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Color of Chiang Mai Historical City**Abstract**

Chiang Mai is located in the northern region of Thailand. It has a history of more than 700 years old. From that very long past, Chiang Mai possesses a lot of culture including building characteristics, temple styles, and the shape of city. These things turn to the city's identity. One important identity is color. The color of Chiang Mai City, the old city in the rectangular moat, is one of the questions - how to develop such color. It is known that the color of material is the color of building and it is perceived that it is the color of the city. Moreover, the color of material is the color of nature. The assumption can be proofed by the study of photographs, pictures, and interviews. The suggestions from this article will be to use color of material in pale or fade tone.

Subjects: Colors, Chiang Mai Historical city

1. Introduction

Chiang Mai, located in the northern region of Thailand, has a very long history for more than 700 years old. The rich of Lanna culture, the culture of Chiang Mai, includes famous celebration of many festivals such as Loy Kratong and Songkran. The charming of natural environment of Chiang Mai is also well-known by its mountains surrounded and its cooler climate than other regions of Thailand. Since 50 years ago, Chiang Mai has rapidly developed and turned to a centre of many activities. This may bring a conflict between development and conservation. For instances, regarding building-use, some buildings with functions of entertainment, such as pubs or bars, should not be closed to temples or religious places. According to physical aspects, the identity of buildings in Chiang Mai Historical City, should have Lanna cultural identity.

To understand identity is not easy to describe. For simple explanation, identity of Lanna culture is not only Ka Lare, the cross sign over the end of gable, but it is composed of many things, including proportion, shading and void, and many details. Color is one of an important identity because color of historical city, the vernacular color, appears as its reflection from surrounding, sociality and geography. For examples, the color in Venice, Barbados, Copenhagen and Kyoto, may response from different conditions. However, it has the same way to percept from the vision. After seeing, visual perception will occur. The quality of visual perception depends on quality of light. Therefore, the physical characteristics of cities will depend on the site or location, the natural or environment and the quality of light. In the dimension of color, hue, a gradation of a color, and intensity, the strength or sharpness of a color, are very important compartments of color.



Fig.1 Chiang Mai Historical City Location

2. Chiang Mai Historical city

Chiang Mai is in the northern region of Thailand. It is far away from Bangkok for almost 700 kilometers up to the north. The natural land form of Chiang Mai is in a big basin, Chiang Mai-Lampoon Basin, which is enclosed by high mountains. The famous cultural attraction is in the historical city of Chiang Mai, where there are more than a hundred temples. Chiang Mai Historical City has an area about 1.6 kilometers by 1.7 kilometers. Its shape is almost square. It is located between Doi Suthep, Suthep Mountain, on the west side, and Ping River, on the east side and set on the latitude of $18^{\circ}48'00''\text{N}$ and the altitude about 300 meters above the mean sea level. The city has 5 ancient doors, 4 earthen corners, and surrounded by moats.

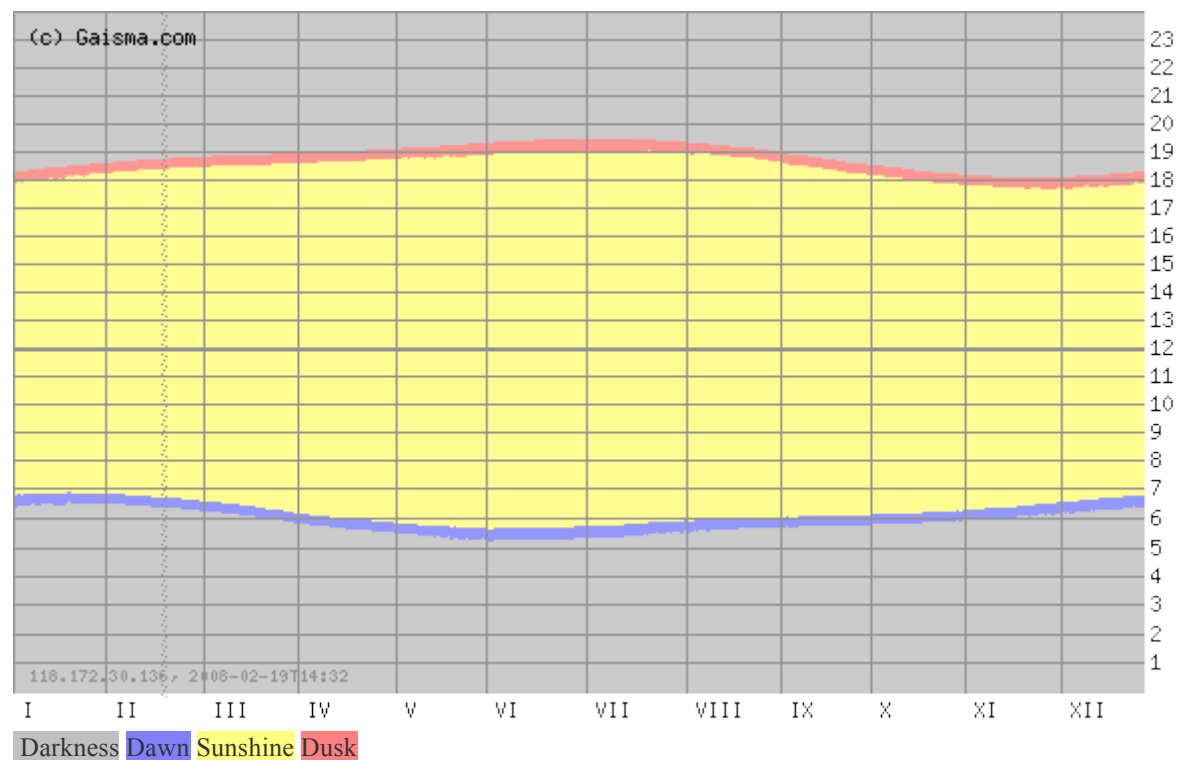


Fig.2 Chiang Mai, Thailand- Sunrise, sunset, dawn and dusk times, graph

Figure Two shows the time of sunrise and sunset in a year. In Chiang Mai, an average time of sunshine is more than 10 hours a day. For visual quality, the need to see color in a sunshine atmosphere is less than other places that have less sunshine such as in Scandinavian countries. For this reason, the color in Chiang Mai Historical City can be in fade or pale tones.

Table 1 Chiang Mai, Thailand- Clearness

| Variable | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII |
|------------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Clearness, 0 - 1 | 0.64 | 0.66 | 0.62 | 0.59 | 0.50 | 0.42 | 0.38 | 0.39 | 0.42 | 0.47 | 0.52 | 0.59 |

Table One shows an average time of clearness sky ratio in a year. The average of clearness ratio is more than 0.5. This condition can be explained that Chiang Mai has a good quality of sunshine, not too much cloudiness. It is considered that pale colors are suitable for colors of Chiang Mai Historical City.

3. The study

Methodologically, this article uses architectural students as the samplings of the study. These students are very important people for the near future because they will turn to be a young generation of architects who will affect building designs. The lecture for improving their understandings of colors in a historical city was given to these students before they started their survey. For this article, the centre of Chiang Mai Historical City is focused and four groups of students conducting a survey on this area are selected.

Group 1: Improving public space

The students of Group One have a concept of improving public space. They analyze data from ancient pictures. In the past, buildings were settled along a road, by continuity, without fences. But now, there are fences that appear unrelated to the road which is a public space. Therefore, the idea of this group is to bring back the feeling of public space by using colors.



Fig.3 Photos of Chiang Mai in Ancient Time

From their survey, the collection of building use, the fronts of building setback, and the color of each building are their interest and provide their schematic color. It is suggested that the colors of temple, religious places and conservation buildings should not be changed. However, the color of fences should be changed to look friendlier to public space. Very strong colors, such as deep blue or yellow, should be changed or faded. Some details of buildings such as signage should be concerned for color. The space in front of buildings should be provided to keep the continual line along the road.

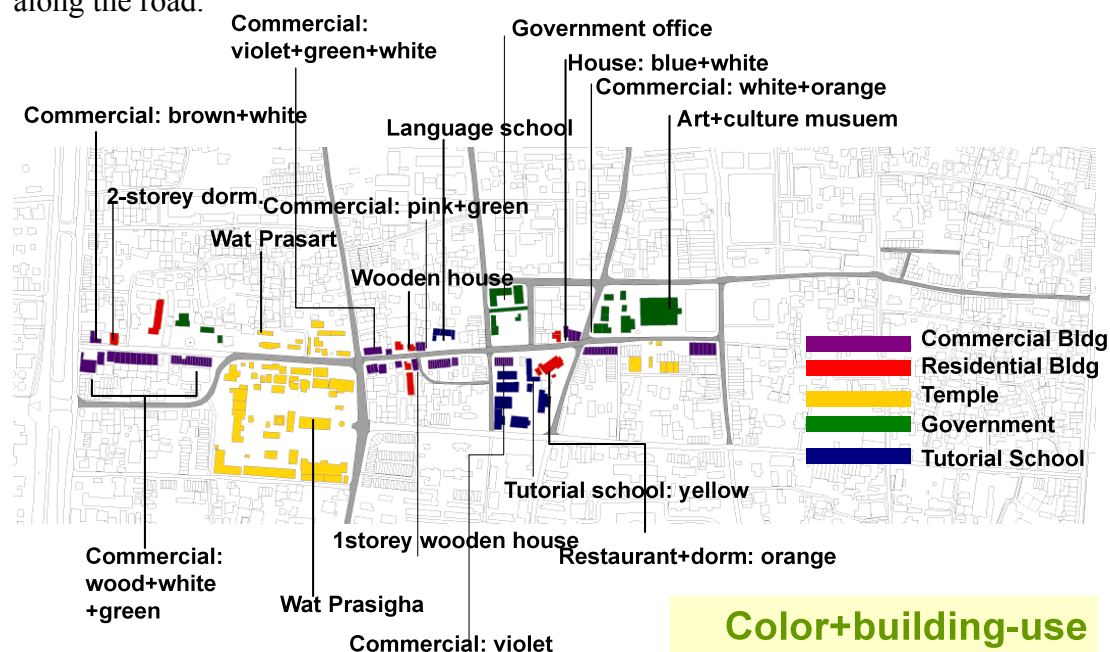


Fig.4 Show the Color and Building Use



Fig.5 Show Open Space in front of Building

The result of study recommends colors as follow,

1. Dark grey
2. Pale grey
3. Brown
4. Pale brown
5. Pale yellow

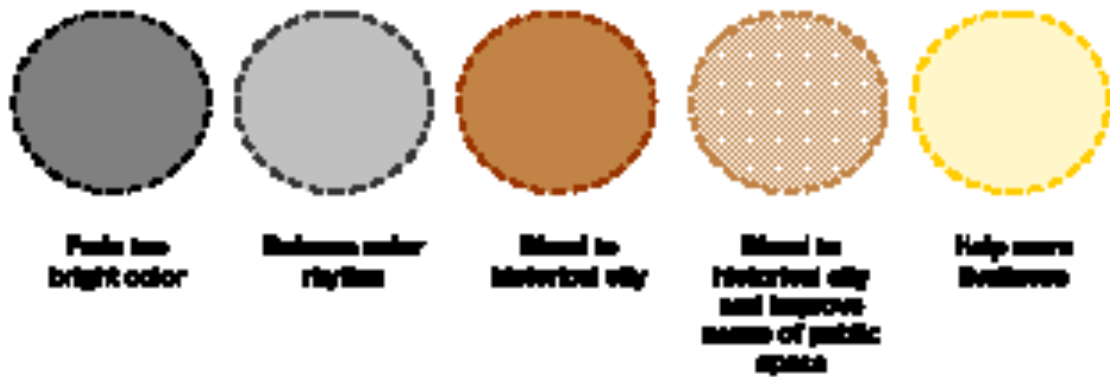


Fig.6 Colors Suggestion from Group 1



Fig.7 Color Replacement Simulation

Group 2: Shade and time

The shade and time is corresponded from the sun light that shines to objects. According to an orientation of Chiang Mai Historical City, at the center of the city there is a main axis road which links the east and the west. Therefore, this road is very interesting to study shading. The students of this group choose Raj Damnern Road, the road at the center of the city, as a study area.

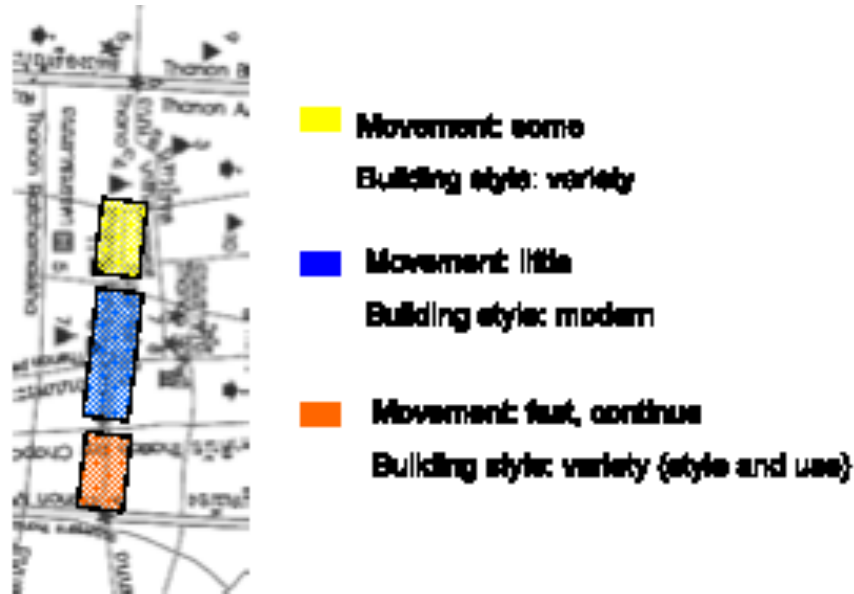


Fig.8 Analysis Activity Movement and Building Style



Fig.9 Analysis Shade and Time

They take pictures all day and all night for signifying shade, reflection, and activity movement. Moreover, they survey building uses along this road and result in a three-zone category. First is the area of moderate activity movement and different building uses. Second is that of the very few activity movement but very strong characteristics of buildings style. The last zone has fast and continual activity movement and a lot of styles and building uses.

From these photos, the color suggestion is corresponded to zoning as presented below. In the first zone, the color should be pale brown because of a respect to a religious place, Wat Prasigh (Prasigh temple). In the second zone, an egg-shell color should be considered instead of very white or very bright color. These colors bring harmonized feelings to nearby sites and the historical city. In the third zone, the area next to Ta Pae Gate, the color of material (earthen or clay brick color) should be used because of the reflection from Ta Pae Gate.



Fig.10 Colors Suggestion from Group 2

Group 3: Reflection

The word “reflection” comes from the method used by the students of this group because they choose the colors that reflect from landmarks. The reason how to pick up landmark is very important. In a historical city, the domain places are religious places and main components of the ancient city. On Raj Damnern Road, Pra Sign Temple and Ta Pae Gate are deemed to be landmarks.

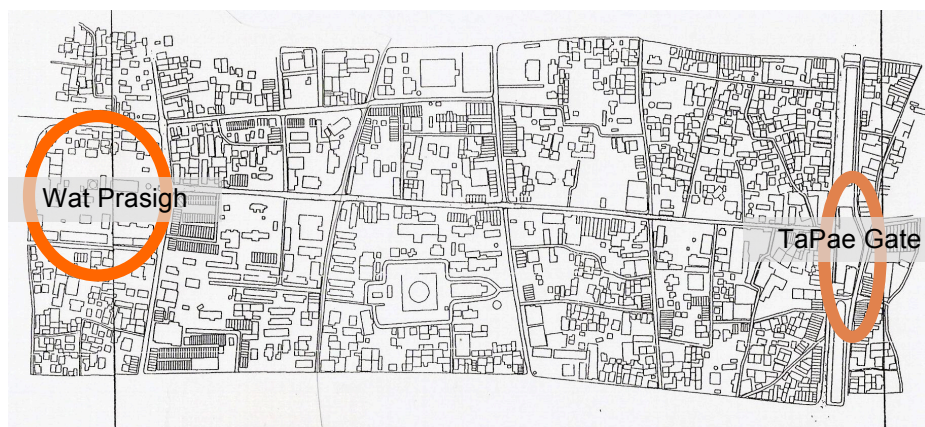


Fig.11 Location of Landmark

The colors of these places are suggested from the color of material of each place and hence should be the color of buildings nearby. Near Pra Sign Temple, brown, pale brown, egg-shell, and white, are suggested. Near Ta Pae Gate, brick color, pale brown, and brown are proposed.

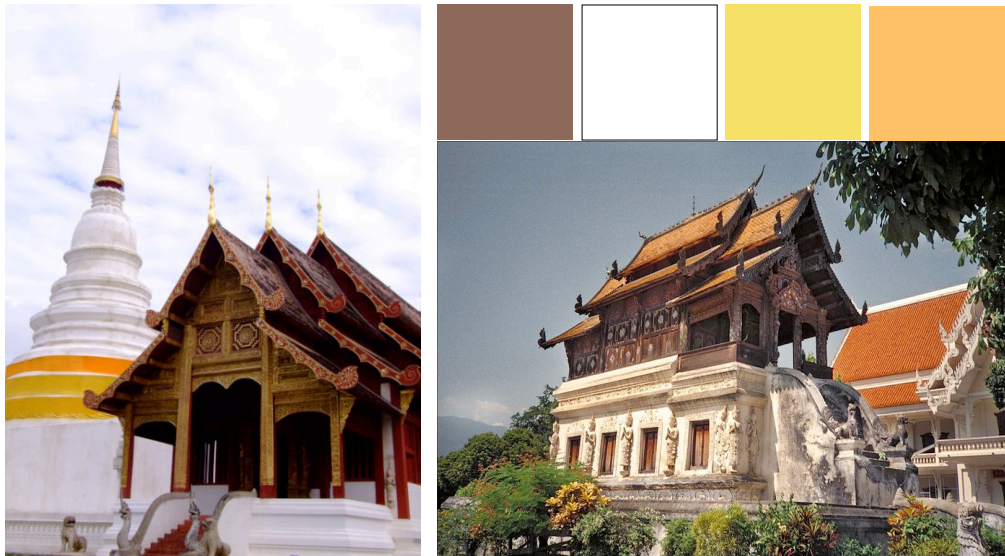


Fig.12 Colors Suggestion near Pra Sigh Temple

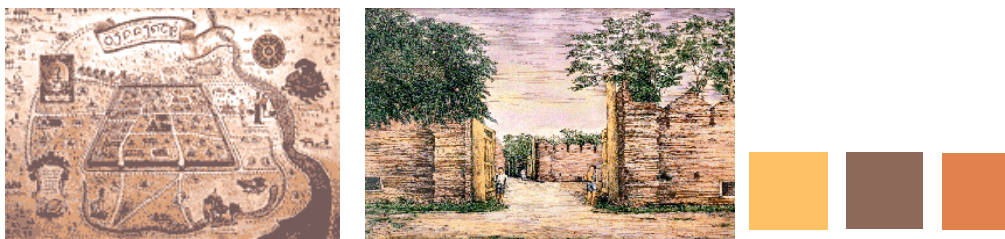


Fig.13 Colors Suggestion near Te Pae Gate



Fig.14 Colors Replacement Simulation of Group 3

Group 4: Velocity and perception

Regarding an ability of the eye perception in different speeds, it is better in a low speed than in a fast speed. From this theory, the students in this group are interested in the correlation of speed and color of building. Meanwhile, the speed of vehicle and the danger from accidents at junctions are their rationale. This group aims to find the colors to be used on the buildings near junctions for reducing the speed.

From supporting information to the conclusion, color for buildings near junctions should be color of material but more hue and intensity than building on both sides of road. Near junctions, which have most volume of traffic but no have traffic light, will be first decision.



Fig.15 Buildings near Junctions

4. Conclusion and Suggestion

In conclusion, according to the method of the study by each group, it is appropriate that the result from each group can be used as guidelines for a historical city development and thus this article may be useful. However, there is weakness when this study compares with others which use a serious research method. Nonetheless, the freedom of thinking from a young generation is excused from the beginning of this study and its results are not too bad. It is suggested that more studies of the proportion of colors of buildings that still has a perception of a historical city should be furthered. For preventing the boring dullness of colors, if the colors of buildings

are the same, there should be more studies about the variety of building details. Furthermore, each country has local color psychology. For instances, in China red means lucky, but in other countries red means danger or unsafe. It is better to study color psychology of local people. The results of this study accept the colors of material in pale or fade, especially in a shiny city as Chiang Mai.

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