

THE RELATION BETWEEN IMPRESSION OF AND INTERIOR ELEMENTS IN RESTAURANTS

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Abstract:

When designing an interior space, a designer designs on the basis of his design image for the interior space. In other words, he decides on the form, the material, the color and the layout of the elements that compose the interior space. The user gets an impression when they see the interior space. If the user's impression fits the design image, it is thought that the designer's image is well represented in the interior space. I think that it is important to make clear the relation between the impression of and the interior elements in an interior space design. This paper aims to clarify the relation between the impressions of the Japanese style and the Western style and the interior elements used. The object space of this study is the interior space of restaurants. Sample photographs (114 photographs) are extracted from interior design and food magazines which were published in Japan. These photographs were taken from the same angle. These photographs are classified according to similar impression with KJ method³). It is questioned with semantic

differential method for some impressions on the sample photographs of the classified groups and it is analyzed with Factor Analysis. The interior elements which induce the impressions are identified by the subjects. They are considered further if the subjects have identified them as common interior elements. Next, the relations between some impressions and the relevant interior elements are examined in two groups (1. One is the group that is held to induce a Japanese atmosphere; 2. The other is the group that is held to induce a Western atmosphere) with an interview research method that is called "Evaluation grid method⁴". This method is based on the repertory grid technique in psychology and the relations are shown in a diagram. These photographs (114 photographs) are classified into seven groups. It is understood that the subjects have similar impressions on each group and the impressions between the groups are different. There is the group that is held to induce traditional Japanese atmosphere. There is the group that is held to induce a Western atmosphere. And there is the group that is held to induce Asian atmosphere. It is understood that the same interior elements referred to create such impressions. And the relations between the impressions and the interior elements are shown in a diagram. For example, a Japanese atmosphere is created with tatami, shouji, zabuton, and etc. These are traditional Japanese materials; a Western atmosphere is created with sun-shine through windows, and tables or chairs of organic design, and etc.

1. Introduction

The designer designs an interior space on the basis of his design image for the interior space. In other words, he decides on the form, the material, the color and the layout of the elements that compose the interior space. The user gets an impression when they see the interior space. If the user's impression fits the design image, it is thought that the designer's image is well represented in the interior space. I think that it is important to make clear the relation between the user's impression of and the interior elements in an interior space design. This paper aims to clarify the relation between the impressions of the Japanese style and the Western style and the interior elements used. It is difficult to define the Japanese style and the Western style. And it is highly possible that these styles change according to the fashion of the times. But I think that there are common features in our impression of the Japanese style and the Western style. The object space of this study is the interior space of restaurants. As the interior design of restaurants is characterized by the main dishes (ex. Japanese dishes, Western dishes, Chinese dishes) of the restaurant, it is easy to identify the relation when compared with other interior spaces.

This study is conducted with photographs. Strictly speaking, it is desirable for actual interior spaces to be investigated. But it is difficult to investigate many restaurants in actuality.

The relevant issues include:

- 1) Do we get an impression of an interior space by looking at a photograph?
- 2) What impressions do we get?

Are there any common impressions?

- 3) Which interior elements cause the impression?

2. Extraction and selection of sample photographs for this investigation

2.1 Extraction of sample photographs

Some photographs are used for this investigation. It is important to select sample photographs to get an appropriate result. Some photographs are extracted from some magazines (architectural magazines and information magazines for restaurants). Some rules on how to select the photographs are established. The first one is that the photographs are taken at about the same angle to show the interior space. The second is that the interior elements are well-balanced in each photograph. The third is that there are no or few dinner sets on the tables in the photographs. The third rule is to reduce the influence of interior elements other than the tableware. The extracted photographs number 114(photo-1).



Photo-1 Sample photographs

2.2 Selection of the typical samples

It is desirable to investigate all the sample photographs. But it is difficult to make the subjects spend a long time the questionnaire. Therefore typical samples are selected from among the extracted samples. The extracted samples are classified in ways that are of similar to the KJ method. Some types of impression (example: Japanese style and Chinese style etc.) are identified in the extracted samples.

A restaurant specializing in Japanese cuisine is generally designed to have a Japanese style. A restaurant specializing in Western cuisine is generally designed to have a Western style. It is thought that a restaurant's interior design is influenced by the specialty of the restaurant.

2.3 The result to select samples

The extracted samples are classified into six groups (Fig-1): Japanese style, mild Japanese style, "modern or pop" style, Asian style, mild Western style and Western style. Uchibori classified interior design images the six groups 1). The six groups in this study are almost the same as the Uchibori groups. It is thought that photographs extracted are pretty well-balanced.

Two typical samples in each group are selected for this study. These samples are used in our research.

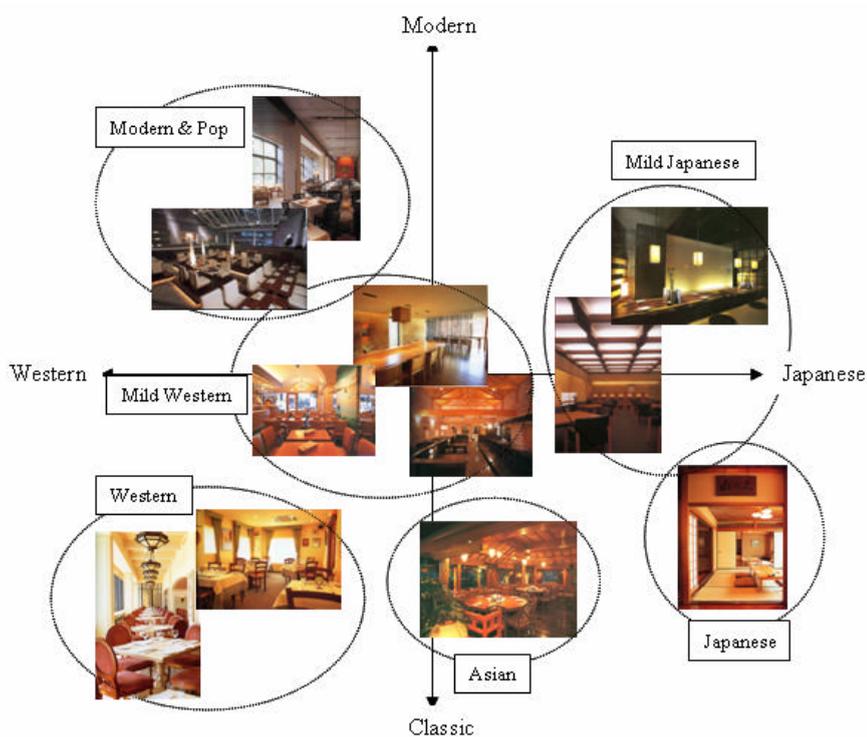


Figure-1 Classified into six groups

3. Evaluation of the impression of the sample photographs

3.1 Method

The two typical samples in each group are evaluated with the Semantic Differential Method (14 pairs of adjectives) to identify the different of impressions between different groups (Fig-2). I make the subjects to point out the interior elements which influence the impression (more than three elements). And it is checked whether there are common points or not.

The size of each photograph is about half of an A4-size piece of paper. Ninety-eight subjects ranging in age from 15 to 60 (55 males, 43 females) are involved in this evaluation.

Graceful --- Awkward	Like --- Dislike
Restful --- Disturbing	Easy --- Uneasy
Open --- Close	Orderly --- Disorderly
Gay --- Plain	Exciting --- Boring
Familiar --- Unhamiliar	Light --- Heavy
Warm --- Cold	Unique --- Commonplace
Clean --- Dirty	Manly --- Womanly

Fig-2 14 pairs of adjectives

3.2 Result

The impression of each group and the number of interior elements that are referred to by the subjects are as follows;

1) The group that gives the impression of the Japanese style (Fig-3)

There are high evaluation scores on "restful" , "graceful" , "relaxing" and "warm". A lot of the subjects say they "like it very much" in their overall evaluation. The number is the highest when compared with the other groups.

" Courtyard" , "Syoji" , "light" , "floor" and "chair" are highlighted as the interior elements that induce the impression of the Japanese style.

These elements are referred to as follows;

There are natural stones and trees in the courtyard. The interior space has dim electric lighting and is a little dark. Tatami or blackish material is used for flooring. The chair is small-sized and made of wood that is painted blackish. These are the common features in this group.

2) The group that gives the impression of the Western style (Fig-3)

There are high evaluation scores on "graceful" , "individual" and "gaiety". "Light" , "chair" , "curtain" and "picture" are referred to as the interior elements that induce the impression of the Western style. Chandelier is referred to in this group the most frequently. There is diversity in the subjects' response on "restful - not restful". There are many chairs that are shaped in a curved line and that are upholstered with moquette in this group. It is observed that there is a balloon curtain and there are some paintings in a room. These are the common features in this group.

It is expected that the subjects get a common impression of the photographs in one and the same group and another impression of the photographs in another group. It is assumed that we can change the impression of the interior space of restaurants by manipulating these features.

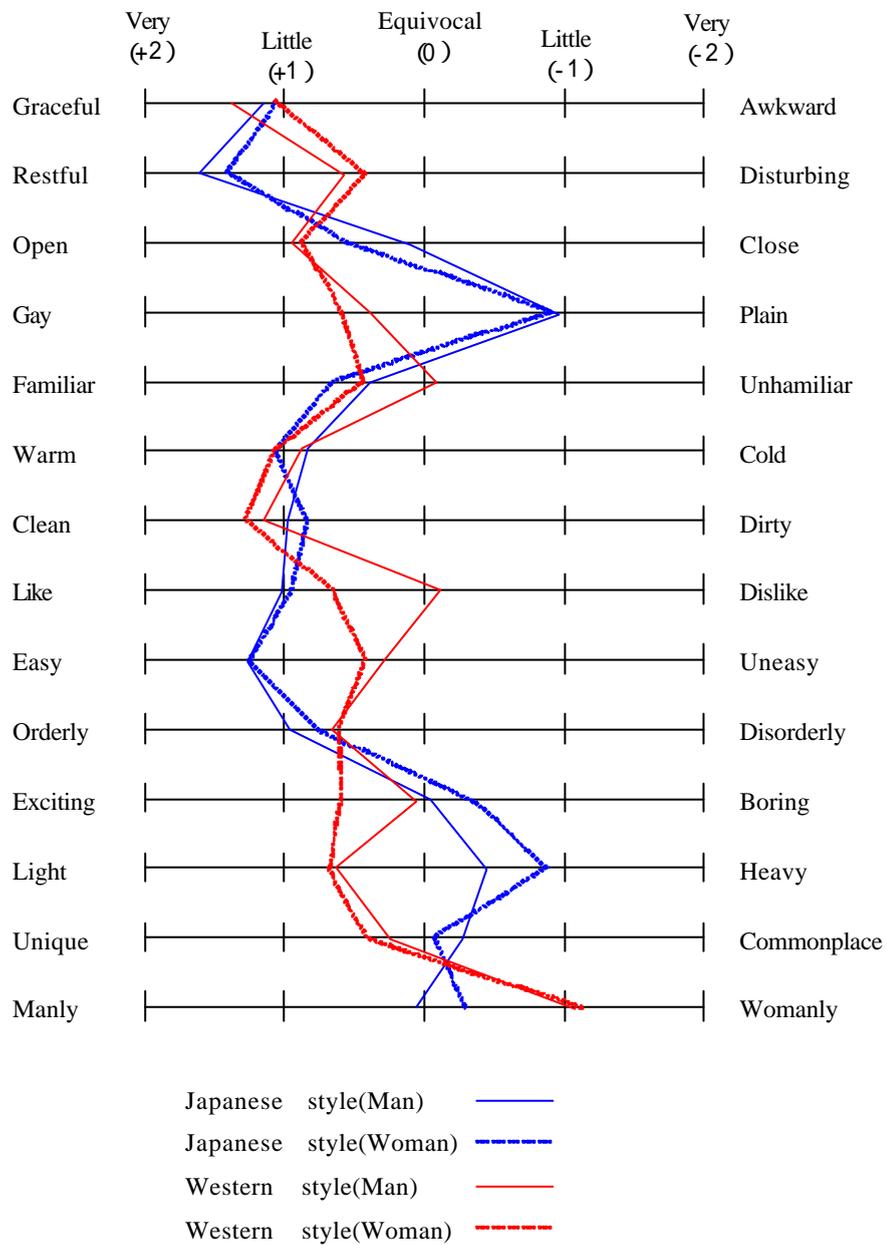


Fig-3 Evaluation structure of Japanese and Western style

4. Relation between the impression and interior elements

4.1 Method (Japanese style and Western style)

Many Japanese people think that the Japanese style is opposed of the Western style²⁾. It is assumed that many Japanese people think like this when forming an impression of an interior design.

The impressions of the Japanese style and the Western style that are evaluated by the subjects are selected as the objects for this investigation after considering the evaluation grid method. And the relation between the impression and the interior elements are identified with the evaluation grid method.

The research process of the evaluation grid method is as follows;

- 1) Make a subject place the sample photographs along a continuum from Japanese style to Western style.
- 2) Hear their reasons for placing these photographs in the way they do (it is called ladder up and ladder down).
(Abstract contents and concrete contents are included in the reason.
- 3) Relate the impressions to the interior elements.
- 4) The relation is illustrated in a diagram and is analyzed.

It is difficult to place all the sample photographs in either the Japanese style or the Western style only. The sample photographs of the mild Japanese style and the mild Western style fall between the Japanese style and the Western style.

Fifteen subjects ranging in age from 20 to 60 (8 males, 7 females) are involved in this research.

4.2 Result (evaluation structure based on the relation between the impression and interior elements)

4.2.1 Evaluation structure of the Japanese style

Using the evaluation grid method, the evaluation structure of the Japanese style and that of the Western style are shown in two diagrams.

First, the evaluation structure of the Japanese style is explained. Five evaluation structures of the Japanese style feel are identified (Fig-4).

1) The structure of the traditional Japanese house feel

To many of the subjects, tatami, fusuma and tokonoma are associated with the traditional Japanese house. Also, Japanese tableware like chopsticks influences their impression. Low tables are associated with sitting on the floor, which is associated with the image of the traditional Japanese house.

2) The structure of the impression of calm

Many subjects pay attention to the natural colors and woody colors of interior elements (table, chair, post, tableware, beam). These are associated with the image of calm.

3) Form in the Japanese style feel

Some subjects get the impression of the Japanese style from tables, chairs and beams with a straight-line design. Some other subjects associate beams with a gentle-curve design with the Japanese style. (Photo-2 blackish beam)

4) Plants in the Japanese style feel

The plants referred to are almost always flowers arranged in a vase. The presence of some twigs induces a stronger impression of the Japanese style. Flower arrangement is associated with the Japanese style.

5) Lighting in the Japanese style feel

Warm color light (low color temperature) and concealed lightning are associated with the Japanese style.

In the result of this research, there is the basic evaluation structure in the relation between the impression and the interior elements among the subjects.

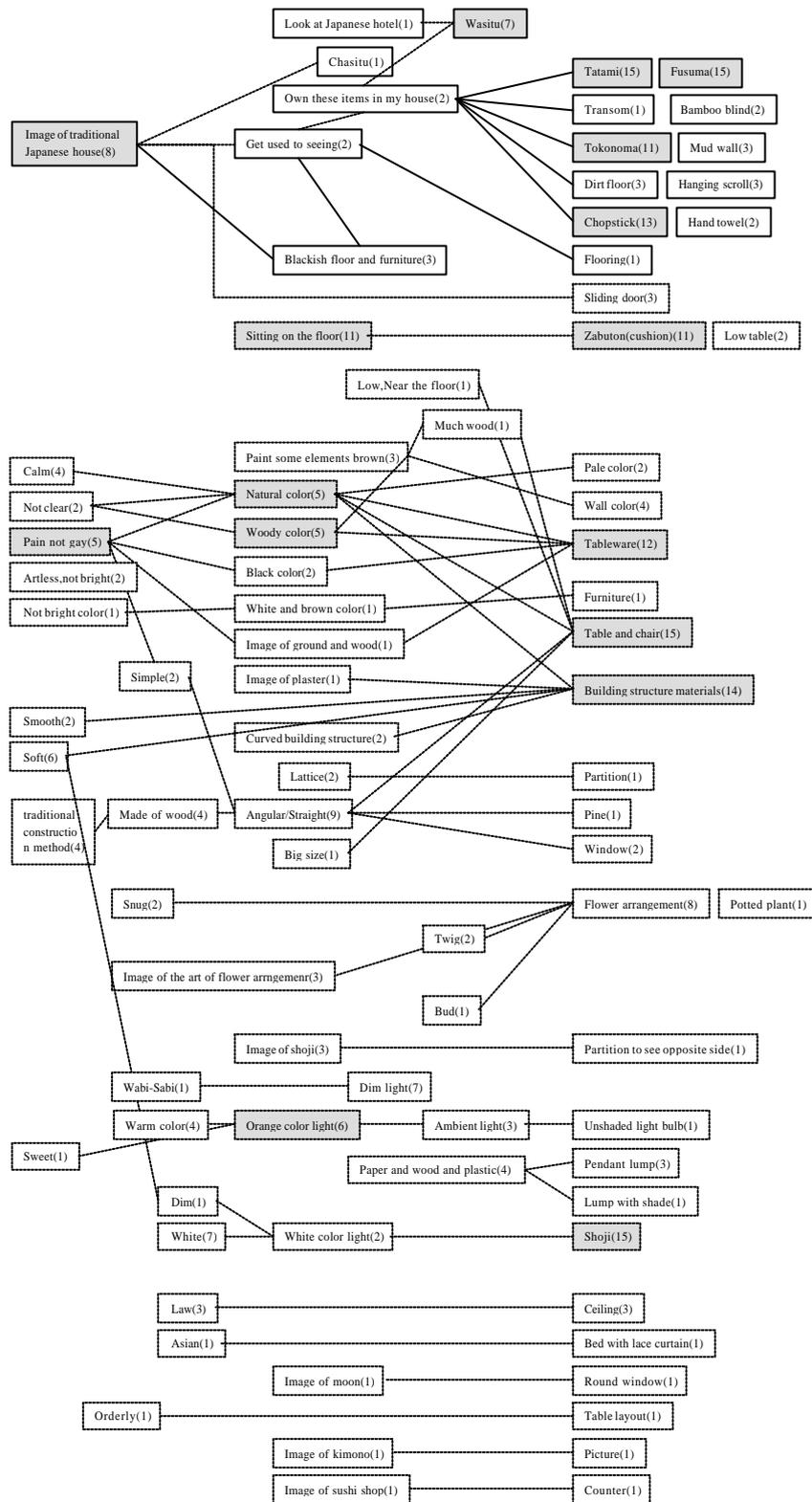


Fig-4 Evaluation structure of the Japanese style

4.2.2 Evaluation structure of the Western style

Next the evaluation structure of the Western style is explained. Three evaluation structures giving the impression of the Western style are identified (Fig-5).

1) Interior elements used in Europe originally

Interior elements used in Europe originally are associated with the impression of the Western style. A brick building, a curtain, a carpet, a tablecloth and a fork are examples.

2) Feeling bright and gay

When there are many interior elements in bright colors, the subjects feel the interior space is bright and gay, and they associate it with the Western style.

3) Form and material in the Western style feel

The subjects see tables and chairs with an organic-curve design as associated with the Western style. So do the subjects when they see windows, tables and chairs decorated or windows and tables made of stone and metal. When there is a big window and plants of sunlight in the room, they get the impression of the Western style.

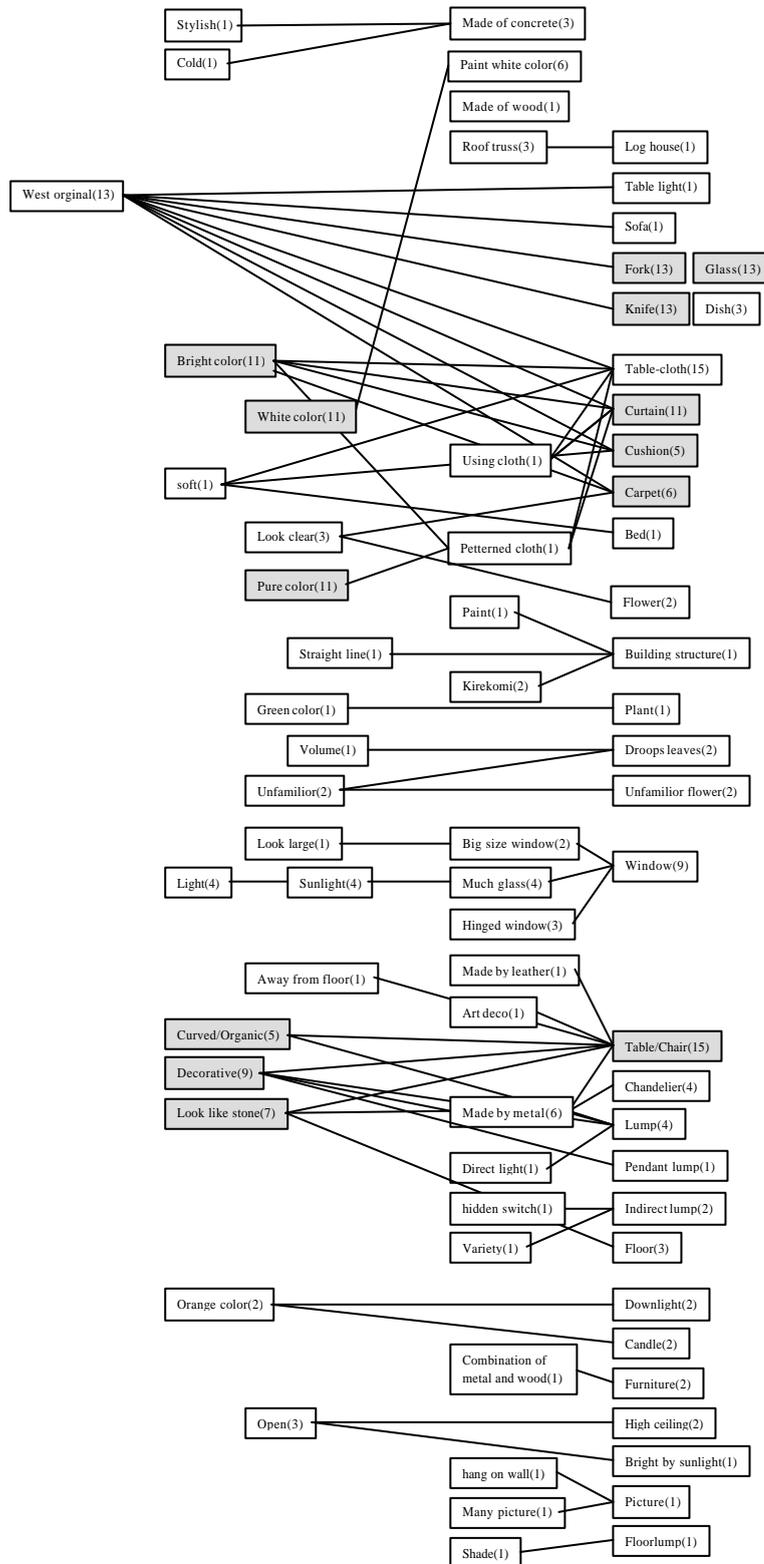


Fig-5 Evaluation structure of the Western style

5. Compound effect of interior elements

We do get an impression from one single interior element. In addition, interior elements influence each other. It is possible for the compound effect of two or more interior elements to induce an impression.

It is difficult to identify the compound effect with the diagram used in the evaluation grid method. So, an attempt is made to do this with the rough sets theory³).

5.1 Method

It is thought that the rough sets theory is a good method to analyze such compound effect.

The two typical samples in each group are graded in terms of seven ranks (from Japanese style to Western style) by 37 subjects. The result is analyzed with the rough sets theory and the effect is identified. The seven ranks are changed to four ranks when using the rough sets theory. (The first rank and the second rank are merged. The sixth rank and the seventh rank are merged.)

A covering Index (CI) is then calculated with the formula below:

CI=the number of sample photographs showing the combination of the same interior elements/the number of samples to be evaluated in the same evaluation.

(0 ≤ CI ≤ 1)

The Covering Index (CI) score of an interior element is the highest (CI=1) when it has total influence in inducing an impression. The Covering Index (CI) scores of an interior element is high (CI<=1) when it has strong influence in inducing an impression. The compound effect of some interior elements is calculated at the same time. The interior elements included in the calculation are those referred to by the subjects and extracted with the evaluation grid method (Table-1 Interior elements, Table-2 data sample).

Floor material	tatami	F1	Material of table top	wood	T1
	wood	F2		stone	T2
	carpet	F3		tablecloth	T3
	stone	F4	Form of table	straight	c1
A ratio of floor space on a photograph	1 – 5 %	a1		organic	c2
	6 – 15 %	a2	Layout of table	plan 1	p1
	16 – %	a3		plan 2	p2
Wall material	Juraku mud	W1	Sitting style	floor	f1
	mud	W2		chair	f2
	wood	W3	Kind of seat	zabuton	S1
	stone	W4		legless chair	S2
	brick	W5		wood chair	S3
	concrete	W6		upholstered chair	S4
	cloth	W7	Form of chair	straight	d1
	other	W8		organic	d2
A ratio of wall space on a photograph	1 – 15 %	b1	Material of window	shoji paper	O1
	16 – 30 %	b2		glass	O2
	31 – %	b3		other	O3
Sunlight	full	s1			
	nothing or little	s2			

Table-1 Interior elements

	Floor		Wall		Table			Seat			Window		Evaluation
	Material	Space ratio	Material	Space ratio	Material	Form	Layout	Style	Kind	Form	Material	Sunlight	
Sample 1	F3	a1	W7	b2	T3	c1	P2	f2	S4	d2	O2	s1	4
Sample 2	F1	a3	W8	b2	T1	c1	P1	f1	S1	d1	O3	s2	1
Sample 3	F1	a2	W7	b2	T1	c1	P1	f1	S1	d2	O3	s2	1
Sample 4	F1	a3	W1	b2	T1	c1	P1	f1	S1	d1	O2	s2	1
Sample 5	F2	a2	W7	b3	T1	c1	P1	f2	S4	d1	O3	s2	3
Sample 6	F1	a3	W1	b3	T1	c1	P1	f1	S1	d1	O1	s1	1
Sample 7	F4	a2	W7	b2	T3	c1	P2	f2	S4	d1	O2	s1	4
.....										
.....										
.....										
Sample 28	F3	a1	W5	b1	T3	c1	P2	f2	S4	d2	O2	s1	4
Sample 29	F4	a1	W8	b3	T3	c2	P2	f2	S3	d1	O2	s1	4
Sample 30	F2	a2	W6	b2	T3	c1	P2	f2	S3	d1	O2	s1	3

Table-2 Input Data on Rough sets theory

5.2 Result

The compound effect is calculated with the rough sets theory. The Covering Index (CI) is presented according to the scores (Table-3). The compound effect is explained according to the Covering Index (CI) score for each impression.

1) Covering Index (CI) on the impression of the Japanese style

Japanese cushion<S1> as an individual item is given a higher score by many of the subjects. Also, there is the same tendency for sitting on the floor<f1>. Many of the subjects presumably associate the Japanese style with Japanese cushions (Zabuton) <S1> and the practice of sitting on the floor<f1>. Tatami<F1> and plastered walls<W1> combined with other interior elements get a higher score. These elements have much influence when combined. The absence of sunshine<s2> has an influence when combined with other interior elements.

2) Covering Index (CI) on the mild impression of the mild Japanese style

The "No sunshine<s2>" feature is identified in the same way. It is different from the feature "sitting on a chair"<f2>. Syouji<O1> and plastered walls<W1> combined with other interior elements are found to have a higher score. Both interior elements compose the vertical plane. Therefore, these elements have an influence when combined together. Juraku mud walls<W1> combined with other interior elements are found to have a higher score.

3) Covering Index (CI) on the impression of the mild Western style

Wood flooring<F2> when combined with other interior elements is found to have a higher score. Other elements don't have much influence, according to the Covering Index (CI).

4) Covering Index (CI) on the impression of the Western style

A glass window<O2> and sunshine<s1> have an influence when combined together. The combination is found to have a higher score. Also, sitting on a chair<f2> when combined with other interior elements is found to have a higher score. Stone flooring<F4> as an individual item is identified. Vinyl cloth wall<W7> when combined with other interior

(1)Japanese style

Interior elements	CI	Interior elements	CI
S1	0.83	S1	1.00
F1s2	0.83	F1s2	0.80
f1s2	0.67	f1s2	0.80
F1a3	0.50	F1a3	0.60
a3f1	0.50	a3f1	0.60
F1a2	0.50	F1O3	0.40
F1b3	0.50	O3f1	0.40
P1T1b2s2	0.50	F1a2	0.40
F1O3	0.33	a2f1	0.40
O3f1	0.33	W1a3	0.40
a2f1	0.33	W1s2	0.40
W1a3	0.33	F1b3	0.40
W1b3	0.33	W1b3	0.40
b3f1	0.33	b3f1	0.40
O1b3	0.33	T1a3b2	0.40
P1W1s2	0.33	T1W8	0.20
O1P1a2	0.33	W8c1	0.20
O1P1s2	0.33	W8a3	0.20
T1a3b2	0.33	P1W8	0.20
T1W8	0.17	W8f1	0.20
W8s2	0.17	O1a2	0.20
F1W8	0.17	F1W7	0.20
F1W7	0.17	W7f1	0.20

(2)mild Japanese style

Interior elements	CI	Interior elements	CI
O1W1b2	0.75	O1f2	0.75
O1b2d1	0.75	O1W1b2	0.75
W1f2	0.50	O1a2d1	0.75
W1a2b2	0.50	O1b2d1	0.75
O1W1a2	0.50	O1d1s2	0.75
O1W1s2	0.50	W1f2	0.50
O1b2f2	0.50	O1S4	0.50
F2S3a2	0.50	O1W1s2	0.50
P1S3s2	0.50	W1a2b2	0.50
a2b2d1s2	0.50	O1W1a2	0.50
S2	0.25	S2	0.25
F3s2	0.25	P2W1	0.25
P2W1	0.25	P2T1	0.25
P2T1	0.25	O1P2	0.25
O1P2	0.25	P2s2	0.25
P2s2	0.25	F3W1	0.25
F3T1	0.25	S4W1	0.25
S4W1	0.25	F3T1	0.25
F3W1	0.25	F3O1	0.25
F1a1	0.25	F1a1	0.25
W1a1	0.25	W1a1	0.25
T1a1	0.25	T1a1	0.25
a1f1	0.25	a1f1	0.25

(3)mild Western style

Interior elements	CI	Interior elements	CI
O3f2	0.44	F2b2	0.57
F2a3	0.44	F2O2	0.57
F2T1	0.33	F2S4	0.43
F2S4	0.33	F2a2	0.43
F2O3	0.33	F2T3	0.43
F2O2	0.33	F2s1	0.43
T3a3b2c1	0.33	P1S4b2	0.43
P1T3a3b2	0.33	T3a3b2c1	0.43
T3a3b2d1	0.33	T3a3b2d1	0.43
a3b2c1f2	0.33	P1T3a3b2	0.43
P1a3b2f2	0.33	a3b2c1f2	0.43
a3b2d1f2	0.33	P1a3b2f2	0.43
S5	0.22	a3b2d1f2	0.43
F2W7	0.22	W2	0.29
F2b3	0.22	S4s2	0.29
F2s1	0.22	F2W7	0.29
O3W7	0.22	P1a2b2d1	0.29
F2W3	0.22	O2P1a2b2	0.29
W3a3	0.22	a2d1f2s2	0.29
O3W3	0.22	T1a2f2s2	0.29
S3W3	0.22	a3b2c1s1	0.29
O3S3	0.22	P1a3b2s1	0.29
W7f2s2	0.22	a3b2d1s1	0.29

(4)Western style

Interior elements	CI	Interior elements	CI
O2f2	0.89	f2s1	0.93
f2s1	0.84	O2s1	0.93
O2s1	0.84	O2T3	0.86
O2T3	0.74	T3s1	0.86
T3s1	0.74	W7f2	0.64
W7f2	0.58	F4	0.57
F4	0.47	T3W7	0.57
P2T3	0.47	S4s1	0.57
O2P2	0.47	O2W7	0.57
P2s1	0.47	b2s1	0.57
O2S4	0.47	W7s1	0.57
O2W7	0.47	P2	0.50
W7s1	0.47	S4T3	0.50
T3W7	0.47	W7d1	0.43
S4s1	0.47	a1	0.36
S4T3	0.37	S4W7	0.36
W7d1	0.37	F3	0.29
O2a2	0.37	d2f2	0.29
O2S3	0.37	a2s1	0.29
S3s1	0.37	O2S3	0.29
T3a1	0.32	S3s1	0.29
a1f2	0.32	O2a3f2	0.29
S4W7	0.32	d2s1	0.21

Table-3 Covering Index (example: Subject 1 and Subject 2)

elements is found frequently. Tablecloth<T3>, upholstered chair<S4> and furniture layout<P2> combined with other interior elements are found frequently.

As mentioned above, it is assumed that each interior element has more influence when combined with other interior elements.

6 . Conclusion

In this paper, it is shown that the impressions of the Japanese style and the Western style are influenced by interior elements that compose the interior space. The relations between the impressions and the interior elements are identified. And it is found that these interior elements have more influence when combined. A compound effect is produced two or more interior elements operate to induce a similar impression. Designers who design interior spaces according to this result will be able to minimize the difference between the design image and the need impression. It will be more effective for designers to design jointly with their clients. This paper studies only the impressions of the Japanese style and the Western style. I think that it is possible to clarify the relation between another impression and the relevant interior elements with the same method. I think that there is a need to increase the number of subjects and the samples.

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