DATA ANALYSIS OF REGIONAL AESTHETIC FACTORS ON "COLOR-SCAPE" IN JAPAN

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INTRODUCTION

Each region of Japan has beautiful landscapes that are unique to that region. In recent years, however, many of these landscapes have been marked by disorderly colors and are not beautiful.
In this study, we examined aesthetic factors of the regional features of photo images of three towns using the CSAJ's data library（'Beautiful Colorscape in Japan'）.

Website of the
'Beautiful Colorscape in Japan'

ANALYSIS OF AESTHETIC FACTORS

< Methodology >

- 3 towns in Aichi
- 6 photo images from each towns
- 20 pairs of antonym adjectives (Table1)
- Semantic Differential (SD) Method（5 steps）
- Principal Component Analysis (PCA).
- 28 respondents（color experts）

Table 1 Pairs of adjectives

評価語対（antonym adjectives）		
1	暗い（dark）	明るい（bright）
2	くすんだ（dull）	鮮やか（vivid）
3	コントラストのない（low-contrast）	コントラストのある（high-contrast）
4	細かい（fine）	粗い（rough）
5	軽快な（light）	重厚な（heavy）
6	単純な（simple）	複雑な（complex）
7	軟らかい（soft）	硬い（hard）
8	涼しい（cool）	温かい（warm）
9	閑静な（quiet）	賑やかな（lively）
10	静的な（static）	動的な（dynamic）
11	優しい（gentle）	力強い（strong）
12	形式のある（formal）	自由な（free）
13	穏やかな（calm）	活気のある（vibrant）
14	雑然とした（cluttered）	整然とした（orderly）
15	古びた（old）	新しい（new）
16	画一的な（standard）	個性的な（unique）
17	伝統的な（traditional）	先進的な（advanced）
18	自然な（natural）	人工的な（artificial）
19	美しくない（unbeautiful）	美しい（beautiful）
20	好みでない（unfavorite）	好みである（favorite）

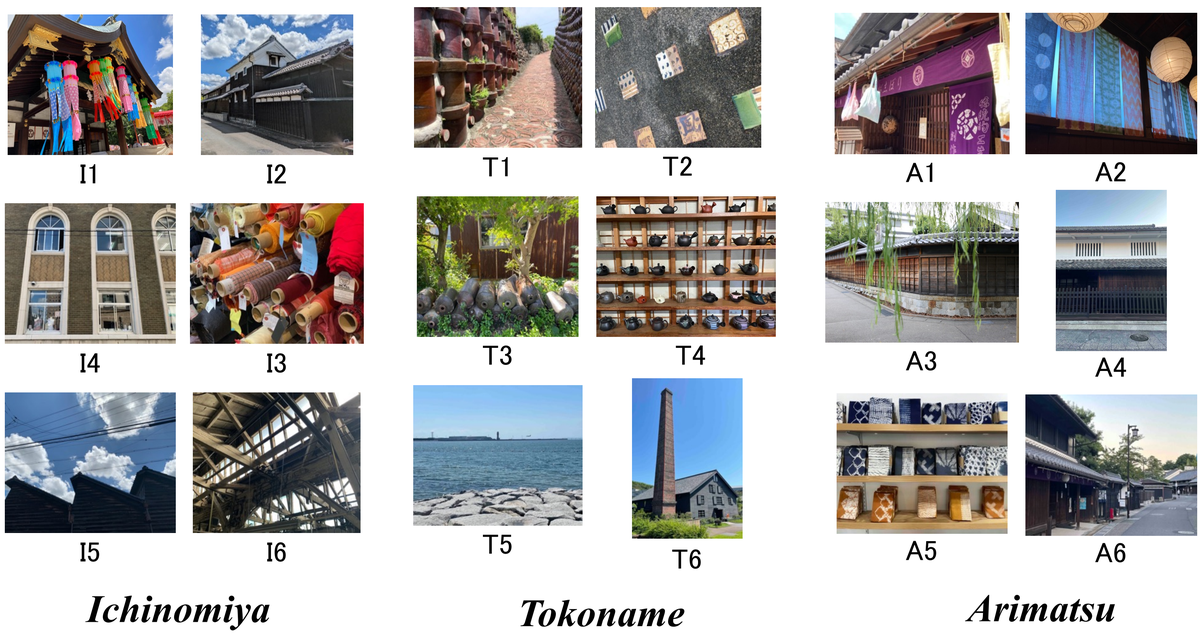

Figure 1: Photo images of townscape

<Result>

- Differences in aesthetic factors were observed in different regions.

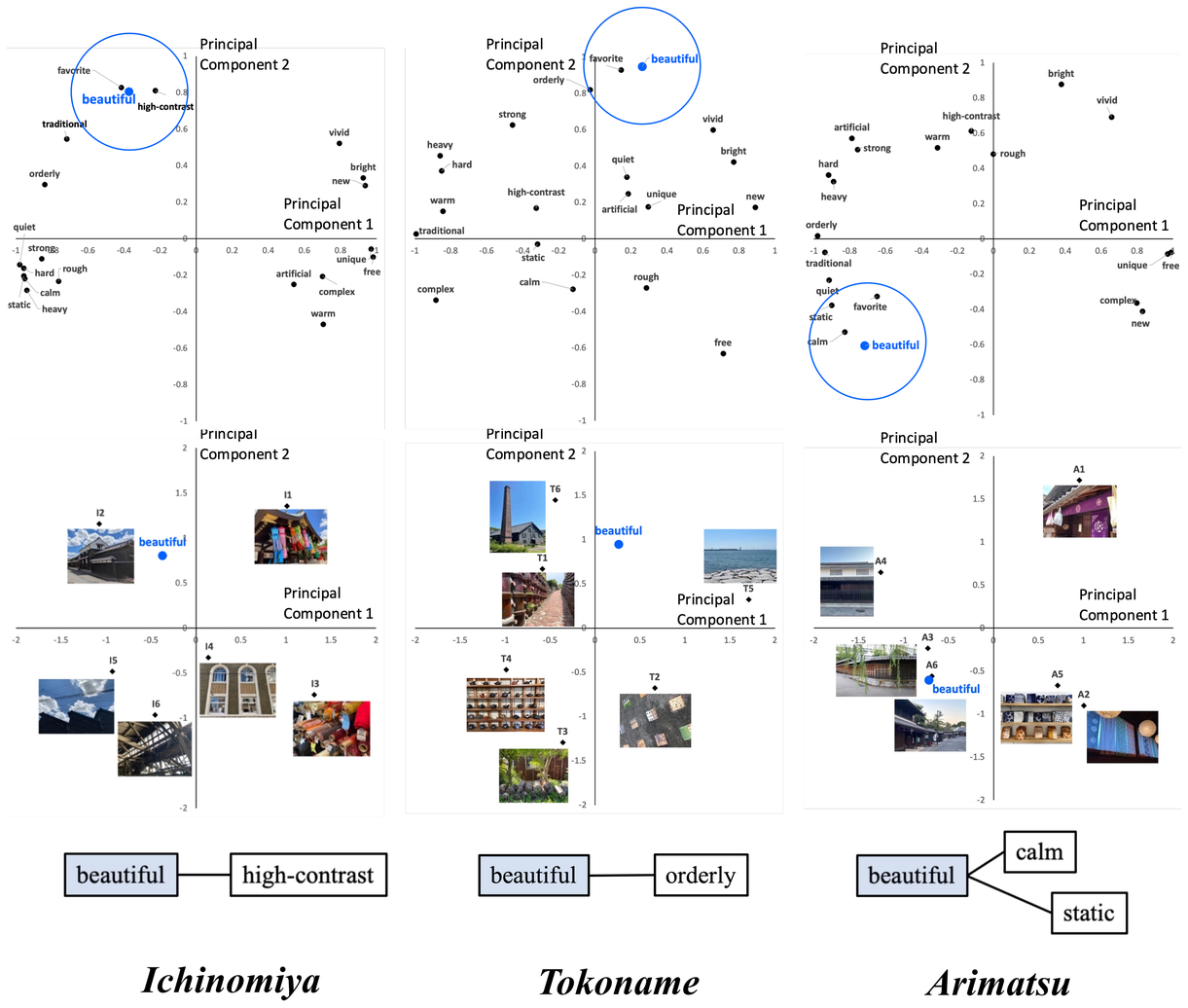

Figure 2: PCA score diagrams（with photo images）

ANALYSIS OF COLOR FACTORS

< Methodology >

- Symbolic colors of each photo image are visualised in three steps.

① RGB values of all pixels on the photo image are converted to L*a*b* values and considered in 3-D space, as in the figure.
② 3-D data are summarized using k-means clustering.
③ Ratio of the number of pixels in the same cluster is represented as a color palettes in descending order.

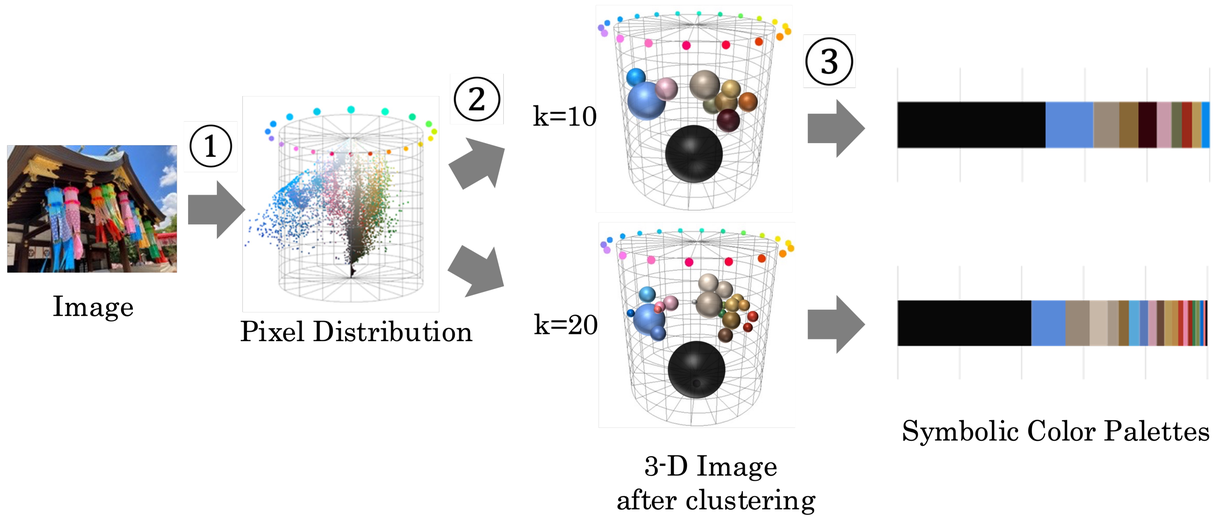

Figure 3: Method to derive symbolic colors from each photo image

<Result>

- Colder, less colorful color palettes tend to be located near beauty.
- Overall color ratio is high in monotones such as black, white, and gray.

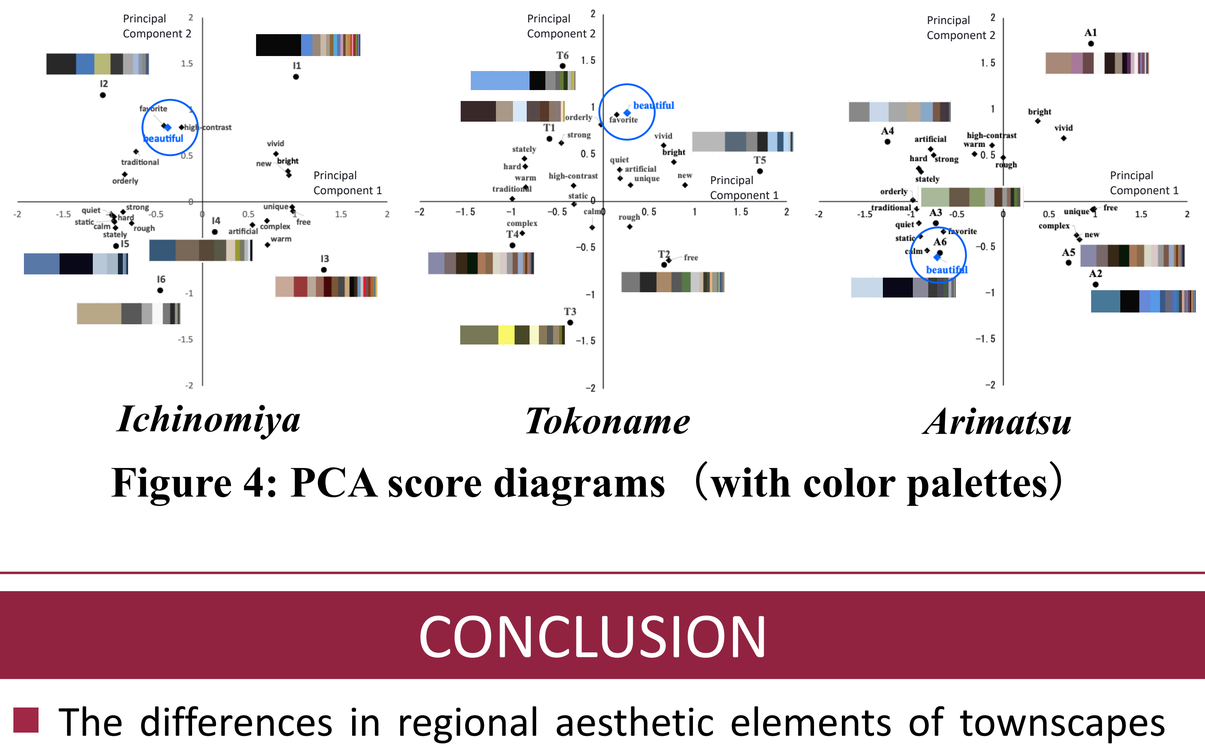

Figure 4: PCA score diagrams（with color palettes）

CONCLUSION

- The differences in regional aesthetic elements of townscapes in three towns were compared using structural analysis by PCA and color pallets, and it became clear that the psychological factors and color characteristics affecting aesthetic appeal differed among the towns.
- In the future, we will try to extract aesthetic factors from text information using AI.

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