Colour Change of The Ten Symbols of Longevity in the Late Joseon Dynasty

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ABSTRACT

The Ten Symbols of Longevity (*Sibjangsengdo*) is an auspicious painting that expresses wishes for long life and wealth. The origin of *Sibjangsengdo* is unknown, but the literature suggests that it has been passed down as a custom of *Sehwa* (paintings given to subjects at the beginning of the year by a king) since the end of the *Goryeo* Dynasty (14C). Most of the extant *Sibjangsengdos* were painted in the late *Joseon* Dynasty (18C-19C). The paintings of the early *Joseon* Dynasty (14C) were based on the tradition of *Goryeo* painting and combined with the unique aesthetics of the *Joseon* Dynasty, but due to the Neo Confucian attitude to life, which was the founding principle of the *Joseon* Dynasty, the paintings were restrained in their expression of colour. However, in the late *Joseon* Dynasty, changes in social ideas such as *Silhak* (Realist School of Confucianism) led to a different colour change. The purpose of this study is to examine *Sibjangsengdo* Paintings, known as 'Type 1', 'Type 2', and 'Type 3' in art history, from the perspective of *Silhak* and the resulting changes in pigments. Type 1 is the oldest of the four. Type 2 is Western-influenced and uses Western synthetic blue and green. Type 3 is much different in composition and colouring from Type 1 and Type 2, with the colour of blue being distinct. The colours of the digitised symbols of each type of *Sibjangsengdo* were estimated using the NCS index. The RGB and L*, a*b*, and C* values of the colours were estimated using CIELAB. With the collapse of the ruling hierarchy in the late *Joseon* Dynasty, paintings by Court Painter were also decorated in the dwellings of the common people, and as Western synthetic pigments replaced traditional pigments, the restrained colours of the paintings gradually gave way to more saturated colours due to the diversity of pigments, especially in the blues and greens. Azurite and malachite were replaced by Western synthetic pigments such as Prussian blue and emerald green, which produced more vibrant colours than in previous paintings.

KEYWORDS The Ten Symbols of Longevity *(Sibjangsengdo*), Colour change, Neo-Confucianism, *Silhak* (*Realist School of Confucianism*), Western artificial pigments, vivid

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1. Introduction

1.1 *Background and purpose of the study*

The Ten Symbols of Longevity (*Sibjangsengdo*) is a painting that depicts the desire for a long life. It has been the main subject of *sehwa* (paintings given by kings to their subjects at the beginning of the year) since the middle of the Joseon Dynasty. The ideological background of *Sibjangsengdo* was Taoism, a religion that promoted longevity. In court ceremonies and real life, Joseon looked to the mythical ideals of Taoism and Buddhism for royal security and the perpetuation of power, but the dominant ideology was Neo-Confucianism. The early Joseon Dynasty inherited the brilliant colours of Goryeo and Chinese painting but gradually became more subdued and restricted in the use of colour as the founding philosophy of neo-Confucian values was emphasised. However, in the later *Joseon Dynasty*, the influence of *Shillhak* led to the development of commerce, the formation of social capital, and the dismantling of the hierarchy, which encouraged the common people to take an interest in painting. As a result, the common people began to become the main agents of reception and production. At the same time, functional paintings by court painters also came to decorate the living spaces of the common people. The colour expression of religions such as Buddhism and Taoism, which had been practised since before the *Joseon* Dynasty, began to recover. *Sibjangsengdo*, which inherited the traditional techniques and styles of *Dohwaseo* (a government office that drew pictures required by the state during the Joseon Dynasty), also experienced changes in colour over time, just like general paintings.

To date, there has been a lack of specific colour analysis studies on these *Sibjangsengdos*. Based on previous research (Park, 2018), three representative types are known to the academic community among the extant late Joseon *Sibjangsengdos*. This study is about the changes in the composition and colour of *Sibjangsengdo* due to the emergence of *silhak* in the late Joseon Dynasty.

2. Types, components and pigments

2.1. *Types of Sibjangsengdo*

Joseon paintings are roughly divided into the early period (1392-1550), the middle period (1550-1700), the late period (1700-1850), and the final period (1850-1910) according to stylistic changes. The late *Joseon Sibjangsengdo* are divided into three types (See Figure 1). according to their pictorial characteristics (See Table 1). Type 1 is a relatively early form and reflects the characteristics of court painters in the middle *Joseon* Dynasty. The colours are less light and saturated than the other types. In the composition, the expression of waves is emphasised, cranes are represented only by white cranes, and white deer are also found only in this style. Type 2 is a typical *Sibjangsengdo* from the late *Joseon* Dynasty. Influenced by Western painting methods, it has a sense of space and perspective and is characterised by strong colouring with higher lightness and saturation than Type 1.

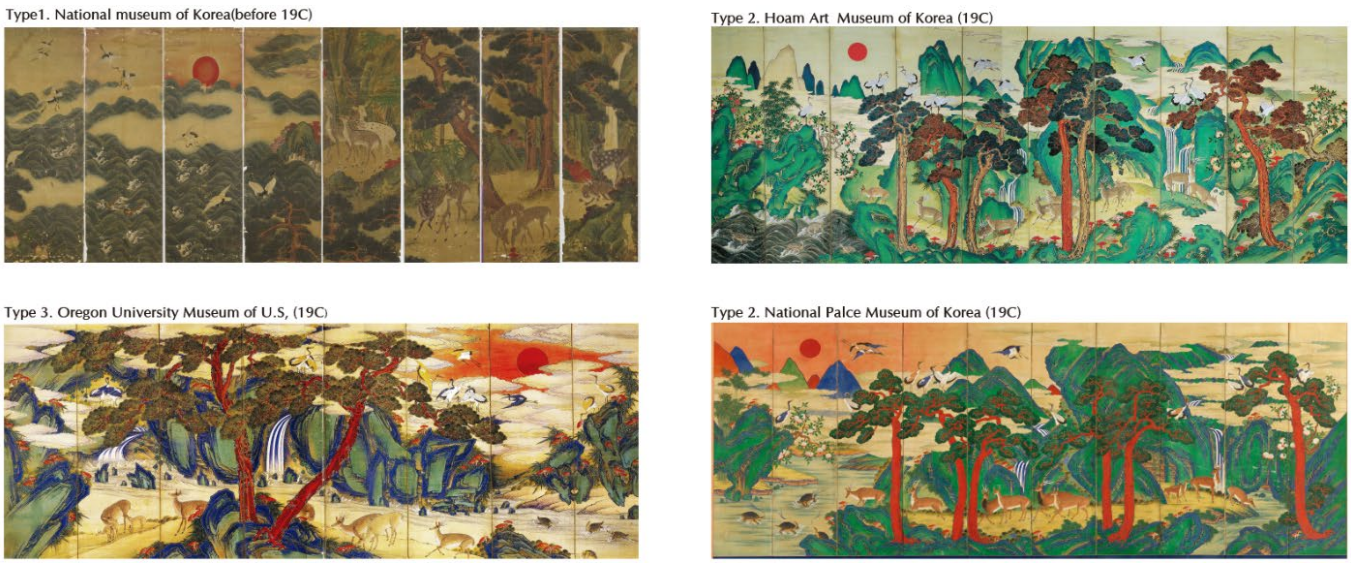

Fig. 1. Sibjangsengdo by Types. "This work was created by 'National Palace Museum of Korea' and used the 'Sibjangsengdo Folding Screen', which is open to the public as a type 1 public domain, and can be downloaded for free from 'National Palace Museum of Korea, https://www.emuseum.go.kr'. https://www.gogung.go.kr/"

	classification	Type1(unknown)	Type 2 (unknown)		Type 3(1880)
characteristics	possession	National Museum of Korea	Hoam Museum of Art(**H**)	National Palace Museum(**N**)	Oregon Univ. Museum of Art Collection, U.S.A.
	wave	Prominence	diminished	disappeared	disappeared
	peach	week expression	emphasised	emphasised	disappeared
	white deer	white deer	disappeared	disappeared	disappeared
	crane	white crane	white crane, blue crane, yellow crane	white crane, blue crane, yellow crane	white crane, blue crane, yellow crane
	colour	vert-blue	blue-green	increased use of blue	a deep blue
	tone	dark greyish,	deep	strong	vivid
	composition	Three god mountain	High mountains and deep valleys	High mountains and deep valleys	High mountains and deep valleys
	perspective		○	○	
	pigment	Malachite, azurite	Prussian blue	Malachite, Emerald green, Prussian blue	Malachite, Emerald green, Prussian blue

Tab. 1. Changes to the composition of Sibjangsengdo (Park, 2018).

It is dominated by greens and blues. There are three types of cranes: white cranes, blue cranes, and yellow cranes. Type 3 is the only one that can be dated (1800). The peach disappears and the rock colour is a reddish blue.

The important symbols of *Sibjangsengdo* are the sun, rock, crane, deer, bamboo, pine, *yeongji* (reishi mushrooms), and peach, with colour changes depending on the form (See Figure 2). The meaning of ten is not the meaning of a number, it has connotations of 'completeness', 'fullness', 'infinity', and 'eternity' throughout Eastern cultures.

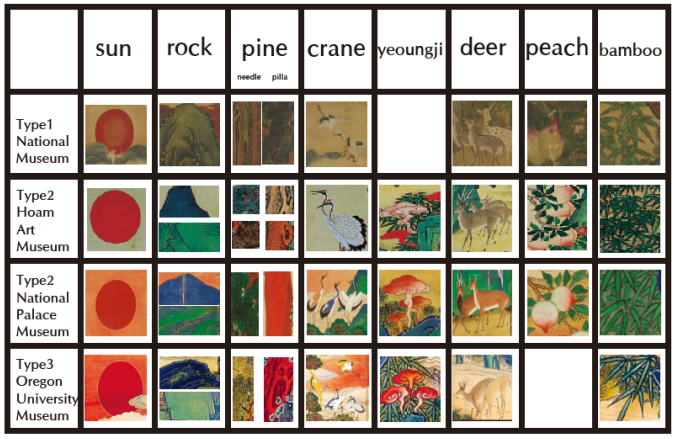

Fig. 2. Color changes of 8 important symbols.

Qin Shi Huang (the first emperor of China), who unified China in 221 BC, had over 3,000 concubines and was wealthy, but not immortal. He sent people to Korea and Japan because he heard that an island in the East Sea had a "magical mushroom" that, if placed on the face of a dead person, would bring them back to life. The mushroom mentioned in this story is the reishi mushroom. It's also said that the secret to *Yang Guifei's* (*Guifei* being the highest rank for imperial consorts during her time the fourth most beautiful woman in China, consort of the *Tang* Dynasty's Emperor *Xuanzong*) transformation into a beautiful woman was eating reishi mushrooms.

2.2. *Characteristics of pigments*

From ancient times to the late *Joseon* Dynasty, about 30 natural pigments were used in paintings, including malachite, azurite, jinsa, artificial pigment vermilion, and natural dyes. The mineral pigment malachite ranges from L*44.61 to 78.08, a*-19 to 40, and b*6 to 16 (Park, et al., 2015). Azurite is L*39.28, a*-2.97, b*-37.29 (Park, et al., 2023). The middle *Joseon* Dynasty was a time of recovery from war and frequent civil disturbances; however, natural pigments were scarce and could not keep up with the demand, so a mixture of dyes and traditional pigments was used. In the late *Joseon* Dynasty, western synthetic pigments such as emerald green and Prussian blue gradually began to be used. The greens became more vivid and the blues changed the angle of the colour from greenish blue to reddish blue (Lhi, 2024). Synthetic pigments were more saturated than traditional pigments and had better colour rendition and chromogenicity. They were widely used because they were less prone to cracking or peeling, not difficult to colour, and inexpensive. Western synthetic pigments gradually replaced traditional pigments (especially green and blue), and the traditional pigments of black, white, and red were used alongside other imported pigments.

2.3. *Joseon's social thought and colour painting*

The highly colourful Bukjonghwa (Northern landscape style) style was popular in the early Joseon Dynasty but gradually lost ground to Confucianism. However, the middle Joseon Dynasty paintings were painted in ink, avoiding colour, to emphasise the purity, virtue and steadfastness of the *Seonbi* (They were scholars during

the *Goryeo* and *Joseon* periods of Korean history.). The middle period of the *Joseon* Dynasty saw the height of Neo-Confucian aesthetic thought, which valued simple beauty as a virtue. Court paintings that emphasized colour were downplayed, and decorative paintings such as *Sehwa* were no longer produced. Buddhist paintings were also devoid of colour, with many line paintings being produced. As in the previous period, black-and-white ink paintings dominated, with colour being excluded throughout. In the Late *Joseon* Dynasty, colour expression became freer and richer due to the decline of Neo-Confucianism, the influence of pragmatism, and the importation of Western pigments. *Minhwa* (Korean folk paintings), the coloured paintings that emerged in the late *Joseon* Dynasty, also used bright colours based on symbolism, and brilliant colours became common.

3. Colour analysis method

3.1. *Data and analytics*

This study was based on a previous study (Park, 2018) that analysed *Sibjangsengdo* by types (See Table 1).

3.2. *Analysis method*

The colour analysis method is as follows.

a. Estimate the colours of each symbol in the digital material of the four *Sibjangsengdos* (Type1, Type2 H, Type2 N,, and Type3) using the NCS index.
b. Get the RGB values of the estimated colours.
c. Get the L*, a*b*, C* values.
d. Plot the L*, C* and a*b* graphs to analyse the chromaticity.

4. Colour analysis results

4.1. *a*b*graphs of Sibjangsengdos* by types

There are a*b* graphs of each type (See Figure 3).

There are a*b* graphs of rocks and pines (See Figure 4):

a. Rock -They are coloured with blue overlaid on green rocks.
-Green rocks - Based on Type 1, the green becomes more saturated in Type 2 and then desaturates again in Type 3.
- Blue rocks - Blue rocks appear in Type 2, and the blue rocks in Type 2 and Type 3 are blue with a reddish tinge.

b. Pine tree

The colour of the pillars of Type 1 is the standard.

-Type 2 H is more yellow, with more saturated brown and orange colours.

-Type 2 N is more saturated and reddish than Type 1.

-Type 3 is also more saturated and red than Type 1, but less saturated and less light than Type 2.

The colour of pine needles of Type 1 is the standard.

- Type 2 H has changed to yellow and blue. Type 2 N is a more saturated green colour. Type 3 has a more yellow colour.

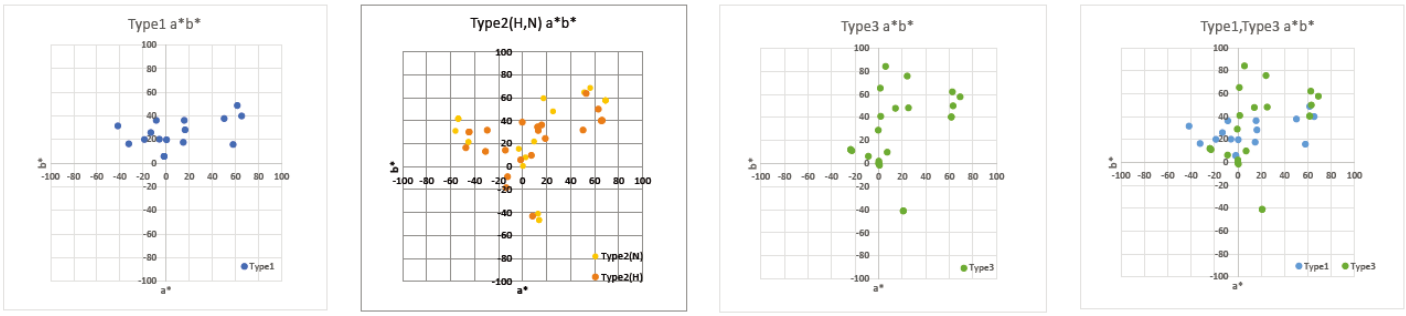

*Fig. 3. Comparative a*b*graphs Type 1, Type 2 and 3 , Type 3, and Type 1 and 3.*

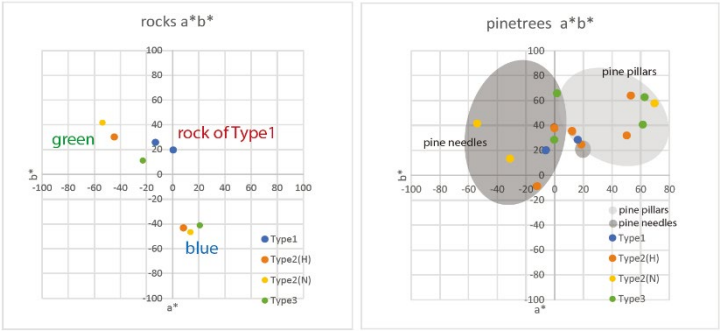

*Fig. 4. a*b*graph of rocks and pines (poles and pine needles) by type.*

4.2. *L*C* Graphs of Sibjangsengdos*

These are the L*C* graphs for each type (See Figure 5). The L*C* graph shows that the overall lightness and saturation increase as you move from Type 1 to Type 2 to Type 3 (See Figure 5**).** You can see that the tone gradually changes (See Figure 6) from dark greyish to vivid (See Table 2).

The L*C* graphs and PCCS tones were analysed. They gradually become brighter and more vibrant as they move through different types.

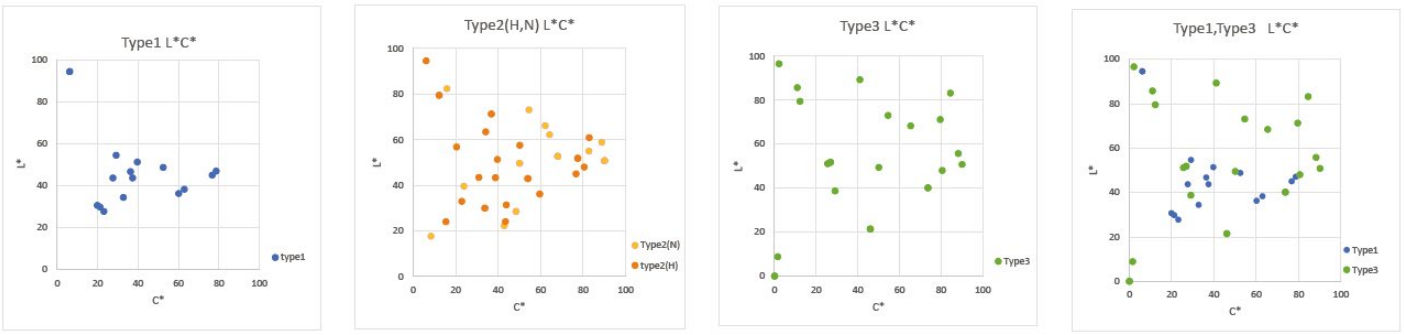

*Fig. 5. Comparative L*C* graphs of Type 1, Types 2 and 3, Type 3, and Types 1 and 3.*

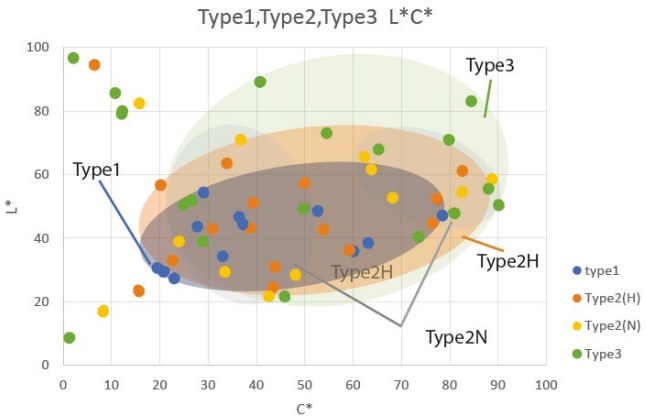

*Fig. 6. Comprehensive L*C* graph of Sibjangsengdo by type.*

5. Discussion

Through the above study, it can be observed that the colours in late Joseon period paintings gradually became more distinct over time. This is due to the gradual increase in colour saturation due to the use of Western pigments introduced in the late Joseon Dynasty. In the case of Type 1, the date is unknown, but the a*b* values of the rocks are L* 54.61, a*-13.24, and b*29.25, which are similar to the category of real stone green (Park, et al., 2015), so it can be assumed that it was painted using traditional pigments. The blue rocks of Type 2 and 3 can be assumed to be imported pigments based on the position of the colour angle by previous research (Lhi, 2024). Green rocks of Type 2 are not part of the traditional range of pigments. However, the green rocks of type 3 have L*51.14, a*-22.89, and b*11.21, which is in the range of malachite. This shows that malachite continued to be used after the pigment change, but the more expensive azurite was replaced by imported pigments. This fact signifies that the development of coloured paintings, which had been suppressed under the Neo-Confucian system, resumed as the system transitioned to Silhak. It also implies that this shift in the system allowed for traditional pigments to be replaced by cheaper organic ones, resulting in a broader and more diverse use of colours. A limitation of this study is that the L*a*b*C* values were obtained as estimates using NCS indices for the analysed objects, so we do not know the exact actual measurements; however, the estimates are within the data range of the actual pigments and are sufficient to look at the colour variation of the late Joseon *Sibjangsengdos*.

6. Conclusion

In the late Joseon Dynasty, the composition of *Sibjangsengdo* changed from Type 1 to Type 2 and Type 3 over time, and the colours also gradually changed from

low lightness and saturation to high lightness and saturation, and the tone from greyish to vivid.

7. Conflict of interest declaration

No conflict of interest.

8. Funding source declaration

The authors received no specific funding for this work.

9. Short biography of the author

Wona Lhi- PhD candidate at Ewha Womans University. She specialises in colour design and draws Korean folk paintings. She majored in chemistry at university, so her research focuses on painting and pigments.

***GyoungSil Choi**, has been a Professor at Ewha Womans University since 1995 with researching in color design and interior architecture. Choi received an Engineer Diploma in Interior Architecture from Fachhochschule Duesseldorf, Germany. Choi received her BA in Interior Design from Ewha Womans University, Korea.

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References

Lhi, W., and Park, Y.K. (2024) 'Analysis of Color Changes in Paintings by Era due to Changes in Pigments', Journal of Korea Society of Color Studies, 38(1), pp. 64-72. Available at: 10.17289/jkscs.38.1.202402.64. http:doi.org/10.17289/jkscs.38.1.202402.64

Park, B.S. (2018) 'A Study of the Ten Symbols of Longevity Screen in the Collection of the Museum of Art at the University of Oregon', *Journal of Korean Art and Archaeology (JKAA),* 12, pp. 27-44. https://www.ijkaa.org/assets/pdf/32/jkaa-12-27.pdf

Park, J.H., Jeong, H.Y., Go, I.H., Jeong, S.L. and Jo, A.H. (2015) 'A study on the physical properties of Seokrok and Noerok used as green pigment', *Journal of conservation science,* 31(4), pp. 429-441. DOI http://dx.doi.org/10.12654/JCS.2015.31.4.10

Park, J., Kim, M., Park, S. and Lee, S. (2023) 'Properties and Lightfastness of Natural and Artificial Azurite Used As Painting Pigment', *Korean Journal of Metals and Materials,* 61(9), pp. 704-713. DOI: http://dx.doi.org/10.3365/KJMM.2023.61.9.704