

# Color Selection of Architectural Facade Taking into Consideration Surrounding Environment in Japan.

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## ABSTRACT:

This study is to research the human's color selection of the architectural facade and human consideration when selecting the color of it. As a result, "Ratio of the color selecting" has the tendency when surrounding color's tone and selecting one are same. "Degree of consideration in surrounding" and "Degree of harmony after color selecting" have the tendency which is relation in the Saturation. "Difficulty in the color selecting" is in the brightness. There seems to be a different tendency between light tone and any others in "Degree of consideration in surrounding" and "Satisfaction after color selection".

**Keyword : Color Selecting , Architectural Facade , Consideration Surroundings**

## I. BACKGROUND

In Japan, as a background of the operation of the "Keikan-Ho (Landscape Law)" and color guidance based on the landscape regulation by each local community, the environmental landscape is gradually becoming more of interest.

In some areas, there is a guidance of architectural facade color to change the base-color that developers

should followed. But the problem is that in the guidance still remained the lack of harmonious color called "Sou-Shoku" or color pollution. Against this situation , the previous researches has been conducted about environmental and landscape color psychology of such an impression evaluation of the architectural façade. In additional , the fact regarding what emotions a human has against the facade is strongly debatable. The purpose of this study is to research the human's color selection of the architectural facade and human consideration when selecting its color.

## 2. METHOD

Number of subject is 21 (male 13 , female 8 , age 19-26 , all college students).

Fig 1 shows the experimental display in PC monitor. The building was arranged in the top half of the picture, and two left and right one were surrounding façade and these color pattern was 120 (Fig 2 ; choosing two from six hues in each eight tones). In this experiment, PCCS (Practical Color Co-ordinate System , Japan Color Research Institute) was used. For reducing patterns , moderate tone was defined as the center between soft and dull tone , and medium grayish tone was between light-grayish and grayish tone. As for the central façade you think those of the subject, a subject can select from the color palette (Refer to Fig 3). Procedure of the experiment refers to Fig 5. After Questionnaire, the data was analyzed with one-way factorial ANOVA (factor : surrounding color's tone) and Fisher's PLSD as a post-hoc test.

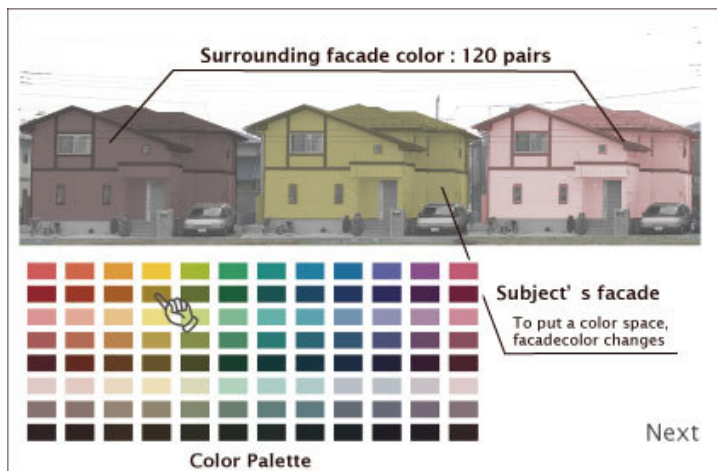


Fig 1. Experimental Display

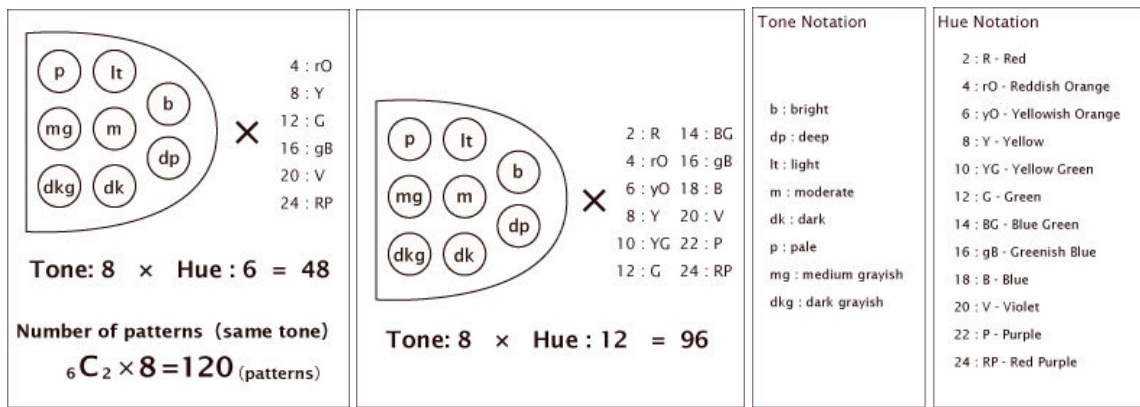


Fig 2. Number of patterns

Fig 3. Number of colors in the palette



Fig 4. CIE L\*a\*b\* notation of the color palette in this experiment

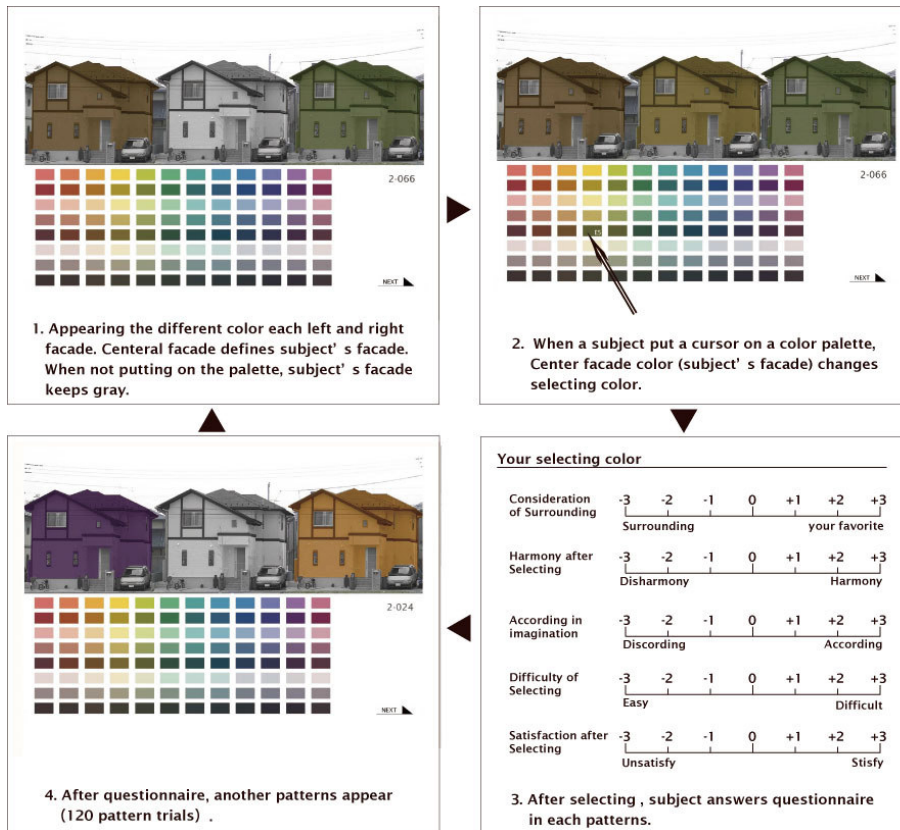


Fig 5 .Procedure of the experiment

### 3. RESULT & DISCUSSION

#### 3-1. RATIO OF COLOR SELECTING (Fig 6.)

A High percentage when selecting color's tone and surrounding's are the same especially pale tone which shows 59.9% , and medium grayish at 43.0%.

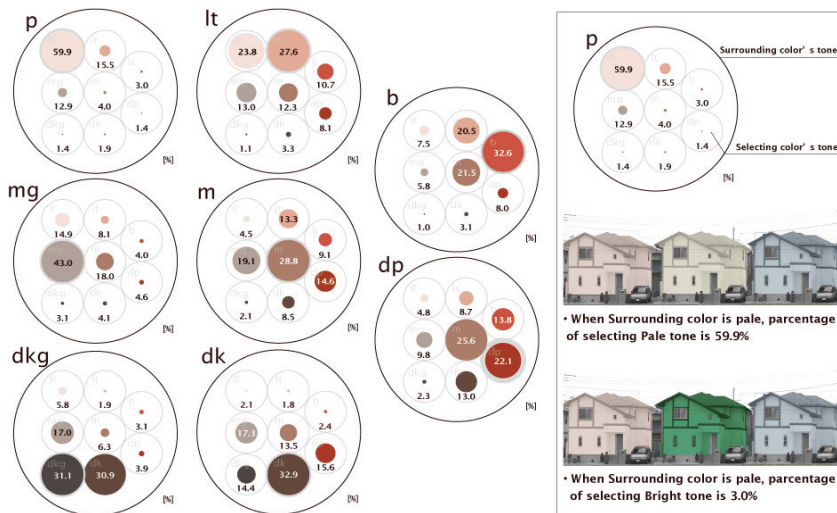


Fig 6. Percentage of selecting color's tone in each surrounding color

#### 3-2. DEGREE OF CONSIDERATION IN SURROUNDING (Fig 7)

- $F[7.13]=5.878$  ,  $p<0.001$  ; Significant
- Light tone has a tendency of consideration in favorite
- On the other hand, dark, pale, medium grayish and dark grayish tones have a tendency of consideration in surrounding



Fig 7. Degree of consideration of Surrounding

#### 3-3. DEGREE OF HARMONY AFTER COLOR SELECTING (Fig 8)

- $F[7.13]=10.448$  ,  $p<0.001$  ; Significant
- Light tones have more of a tendency of disharmony than dark, pale, medium grayish and dark grayish tones.



Fig 8. Degree of harmony after color selecting

### 3-4. DEGREE OF ACCORDING IN IMAGINATION BETWEEN BEFORE COLOR SELECTING AND THE AFTER (Fig 9)

•  $F[7.13]=2.867$  ,  $p=0.0079$  ; Significant

Light and moderate tones have a tendency of discord in imagination in the surrounding color's tones.



Fig 9. Degree of according in imagination before color selecting and the after

### 3-5. DEGREE OF DIFFICULTY IN COLOR SELECTING (Fig 10)

•  $F[7.13]=3.488$  ,  $p<0.010$  ; Significant

• Dark and dark grayish tones have a tendency of easier color selecting than the rest of surrounding's tones



Fig 10. Degree of difficulty in color selecting

### 3-6. DEGREE OF SATISFACTION AFTER COLOR SELECTING (Fig 11)

•  $F[7.13]=2.205$  ,  $p=0.0312$  ; Significant

• Light tones have more of a tendency of dissatisfaction after color selecting than deep, dark and dark grayish tones.



Fig 11 . Degree of satisfaction after color selecting

## 4. DISCUSSION

As a result of the experiment, when color selecting of architectural facade takes into consideration surroundings, it is expected that chroma relates the evaluation of “Degree of consideration in surrounding”

and “Degree of harmony after color selecting”, These seem to relate to the previous study to term of saturation being an important factor in the harmony or necessity of legal control (Inagaki, 2000) and selecting low saturation color for the townscape where it has the composure or feels good sence (Sakahara, 1999).

It is expected that brightness in each same saturation level relates to the evaluation of “Difficulty in the color selection”. We need to verify that result in the different experimental condition. It was shown that different tendency between light tone and any others in “Degree of consideration in surrounding” or “Satisfaction after color selection”. We also need to research why only light tone has different tendency. In this experiment , only college students were tested , in future , we are going to have another ages (more than 30's) , and compare the difference in each ages.

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