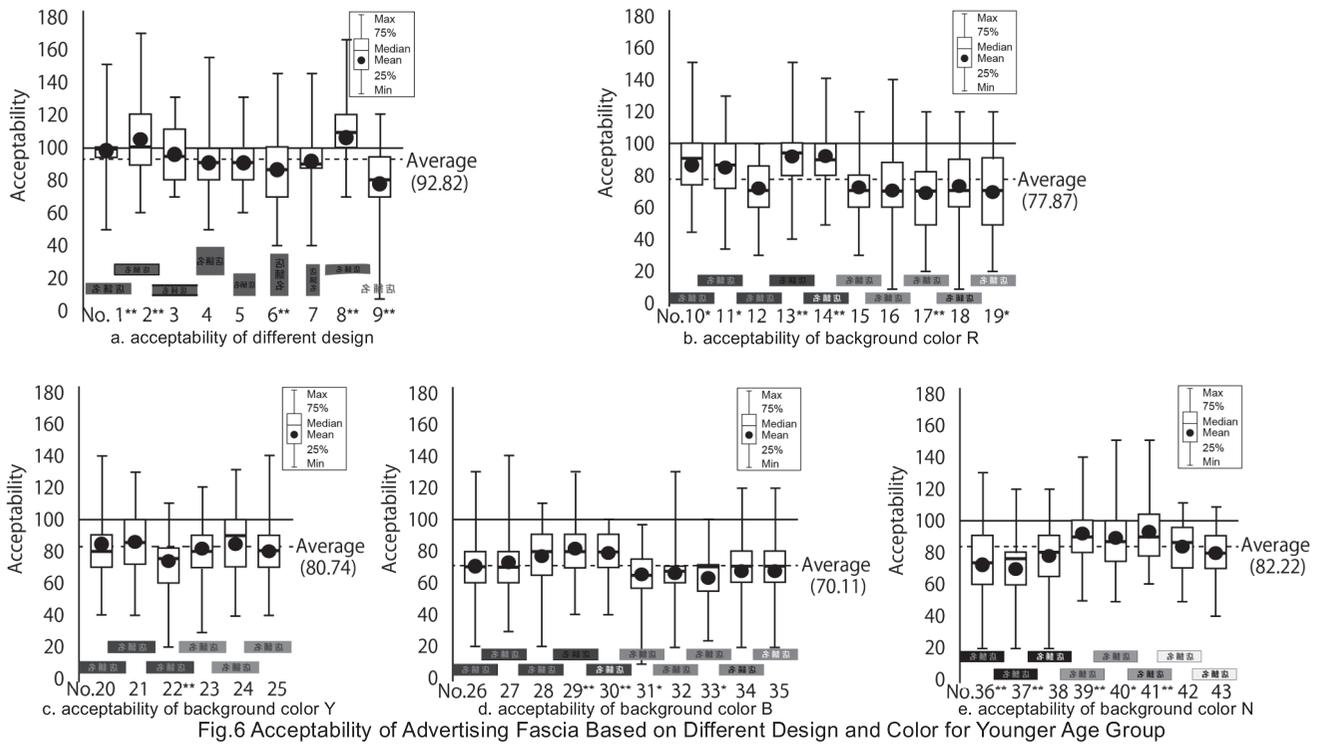


Fig.6 Acceptability of Advertising Fascia Based on Different Design and Color for Younger Age Group

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*.

### 3.3.2 Acceptability of color combination

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.6b), 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* than average, but for a background color of middle value, middle chroma as No.15~19 there was a lower *acceptability*. 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.6c), the *acceptability* 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 we used the B in background color (fig.6d), the *acceptability* 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.6e), a middle value grey was more acceptable than black or white. There was no significant difference in the changes of text color.

## 3.4 Acceptability of Advertising Fascia for Elderlies

### 3.4.1 Reaction to advertising fascia shape

Similarly, we checked the *acceptability* in the responses from elderlies. From fig.7a it can be seen that the *acceptability* for images No.1 and No.8 were relatively high. The *acceptability* given by elderlies for other advertising fascia shapes was generally lower. As with the results mentioned above, there was no significant difference in the *acceptability* of images No.4, 5, 6 and 7 which had different surface areas but were the same shape.

### 3.4.2 Acceptability of color combination

When R used as the background color(fig.7b), image No.14, which was a dark base with white text, had the highest *acceptability* - higher than the reference value of 100. *Acceptability* for images No.15~19 were lower than the average. There was no significant difference in *acceptability* for varying text colors. With hue Y, *acceptability* for all images were concentrated in the 90~100 range and there was no significant variance. When the background color was B, the *acceptability* 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*. The *acceptability* of other colors was concentrated in the 85~95 range.

## 3.5 Comparing Responses of the Two Age Groups

In this chapter, we compare the responses of the two different age groups (fig.6~7). First, based on the general responses, we 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.

Experimenting different shaped fascia, based on mean value, younger respondents found natural or unfinished shapes more

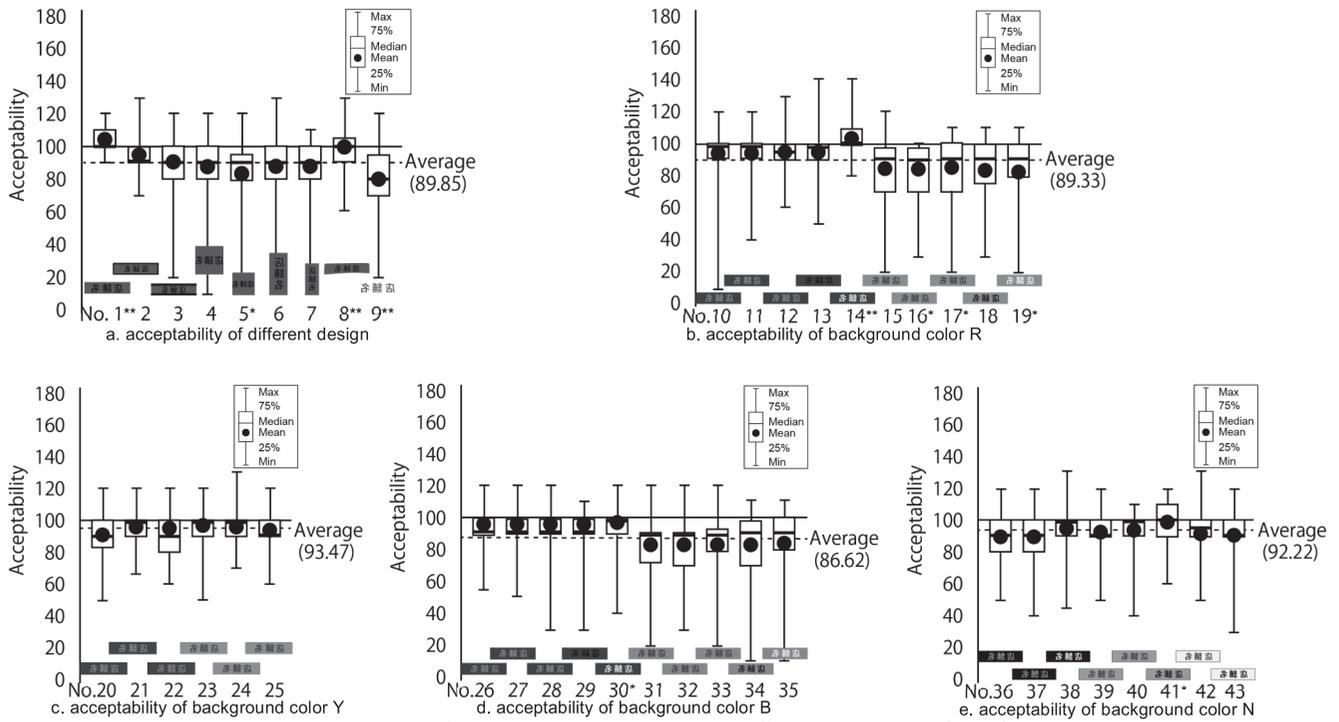


Fig.7 Acceptability of Advertising Fascia Based on Different Design and Color for Elderlies

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. Conclusion and Discussion

From a comparative analysis of the data, we 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 advertisings. Whether there were other factors which affect the evaluation of younger respondents should be further explored.

For the same advertising fascia, there was no significant

difference in *acceptability* when the location was changed. In previous research<sup>2)</sup>, 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, we 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*.

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*. Based on the design factors we 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<sup>18)</sup>, channel lettering was suggested as being more suitable for buildings of stone construction. In this experiment, we 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*. 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, we 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, we evaluated 4 background colors; 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. We 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.

We mainly evaluated *acceptability* by assigning scores. The surface area and color combinations used in this experiment had already been determined in previous research<sup>2)</sup>. 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 appear 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. We 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, the study was based on discrete architectural structures. In urban environments, the building density and advertising fascia frequency influence the *acceptability* of advertising fascia. Further research will therefore aim to explore advertising fascia more in context.

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#### Note

- a) Building elevations were obtained from Kyoto City Planning Division.
- b) Building elevation according to "Tsumago-juku - the Protection and Regeneration-", by Ota Hirotoaro 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 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*. As these terms are considered proper nouns in this survey, they have been italicized.

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## 和文要約

我々は2017年に、日中の歴史的な街並における色相ごとに許容できる屋外広告物の使用面積が異なることを実験により明らかにした。しかし、この実験では、長方形の広告物のみを使用し、背景色と文字色の配色方法は扱わなかった。

現在公布されている日本における屋外広告物の色彩に関する条例では、面積によって制限しており、デザインについては触れていない。そして、広告物の色の制限について、背景色と文字色を同様に設定したり、背景色だけを制限したりしている。本論文では、誘目性と調和性を考慮した屋外広告物のデザインと配色の関係を検討する。前回の研究で明らかにした許容できる使用範囲の中で、広告物のデザイン、広告物の中の背景色と文字色の配色が広告物の許容に与える影響を明らかにする。

先行研究を1)屋外広告物の現状の研究;2)屋外広告物の印象評価に関する研究の二点からまとめたところ、先行研究は事例研究が多く、事例をもとに広告物に関するコントロール方法を提案しているが、現状の条例の改善を提案する研究は見られなかった。そして、主に現在の商業地区を対象地として行われているが、歴史地区の広告物の使用規制などの研究は見られなかった。そのため、本研究は日本の歴史的な街並を実験対象地として、広告物のデザインと配色と許容の関係性を検討する。

日本の重要伝統的建造物群から、京都の茶屋町、妻籠の宿場町、高山三町の商家町の三種類の伝統的な街並を実験対象地とした。この三つの街並をもとにした立面図を用い、印象評価実験を行った。建物3件からなる街並の立面図で、中央の1件の1階庇上の屋外広告のデザインと配色を変化させた。今回実験に使ったデザインは9種類であり、背景色と文字色の配色は34配色である。使用面積は前面の全壁面の5%を設定した。このように一つの通りに対して屋外広告のデザイン・色彩を変化させた43枚の図版を作成し、三つの通りで合計129枚の図版を用いた。図版をランダムに被験者に提示し、基準図版を100点としてME法で評価させた。それぞれの回答数値をもとに分析を行った。

被験者は筑波大学20代大学生24名、シルバー人材センターで募集した60代以上の被験者21名である。「性別」、「年齢」、「現地経験(現地に行ったことがあるか)」などについて被験者の背景を聞いた。今回は20名の大学生及び21名の60代以上の被験者群の有効回答により分析を行った。

被験者の背景、評価項目の分析を行った結果、被験者の年齢層による有意差があった。一方で、それぞれ年齢層の中では、回答の有意差がなかった。そのため、今回の分析は年齢層ごとに分析を行った。評価項目「調和」、「誘目性」と「許容」の相関分析を行った。20代の被験者では、「調和」と「許容」は強い正の相関があり、相関係数は0.981( $p < 0.01$ )である。「誘目性」と「許容」の関係は低く、有意ではなかった(相関係数0.223)。60代以上の被験者において、「調和」と「許容」の相関係数は0.806( $p < 0.01$ )、「誘目性」と「許容」の相関係数は0.436( $p < 0.01$ )である。つまり、「誘目性」は20代よりも60代以上の被験者群に影響を与えていることがわかった。

同じ年齢層では、三つの街並に対する「許容」の有意差がなかったため、年齢層別に「許容」の平均値を利用し、デザインと配色と「許容」の関係を検討した。それぞれのデザインと配色の「許容」

に有意差があったものについて、比較的良好なもの悪いものとして判断した。最後に、比較的良好な「許容」が高いと評価されたデザインと配色の特徴をまとめ、「許容」が上がるためのデザイン要素と配色要素を提案した。

デザインに関しては以下のようにまとめられる。

- 1) 広告物の形について、自然な木材の形や、変化がある形を使った広告物の「許容」が高かった。
- 2) 伝統的なデザイン要素を用いた広告物の「許容」が高かった。例えば、伝統的な木枠の使用など。
- 3) 歴史的木造の街並において、板状の看板を使用すると、広告物の「許容」が高くなる。チャンネル文字を勧める外国の石造りの建物とは異なり、日本では板がないデザインの「許容」が低かった。
- 4) 60代以上の被験者群に対しては、「誘目性」が重要である。文字を大きくすることや、低明度・低彩度の背景に白文字を使うと、広告物の「許容」も高くなる。

配色に関しては以下の4点にまとめられる。

- 1) 今回実験した色相では、背景に低明度低彩度のR系または中明度の灰色を使った広告物の「許容」が一番高かった。
- 2) 広告の背景色がR-Y系の色相の場合、低明度低彩度の背景色の「許容」がより高かった。この時の文字色は同一調和と類似調和であるR-Y系の間の明度差3の色と無彩色の白と黒がより許容できる。対比色B系の文字色を使うと、「許容」が低くなる。
- 3) 背景色がB系の場合、同じように低明度低彩度の背景色の「許容」がより高かった。文字色は無彩色のほうが許容できる。
- 4) 背景色が無彩色の場合、中明度の灰色の広告物の「許容」が一番高かった。文字色の違いは特に「許容」に影響しなかった。

最後に、20代被験者と60代以上の被験者の回答の比較分析を行った。全体的に見ると、20代被験者の回答の分散が60代以上の回答より大きかった。つまり、広告物の「許容」に関する感情は、20代被験者のほうが強いと思われる。

基準値100点を超えた広告物を見ると、20代の被験者群に選ばれたのは自然な形の広告物と伝統的な木枠が付いた広告物であった。60代以上の被験者群は文字を大きくした広告物と暗い背景と白文字の広告物であった。つまり、60代以上の被験者群にとって、「誘目性」が高いほうが許容できることがわかった。

配色に関しては、R-Y系の背景色を使った広告物において、20代の被験者は、文字色に対比色の青を使った配色に対する「許容」が他の文字色より低かった。しかし、60代以上の被験者では特に差がなかった。

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