

Munsell Centennial Symposium 2018

From Munsell Color System To A New Color Psychology System

Setsuko Horiguchi, Katsura Iwamatsu

Nippon Color & Design Research Institute Inc.

June 14, 2018

Contents of this presentation

Young Researcher's Aim

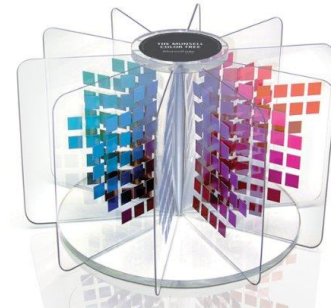
Munsell Color System



1. Hue & Tone System



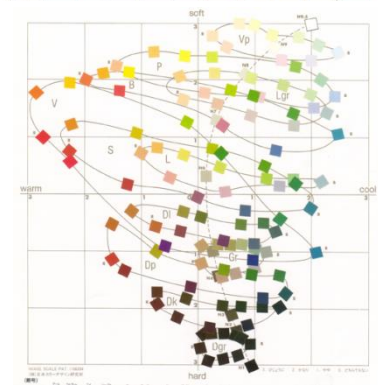
2. Color Image Scale



<http://http://munsell.com/color-blog/munsell-color-diary-easy-way-to-teach-color-theory/>

| 色相 | R | YR | Y | GY | G | BG | B | PB | P | RP | N |
|-----|---|----|---|----|---|----|---|----|---|----|-----|
| V | | | | | | | | | | | 9.5 |
| S | | | | | | | | | | | 9 |
| B | | | | | | | | | | | 8 |
| P | | | | | | | | | | | 7 |
| Vp | | | | | | | | | | | 6 |
| Lgr | | | | | | | | | | | 5 |
| L | | | | | | | | | | | 4 |
| Gr | | | | | | | | | | | 3 |
| DI | | | | | | | | | | | 2 |
| Dp | | | | | | | | | | | 1.5 |
| Dk | | | | | | | | | | | |
| Dgr | | | | | | | | | | | |

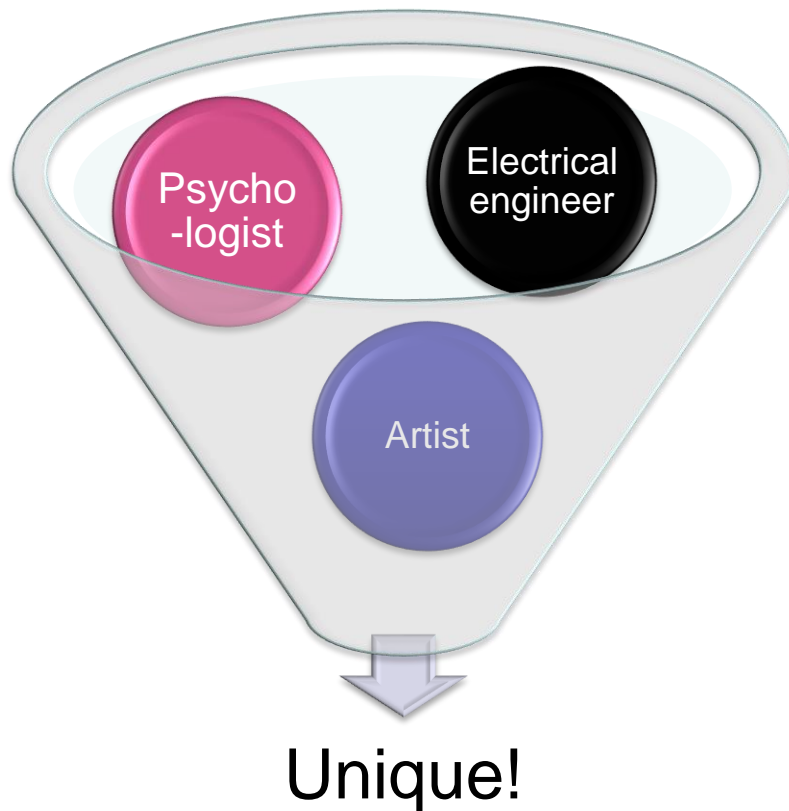
N--Neutralの階で
無彩色を示す。



Young Researcher's Aim

Shigenobu KOBAYASHI (1925-2010)

- Researcher of Color Image -



2005 · 80 years old

Photo by Nobuko Kiuchi

3/40

In his youth: passion for art



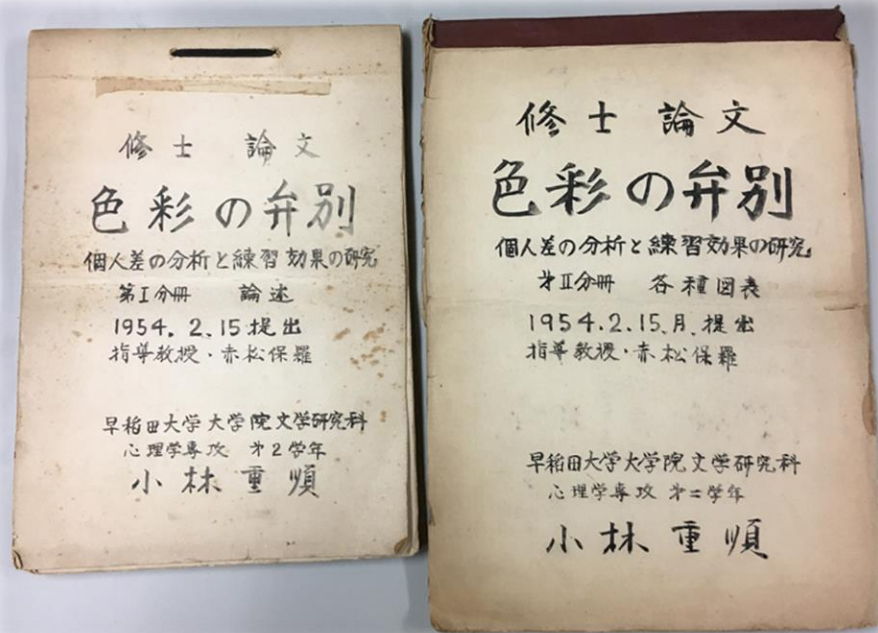
courtesy of Shigeharu Kobayashi

4/40

In his youth: interest in color psychology

1954

Master's thesis "Color discrimination"
Waseda University, dpt. of psychology



courtesy of Shigeharu Kobayashi

1964

"A Guide to improve your sense of beauty -wide application in daily life-", Kodansha



5/40

Social Background of Japan in the 1960's and 70's



http://41-31.at.webry.info/200802/article_1.html



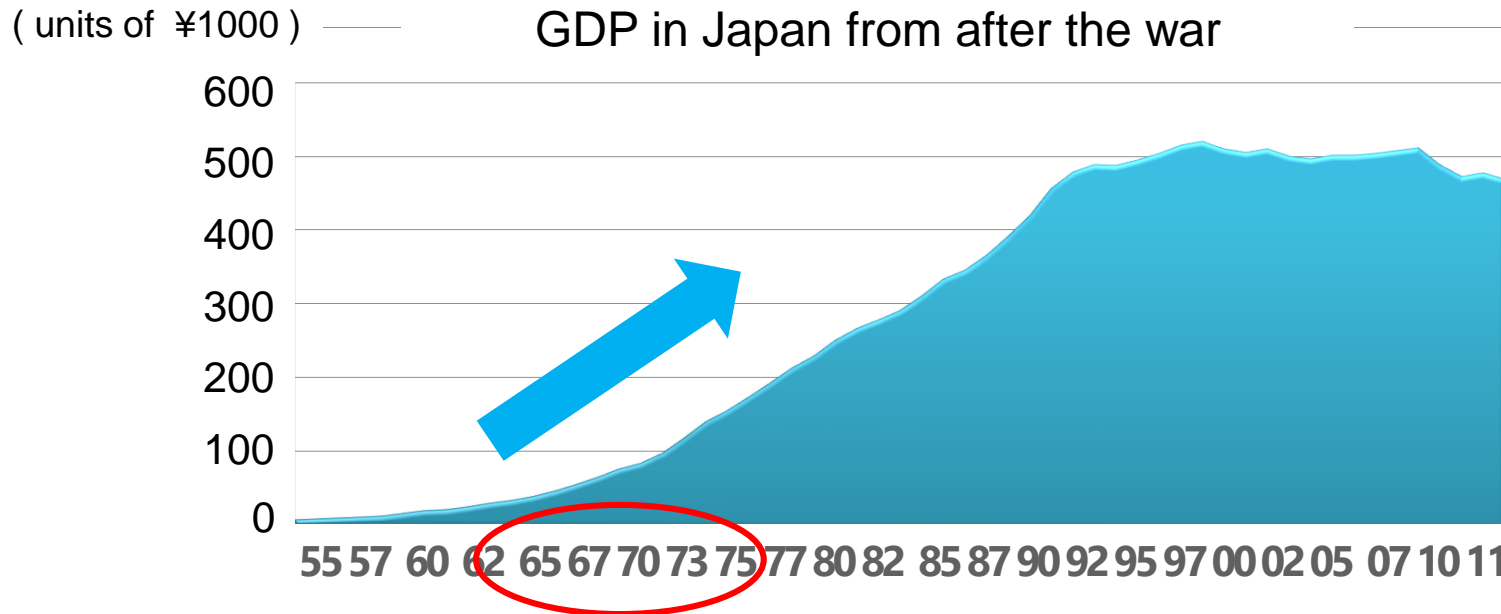
<http://20thkenchiku.jugem.jp/?month=201102>



<https://www.jafca.org/colorcolumn/format-copy.html>



<https://middle-edge.jp/articles/1002592>



http://www5.cao.go.jp/j-j/wp/wp-je12/h10_data01.html

Reception of Munsell System in Japan

1927 Sanzo Wada founded **Japan Standard Color Association**

1948 Color Science Association
(predecessor of Color Science Association of Japan 1970)

1951 Standard of Colors(1062 colors by Japan Color Research Inst.)

1959 **The Book of Color Standards**(JIS Z 8721)

1963 **Munsell Renotation Color Book**
(Japan Color Research Inst)



courtesy of JCRI

1966 **Basic Color Chart** - 5000 colors of 40 hues conforming to JIS- (NCD)



Aim of Kobayashi 1

Color is an excellent salesman!

CASE / SYSTEM / PATTERN

At AIC 1981 Berlin



photo by S.Kobayashi

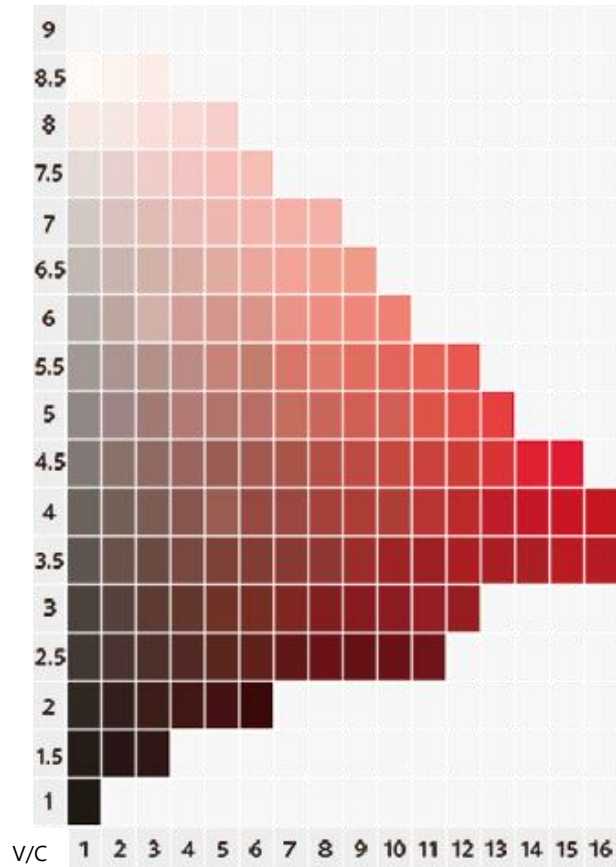
At AIC 1985 Monaco



photo by K.Iwamatsu

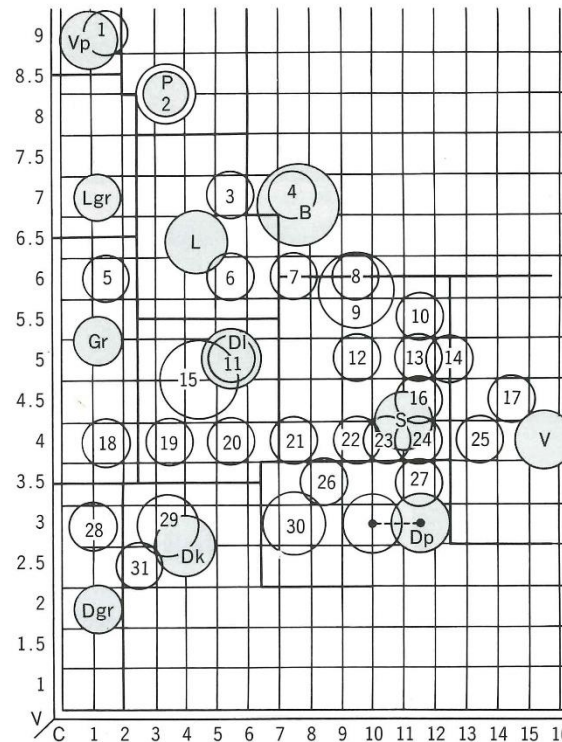
Production of 5000 color chips and Analysis of color names

Segment of Hue 5R



Distribution of color names in 5R → Classification of 12 Tones

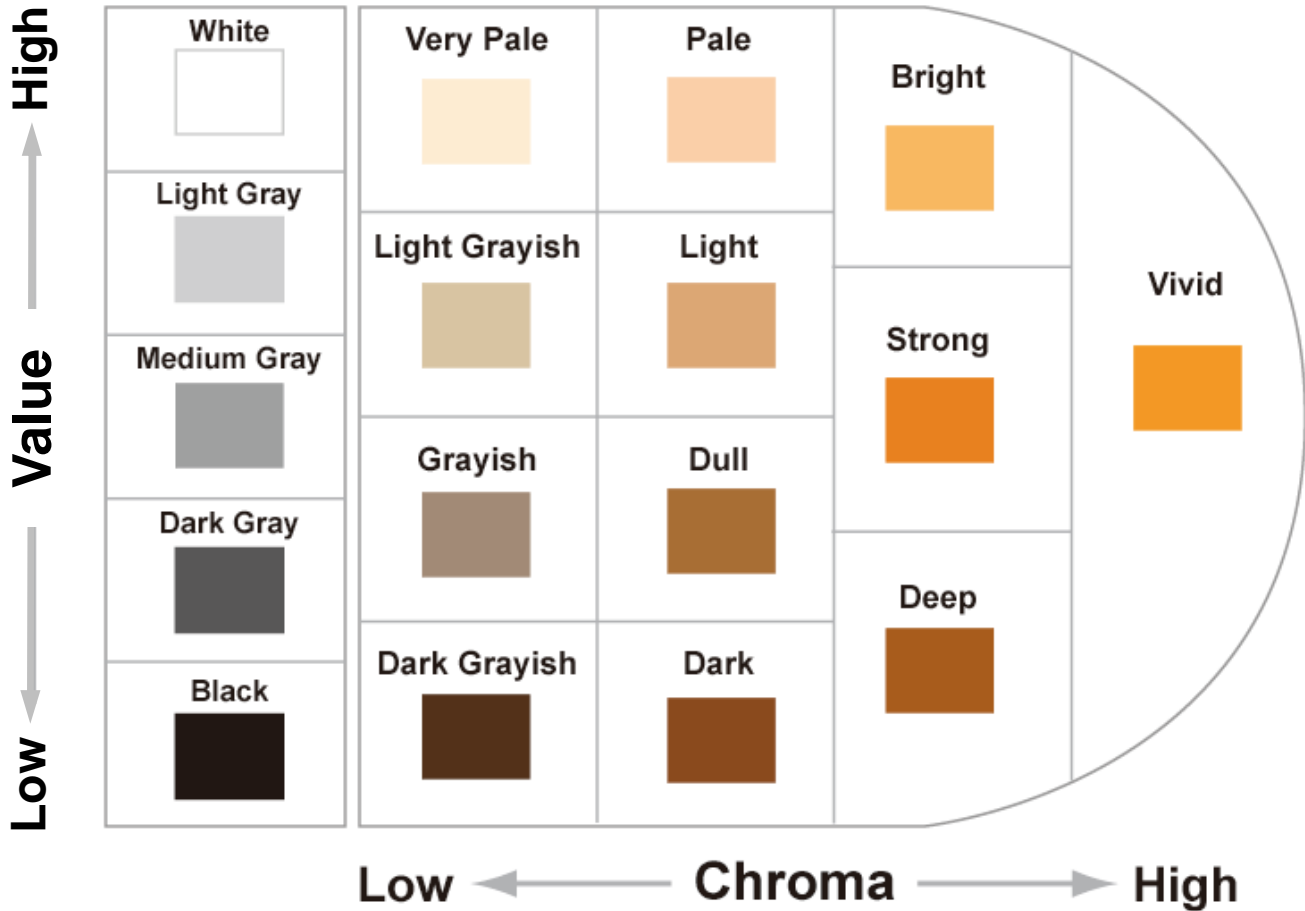
Ref : "The ISCC-NBS Method of Designating Color and Dictionary of Color Names"



Ref. The Standard Color Card of America. 9th ed. Textile Color Card Association of the United States, Inc.; 1960/Dictionary of Colour Standards. The British Colour Council; 1934/Dictionary of Colour Standards + 240 dyed woollen samples., The British Colour Council; 1951/Sanzo Wada. Encyclopedia of color names (Shikimei Soukan). , Tokyo: Shunjusha Publishing Company; 1931/Sanzo Wada, Japan Color Research Institute. Guide to Colour Standard (Iro no Hyoujun). Tokyo: Nihon Shikisai Sha; 1954/Colour Booklet. Tokyo: Nihon Shikisai Sha; 1961/Rokuro Uemura, Katsuhiro Yamazaki. Encyclopedia of Japanese Colour Names (Nihon Shikimei Taikan). Tokyo: Koubun-sha; 1943/The Color Harmony Manual. 4th ed. Chicago: Container Corporation of America; 1958/Kenneth L. Kelly and Deane B. Judd. /National Bureau of Standards Circular; 1965/Color Code for Market Survey . Tokyo: Japan Color Research Institute; 1964

From Munsell System to Hue & Tone System

Tone chart of Hue YR:12 Tones



Hue & Tone System: 130 colors

A pragmatic color order system with the least number of colors

Design Tone 130



photo by A.Sugiyama

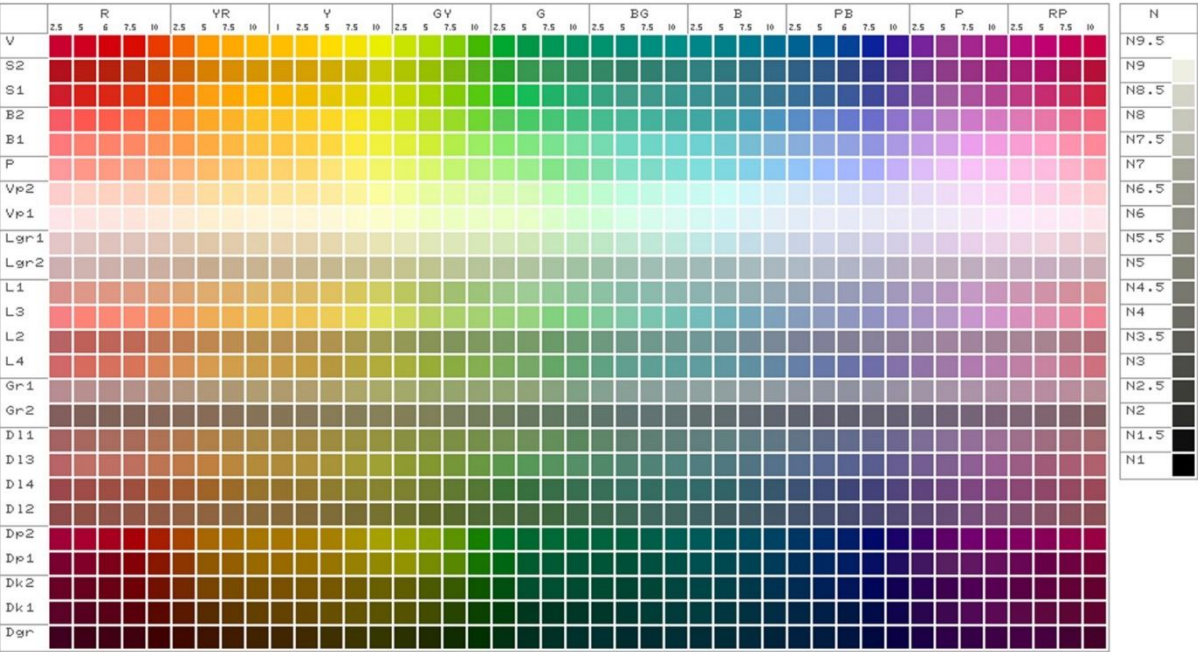
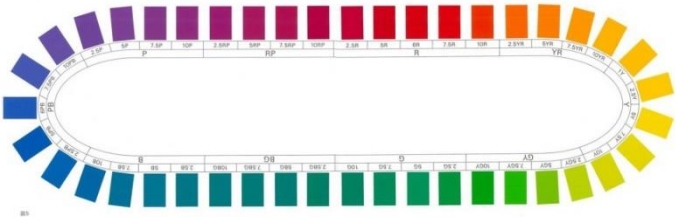
| 色相 トーン | R | YR | Y | GY | G | BG | B | PB | P | RP | N | |
|-----------|---|----|---|----|---|----|---|----|---|----|-----|--|
| V | | | | | | | | | | | 9.5 | |
| S | | | | | | | | | | | 9 | |
| B | | | | | | | | | | | 8 | |
| P | | | | | | | | | | | 7 | |
| Vp | | | | | | | | | | | 6 | |
| Lgr | | | | | | | | | | | 5 | |
| L | | | | | | | | | | | 4 | |
| Gr | | | | | | | | | | | 3 | |
| DI | | | | | | | | | | | 2 | |
| Dp | | | | | | | | | | | 1.5 | |
| Dk | | | | | | | | | | | | |
| Dgr | | | | | | | | | | | | |

無彩色を示す。

Hue & Tone System: 1093 colors

For marketing and product planning

43 hues, 25 tones, 1093 colors



6R, 1Y, 6PB



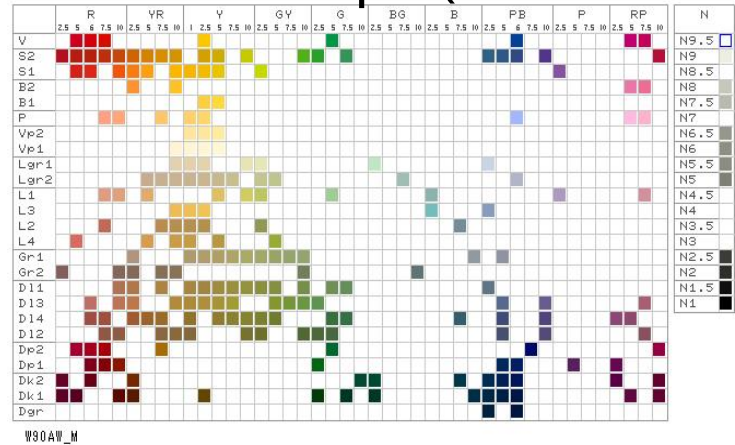
Hue & Tone System: Two-dimensional analysis

Pattern recognition

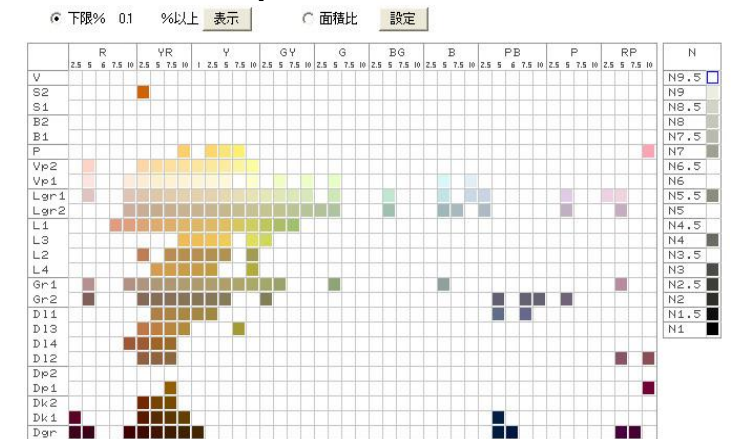
Statistical processing

Release from numerical notation (H V/C)

Woman's tops (1999)

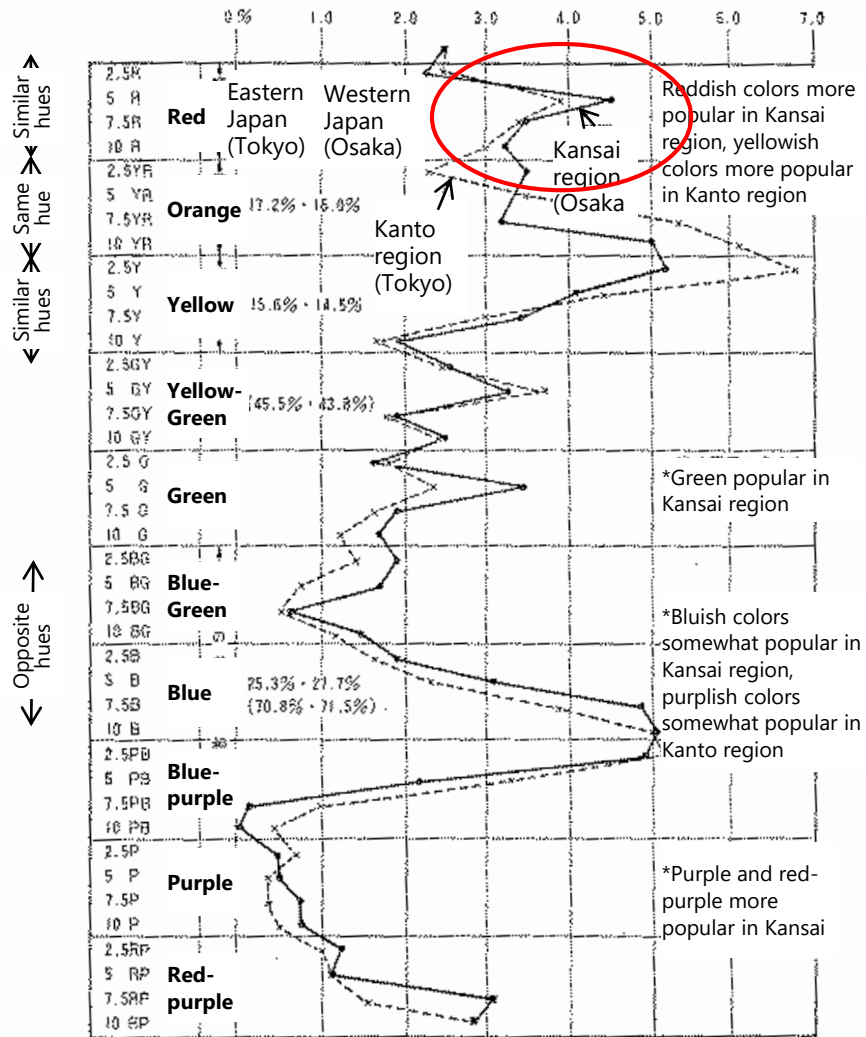


Interior (2000)



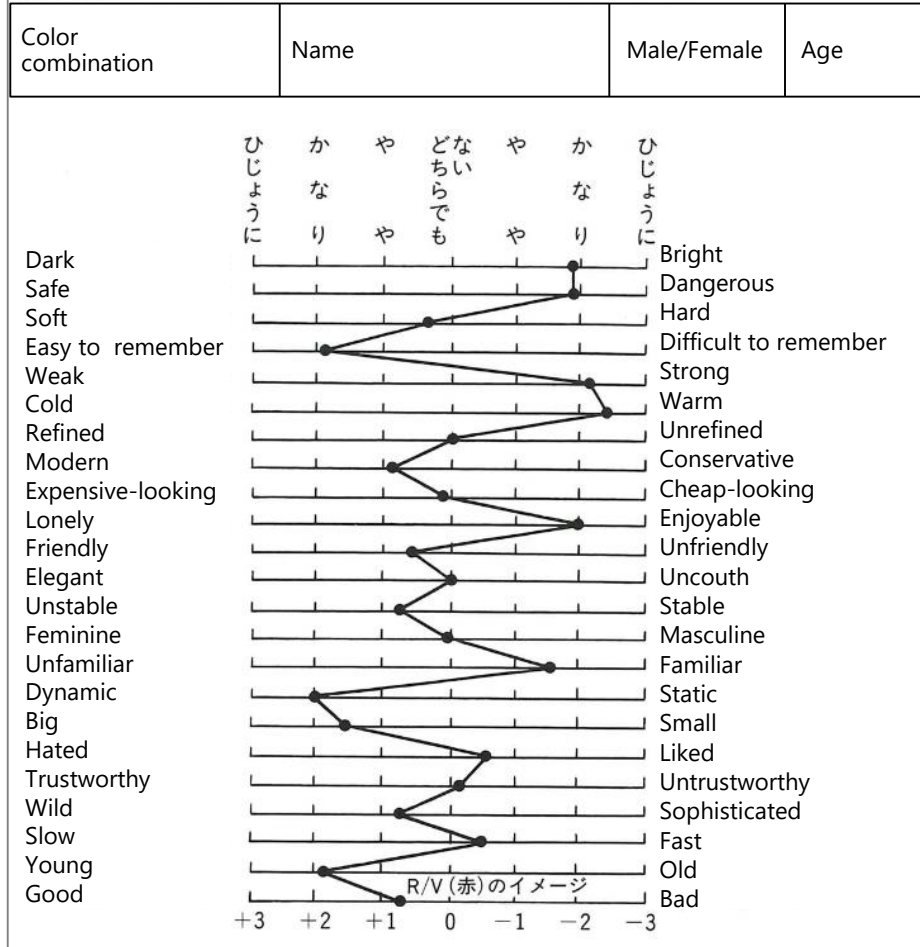
Aim of Kobayashi2 toward the psychological research 1971-

Market research:
Hue analysis of knit fashion
colors in 1971
(comparison of Tokyo and
Osaka)



Aim of Kobayashi2 toward the psychological research 1971-

R/V (red) image



Evaluation factor analysis

Table 14: Association chart of images associated with "good"

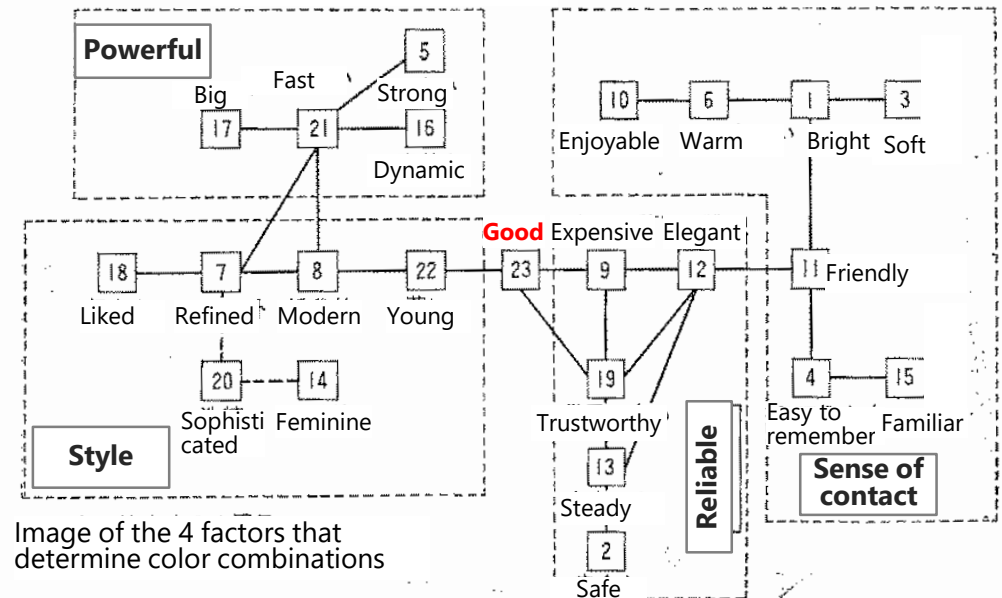


Image of the 4 factors that determine color combinations

From Hue & Tone System to Image Scale

1961

Psychological researches

1975

1982

Starting to Develop

Hue & Tone System

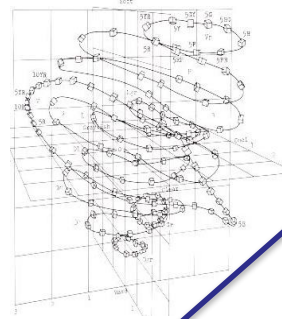
Single color image measurement

Extraction of main image (Factor Analysis)

Association between colors and words

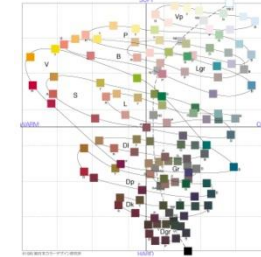
Color combinations image measurement

Color projection method



Completion of basic **Image Scales**

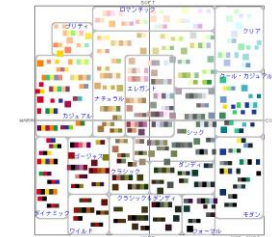
Single colors



Words

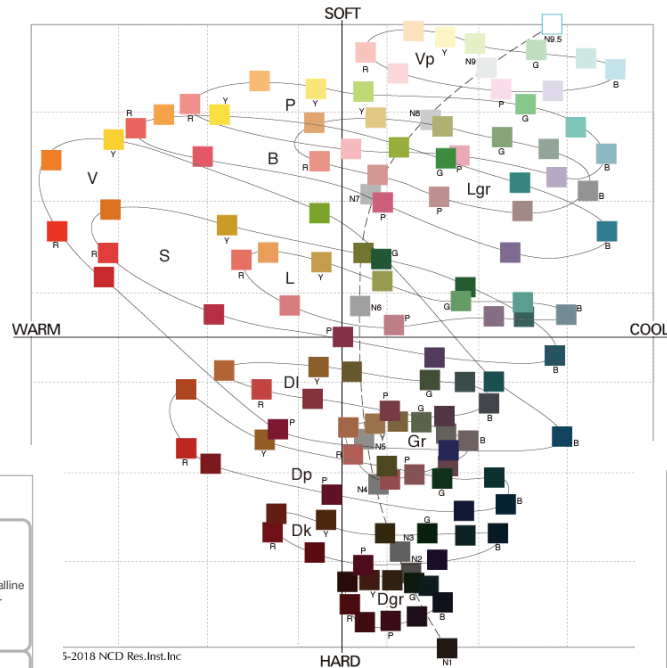
| | | | |
|----------|----------|---------------------|----------|
| ROMANTIC | dreamy | light & airy | romantic |
| PRETTY | fresh | pleasant | pleasant |
| NATURAL | pleasant | pleasant to the eye | pleasant |
| CHEERFUL | pleasant | pleasant | pleasant |
| CLASSIC | pleasant | pleasant | pleasant |

Color combinations



Patent approval
In Japan

Color Image Scale: Psychological Method



Single colors

Words (adjectives)

| | | | | | |
|--|--|---|--|---|--|
| | | SOFT | | | |
| PRETTY naive pretty childlike cute | | ROMANTIC innocent charming sweet & dreamy | | light & pale pure & genuine pure & simple | |
| cheerful happy enjoyable merry humorous vivacious jovial spirited animated showy | | NATURAL amiable agreeable to the touch congenial mild domestic friendly open perky casual | | gentle plain light unadorned fresh & young agreeable healthy fresh | |
| CASUAL casual vivid | | ELEGANT elaborate & delicate honest & straightforward cozy & comfortable generous temperate & mild natural | | delicate subtle feminine emotional sleek refined quiet nonchalant polished simple & frugal | |
| WARM flamboyant | | simple & appealing pastoral dignified & graceful | | CHIC chic fashionable | |
| lively vibrant vigorous active bold provocative fiery passionate intense dynamic active energetic | | CLASSIC quaint nostalgic CLASSIC tasteful diligent antique traditional old-fashioned | | quiet & tranquil simple & elegant sober cerebral composed | |
| DYNAMIC forceful tough robust wild | | CLASSIC & DANDY sturdy serious strong & stout | | DANDY gentlemanly manly dapper masculine sound earnest tidy & neat | |
| | | HARD | | | |
| neat bracing clean crystalline clear refreshing clear-cut | | jaunty young youthful exhilarating sporty | | modern speedy progressive revolutionary alert sharp precise rational manmade mechanical | |
| | | COOL | | | |

Tri-color combinations

| | | | | | |
|--|--|--|--|--|--|
| | | SOFT | | | |
| naive PRETTY childlike | | sweet & dreamy ROMANTIC romantic | | pure & genuine | |
| lighthearted enjoyable perky casual | | domestic NATURAL happy-go-lucky comfortable & laid-back | | tranquil peaceful fresh | |
| CASUAL casual | | feminine elegant ELEGANT graceful | | polished chic CHIC cerebral | |
| flamboyant | | temperate & mild | | artistic & tasteful DYNAMIC active bold energetic | |
| vibrant vigorous active bold provocative fiery passionate intense dynamic active energetic | | captivating rich & luxurious extravagant substantial elaborate | | tasteful CLASSIC luxurious extravagant traditional | |
| DYNAMIC robust wild | | noble & elegant eminent sacred majestic austere dignified | | dapper masculine earnest rational exact MODERN | |
| | | HARD | | | |
| energetic | | robust WILD wild | | genuine CLASSIC & DANDY serious distinctive | |
| | | FORMAL | | | |

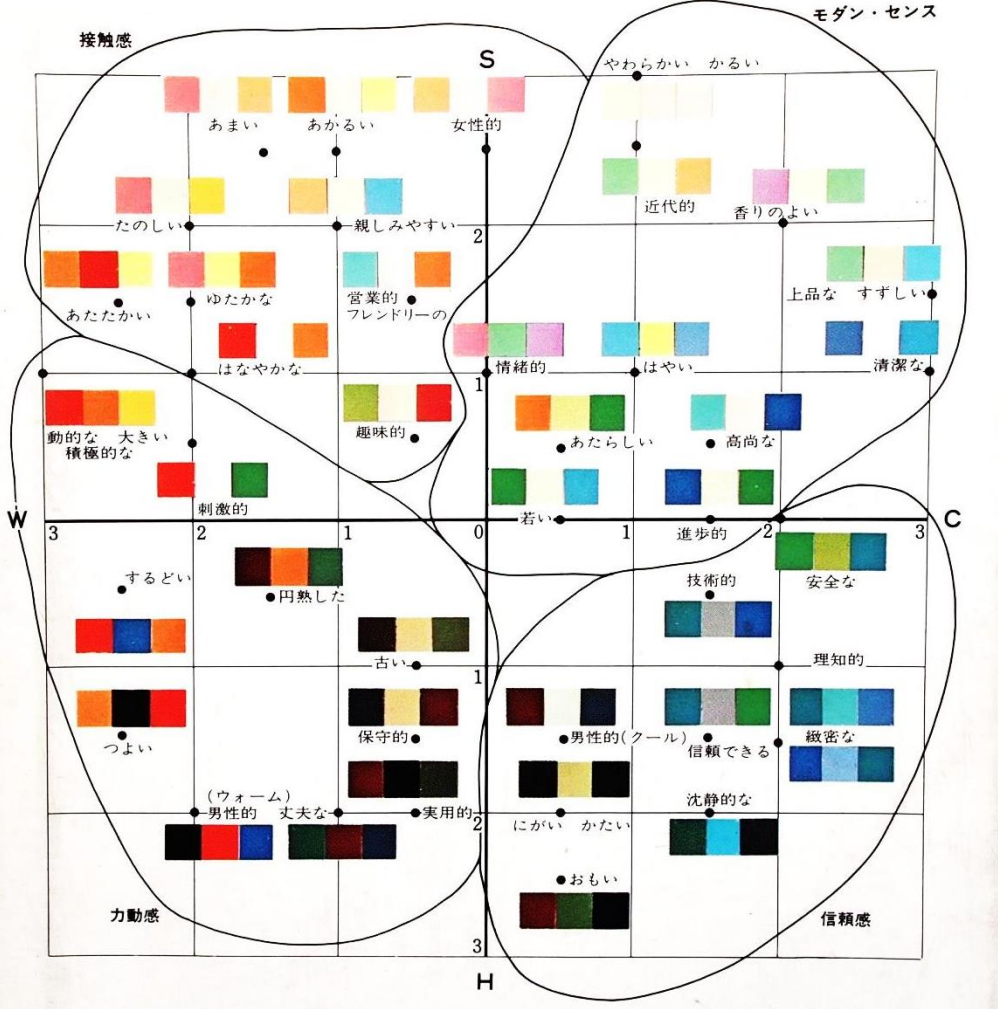
compatibility

Color Image Scale: Tri- Color Image Scale

The 1st scale in 1974

Familiarity

Modern sense

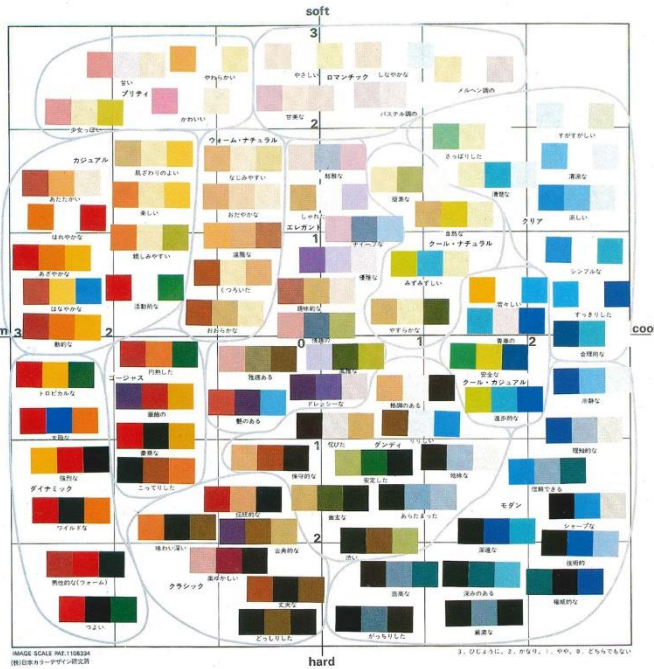


Dynamism

Credibility

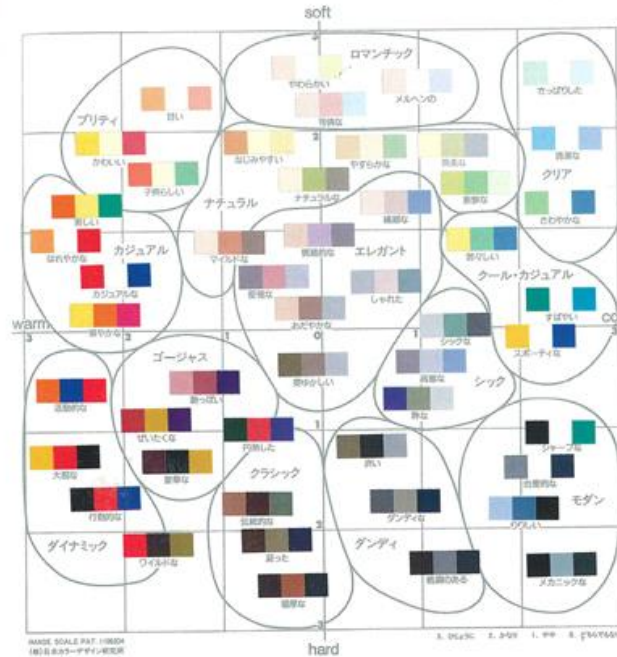
Color Image Scale: Tri- Color Image Scale

1976-1980



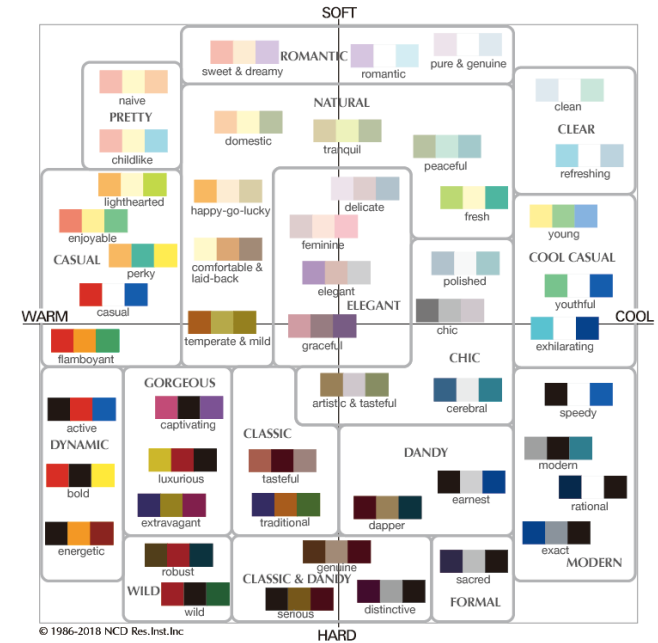
With only 80 colors

1987-present



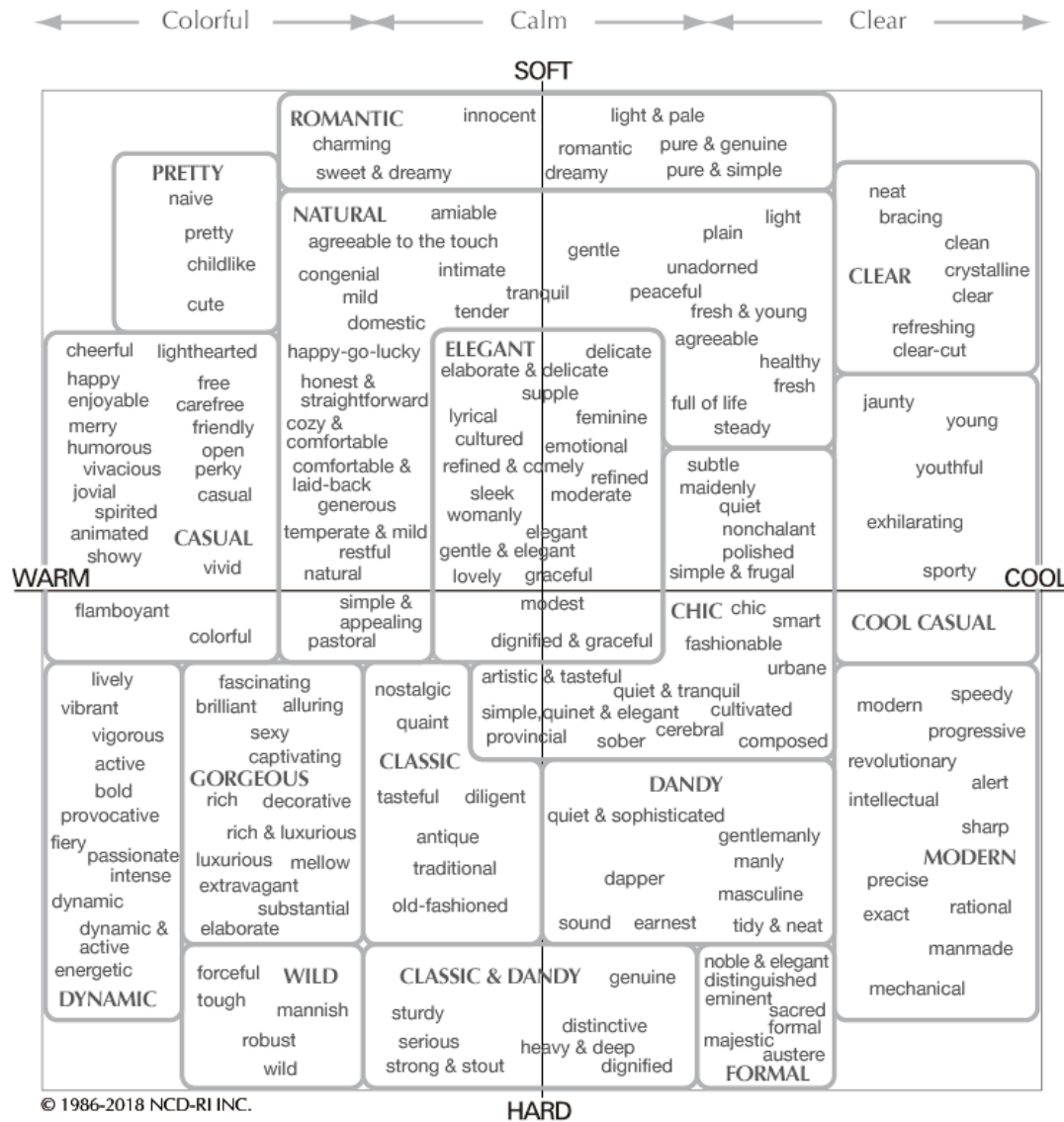
With 130 colors
Freely & Flexibly

1995-present



With 130 colors
Digital

Word Image Scale



Japanese



English

Chinese

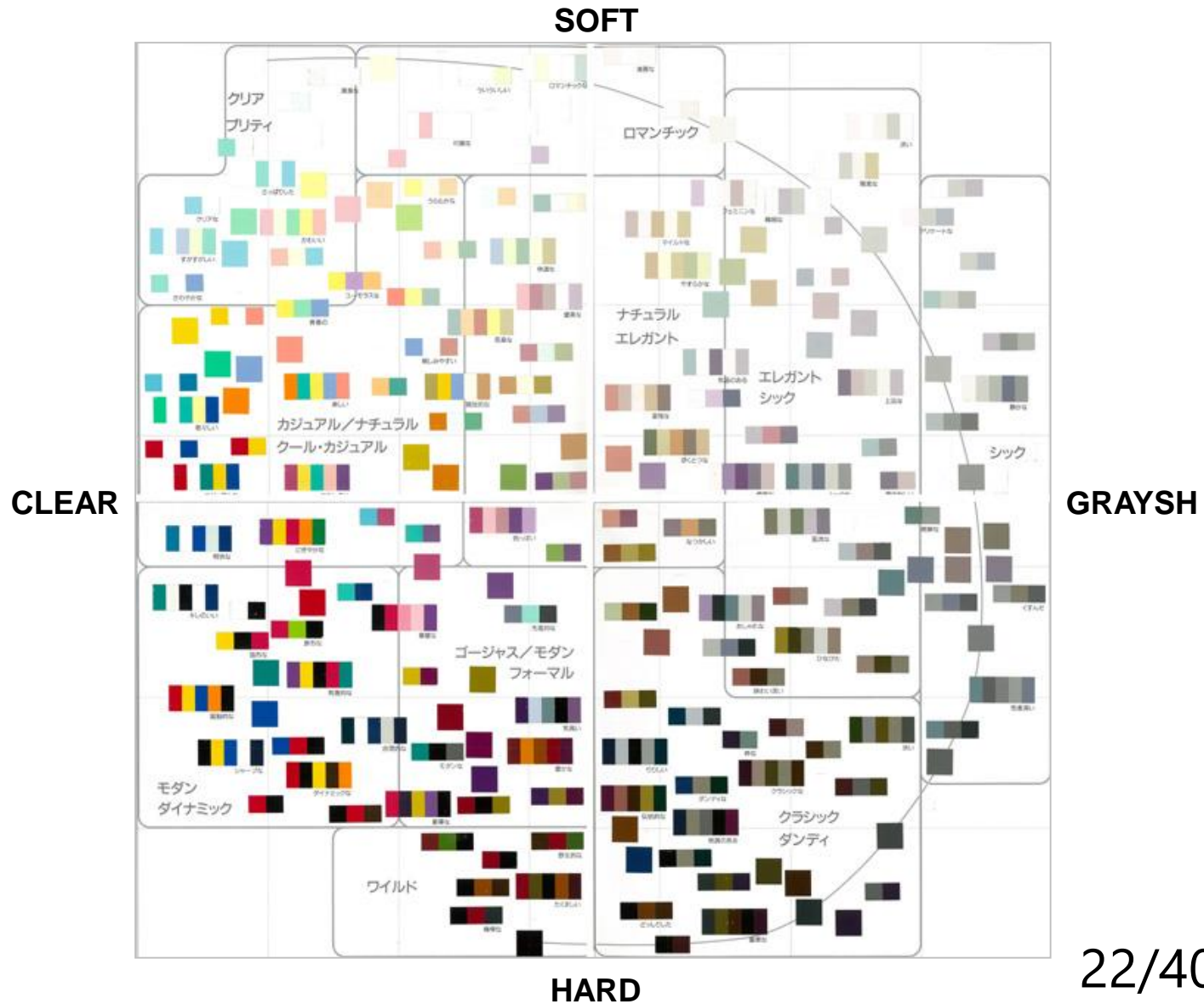
Korean

French

German

Color Image Scale: Clear/Grayish Axis

Single colors,
Two-colors,
Three-colors and
Five-colors
Combinations



PC Analysis by Color Image Scale

Database Image Research

データベースイメージ検索

検索条件: * * * * *

| 検索条件 | 検索結果 |
|----------|----------|
| 1. 検索条件 | 1. 検索結果 |
| 2. 検索条件 | 2. 検索結果 |
| 3. 検索条件 | 3. 検索結果 |
| 4. 検索条件 | 4. 検索結果 |
| 5. 検索条件 | 5. 検索結果 |
| 6. 検索条件 | 6. 検索結果 |
| 7. 検索条件 | 7. 検索結果 |
| 8. 検索条件 | 8. 検索結果 |
| 9. 検索条件 | 9. 検索結果 |
| 10. 検索条件 | 10. 検索結果 |
| 11. 検索条件 | 11. 検索結果 |
| 12. 検索条件 | 12. 検索結果 |
| 13. 検索条件 | 13. 検索結果 |
| 14. 検索条件 | 14. 検索結果 |
| 15. 検索条件 | 15. 検索結果 |
| 16. 検索条件 | 16. 検索結果 |
| 17. 検索条件 | 17. 検索結果 |
| 18. 検索条件 | 18. 検索結果 |
| 19. 検索条件 | 19. 検索結果 |
| 20. 検索条件 | 20. 検索結果 |
| 21. 検索条件 | 21. 検索結果 |
| 22. 検索条件 | 22. 検索結果 |
| 23. 検索条件 | 23. 検索結果 |
| 24. 検索条件 | 24. 検索結果 |
| 25. 検索条件 | 25. 検索結果 |
| 26. 検索条件 | 26. 検索結果 |
| 27. 検索条件 | 27. 検索結果 |
| 28. 検索条件 | 28. 検索結果 |
| 29. 検索条件 | 29. 検索結果 |
| 30. 検索条件 | 30. 検索結果 |

WARM ← → COOL

Image Scale analysis

Basic image analysis (using analysis aids)

基本イメージ分析

イメージスケール

イメージ群

- かわいい
- 親しみやすい
- 華やかな
- 甘美な
- しとやかな
- 知的な
- みずみずしい
- 洗練された
- アールデコ
- 陽気な
- 大膽な
- 躍々とした
- やわらかな
- 静かな
- 生き生きとした
- さわやかな
- しめれた
- 行儀な
- 純真な

イメージ群配色分布

配色

選別品分析

選別品結果

イメージ分析結果出典

| イメージ | 結果 |
|----------|-------|
| Elegant | 22.5% |
| Natural | 14.1% |
| Clear | 12.4% |
| Romantic | 9.4% |
| Casual | 7.8% |
| Pretty | 7.3% |
| Noble | 6.8% |
| Dynamic | 5.2% |
| Ecceus | 5.2% |
| Modern | 5.2% |

DATA: 2群 2因子

分析設定

分析補助表示

配色表示

結果表示

3分割表示

イメージ群表示

コンソート表示

色群分析

ダイス更新

※比率分析には比較データが必要です

Color Image Scale: Basic Idea

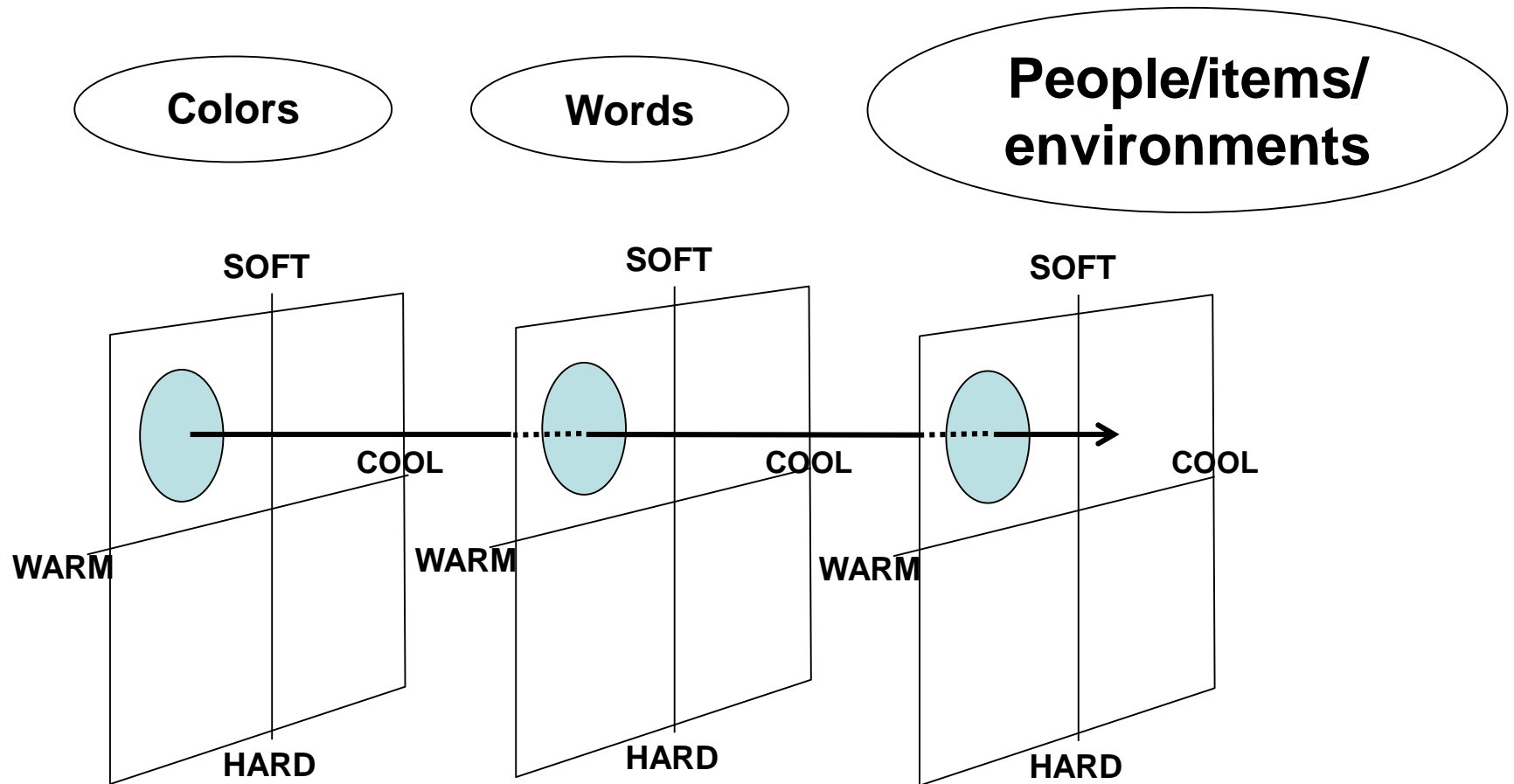
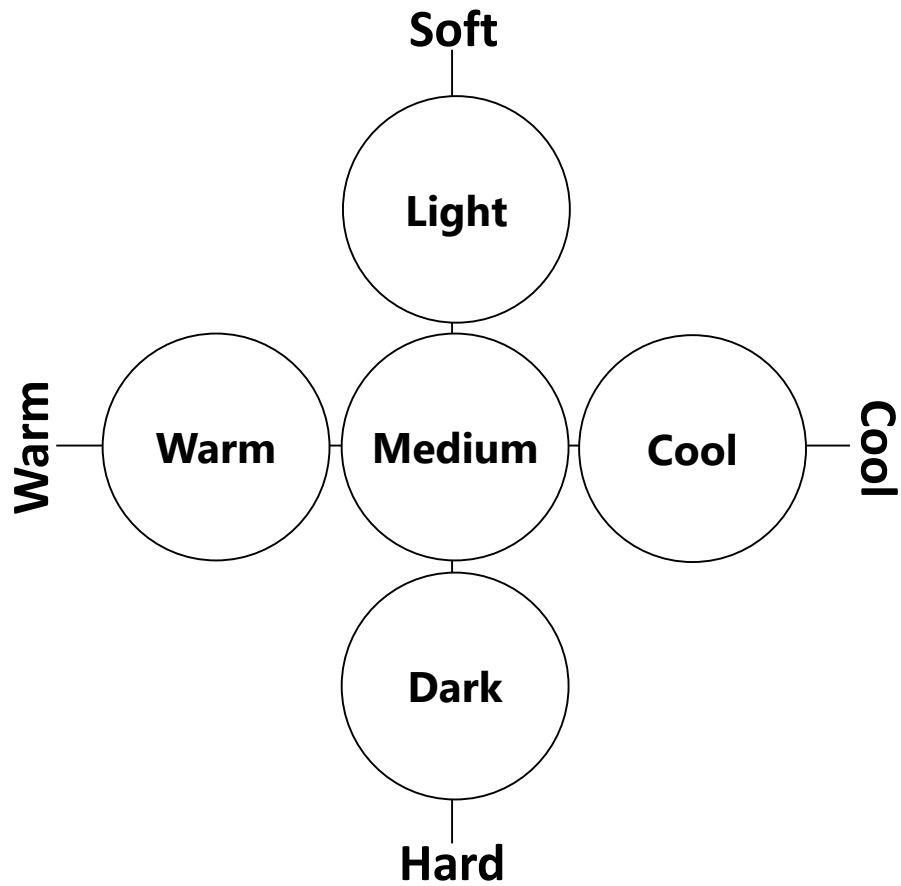


Image of Basic Design Elements

Colors



Patterns

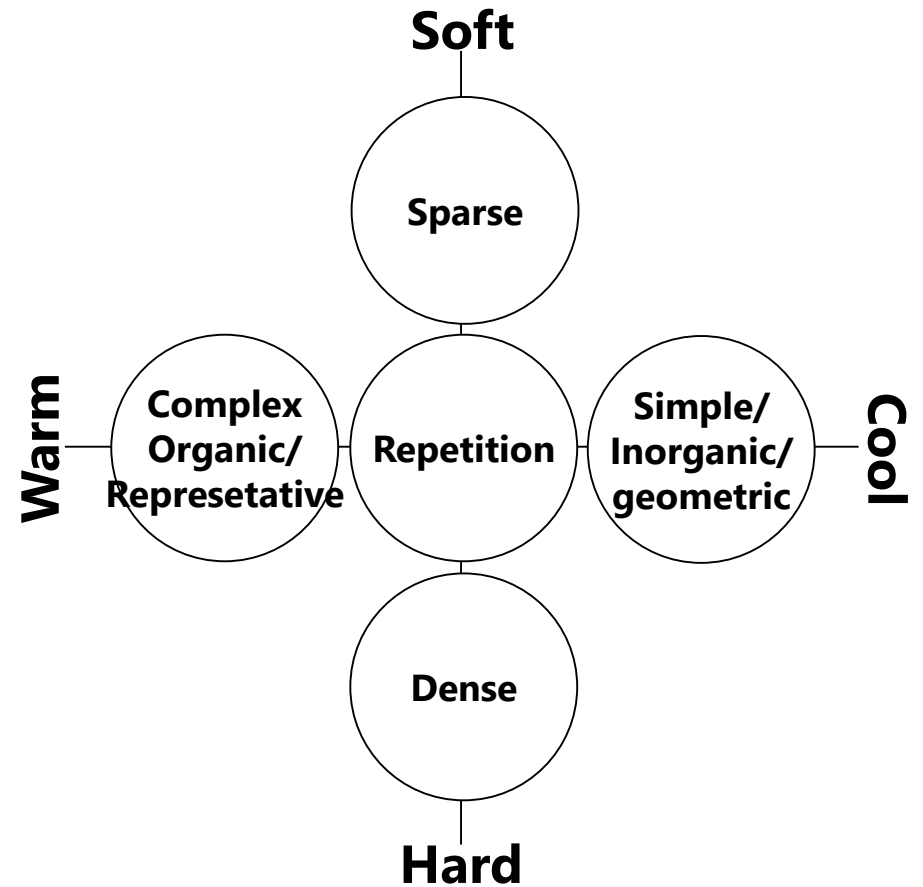
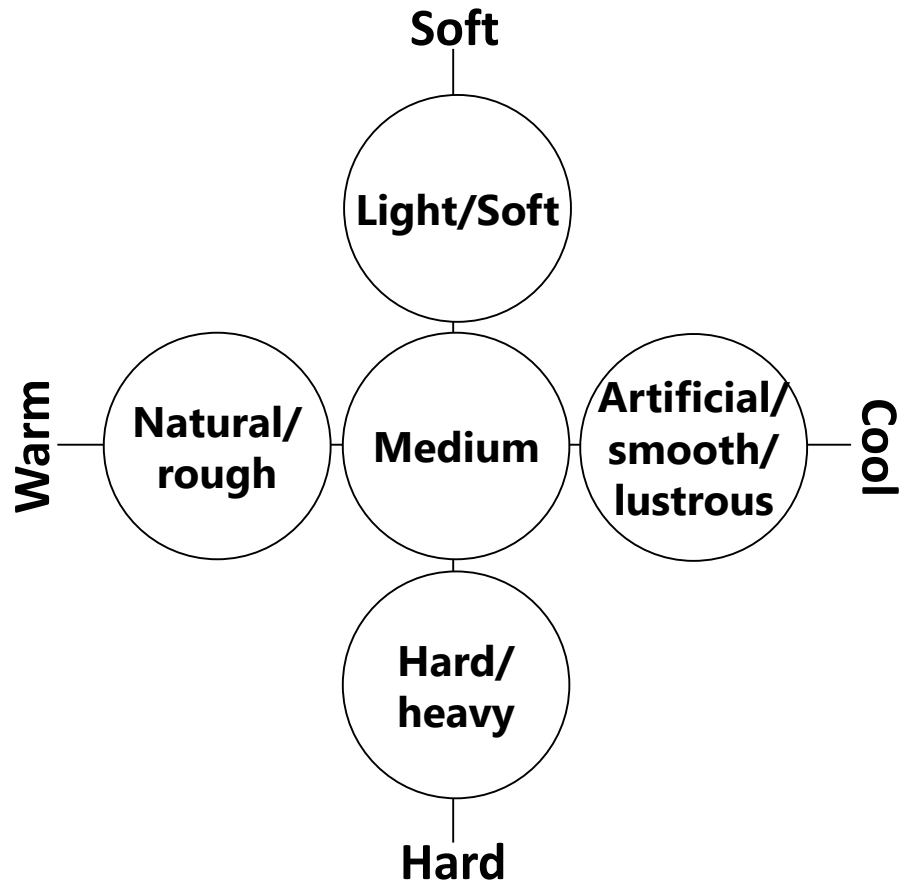
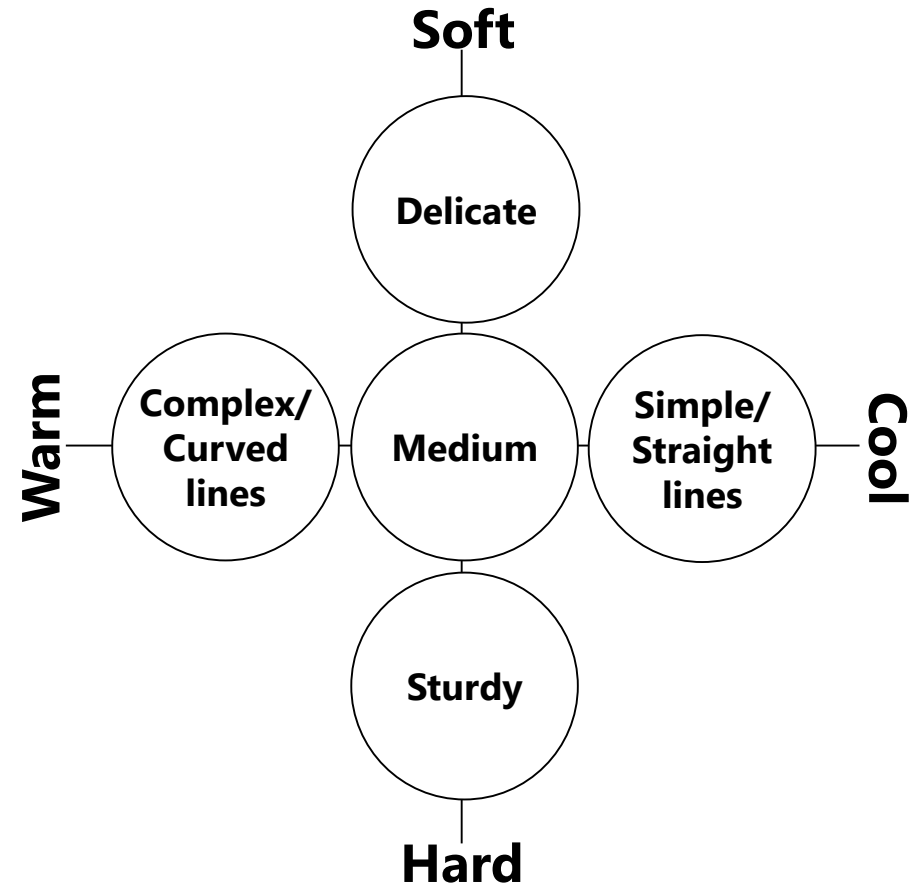


Image of Basic Design Elements

Materials



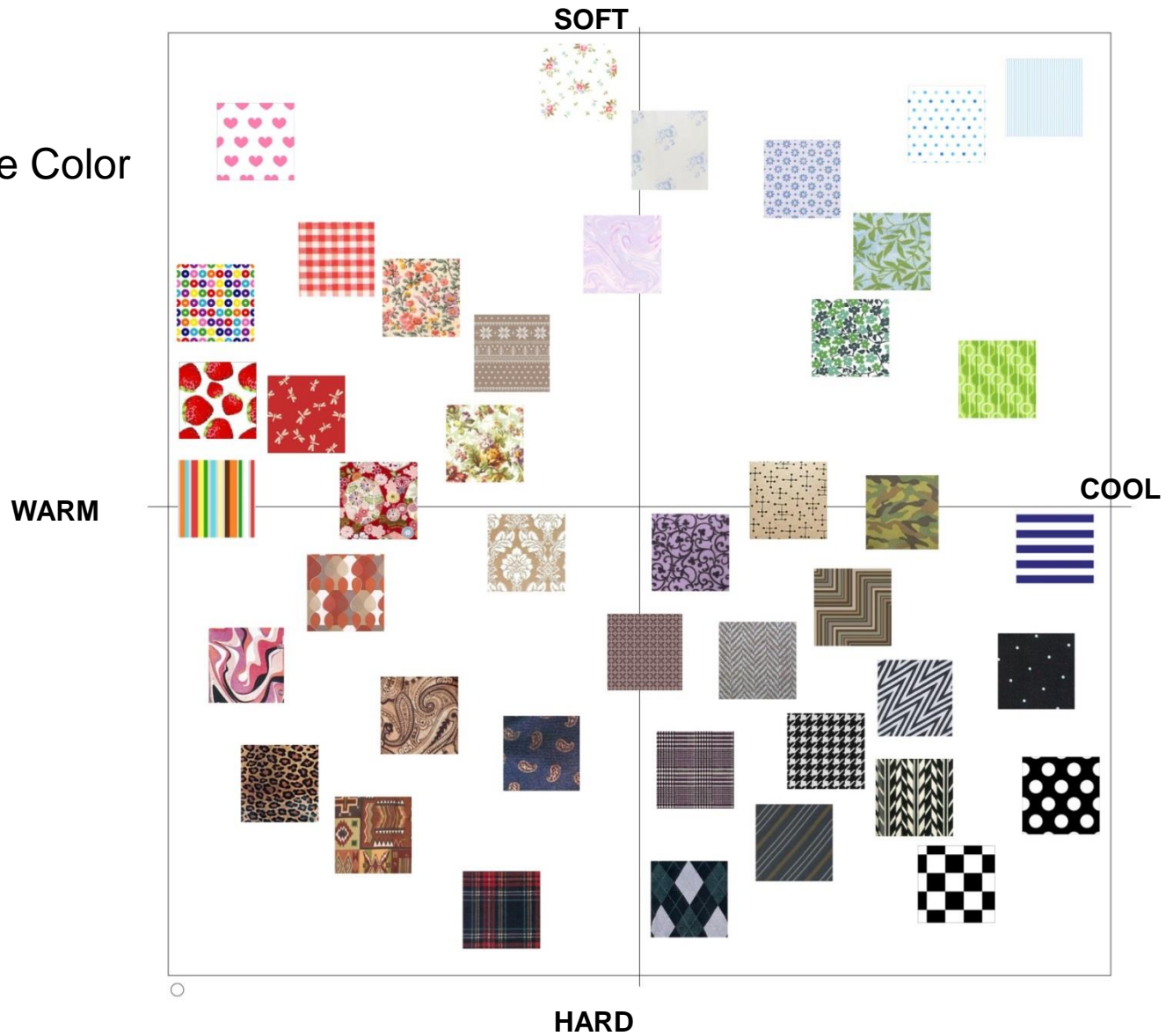
Shapes



Application of Color Image Scale

Patterns

Ref. Season Image Color



Application of Color Image Scale

Chairs

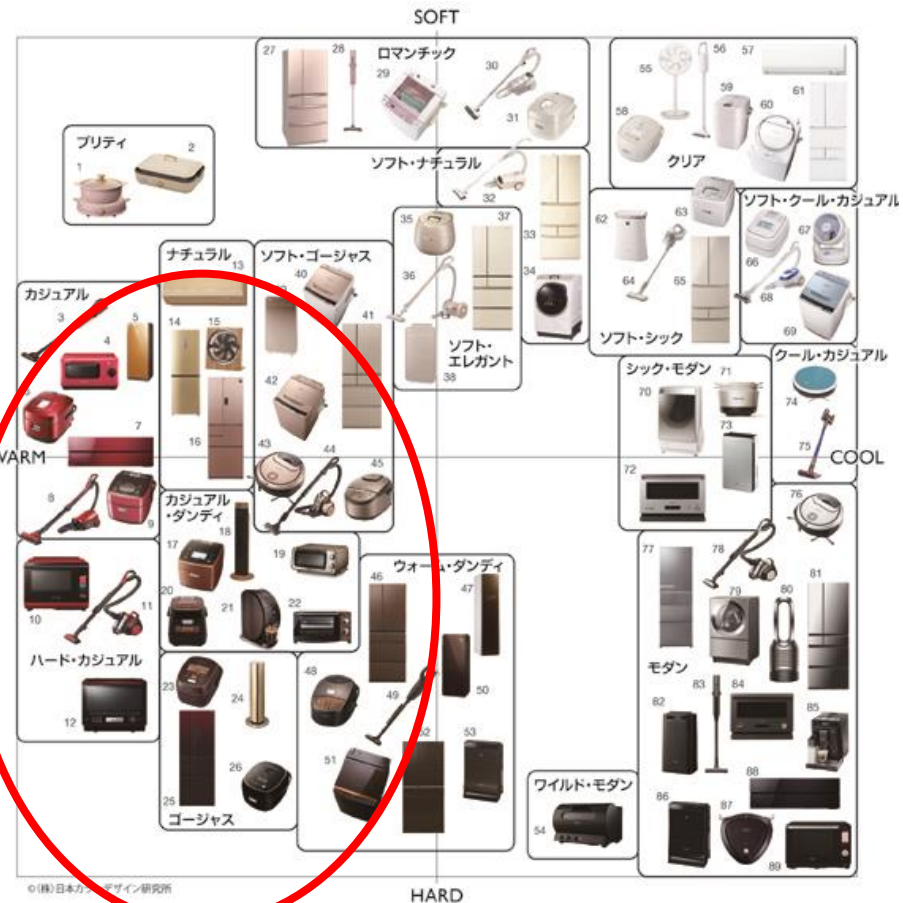
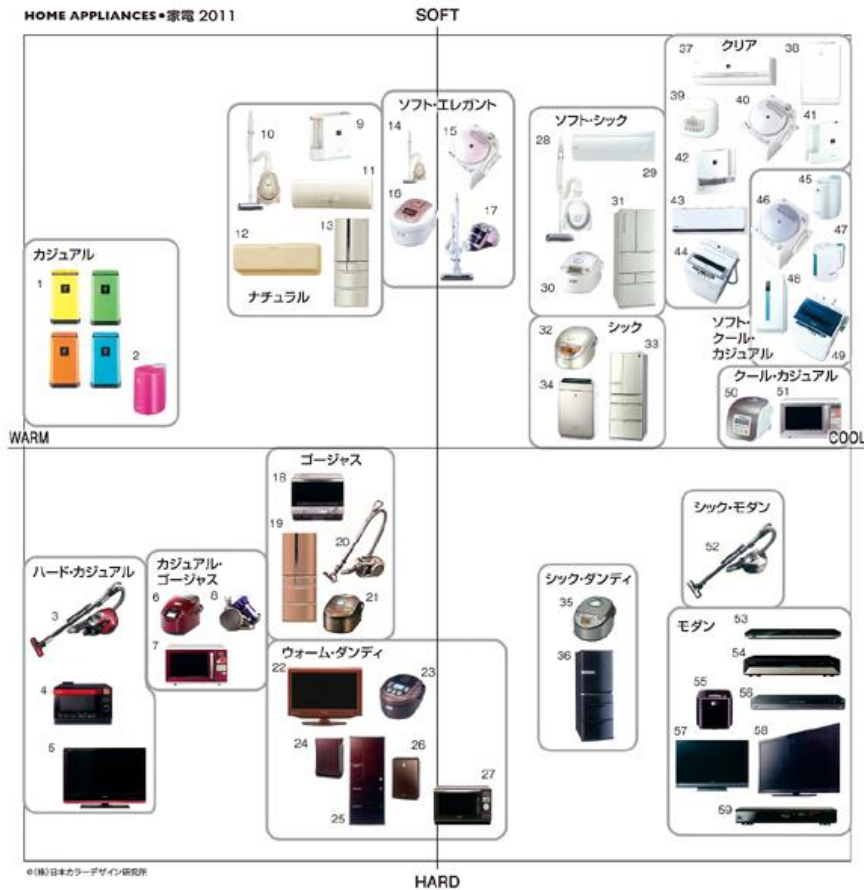
Ref. Season Image Color



Application of Color Image Scale

Home appliances 2011

Home appliances 2018

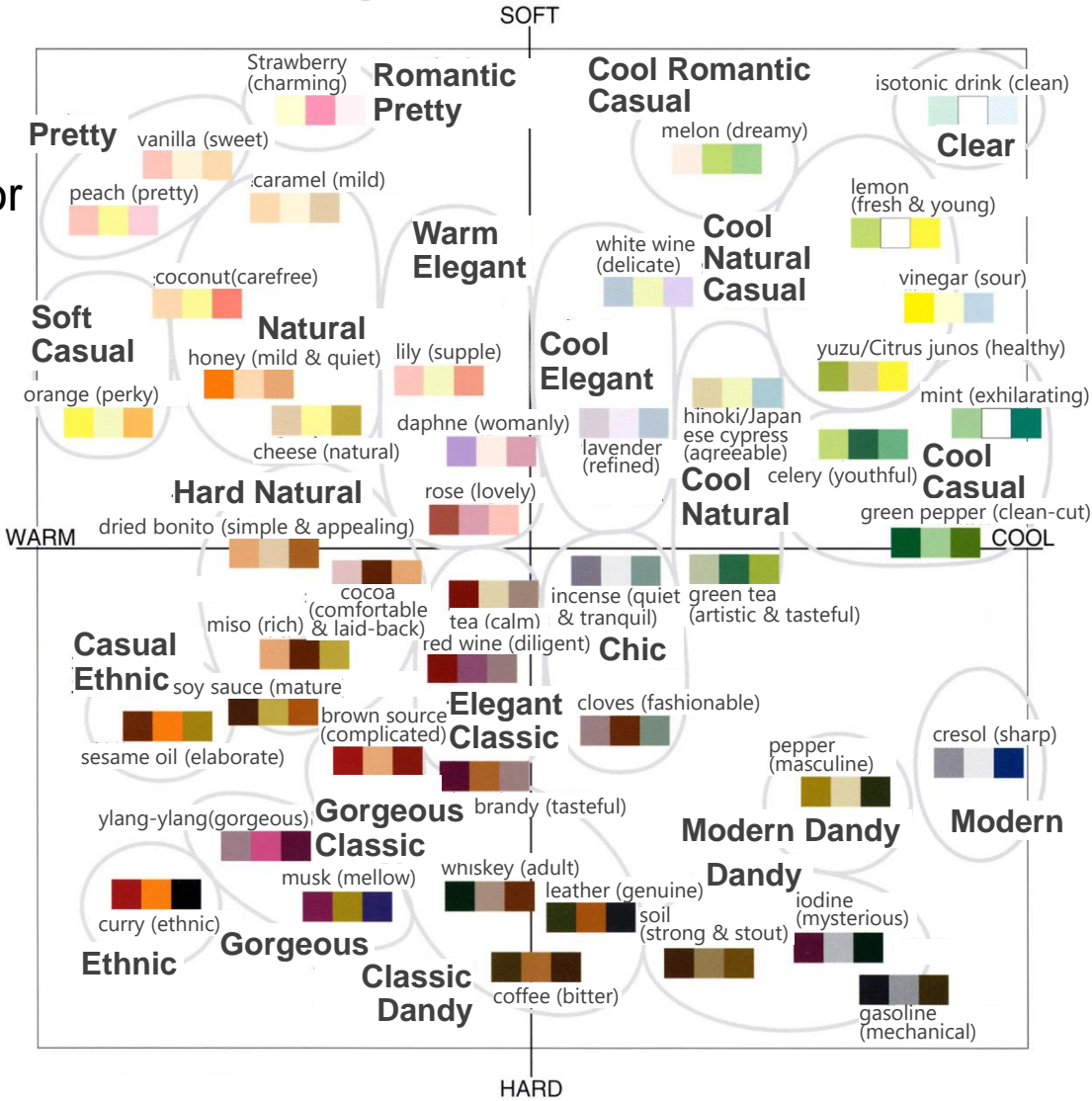


Ref. Season Image Color

Application of Color Image Scale

Scent

Ref. Season Image Color

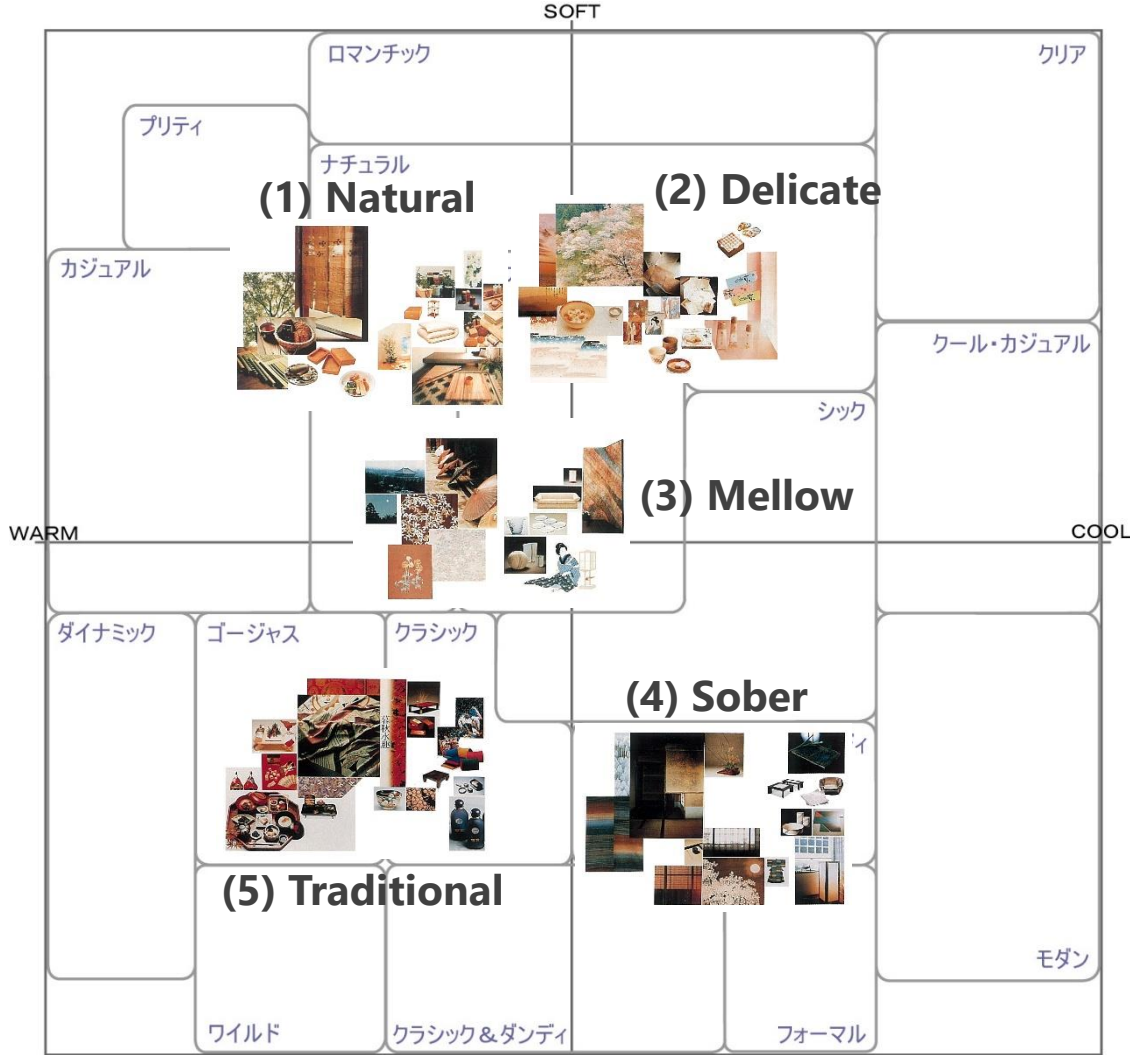


Concept Study: Wafu(Japanese Style)

| (1) Natural | (2) Delicate | (3) Mellow | (4) Sober | (5) Traditional |
|--|--|---|--|---|
| <p>Gentle Friendly Serene Unembellished Simple Calm</p> <p>Natural</p>  | <p>Elegant Rich Fine Peaceful</p> <p>Soft and elegant</p>  | <p>Emotional Smooth Graceful Mellow Modest</p> <p>Elegant</p>  | <p>Sober Plain Dry Elaborate Refined</p> <p>Chic, suave</p>  | <p>Traditional Dignified Conservative Classic</p> <p>Classic</p>  |
|  |  |  |  |  |

Concept Study: Wafu(Japanese Style)

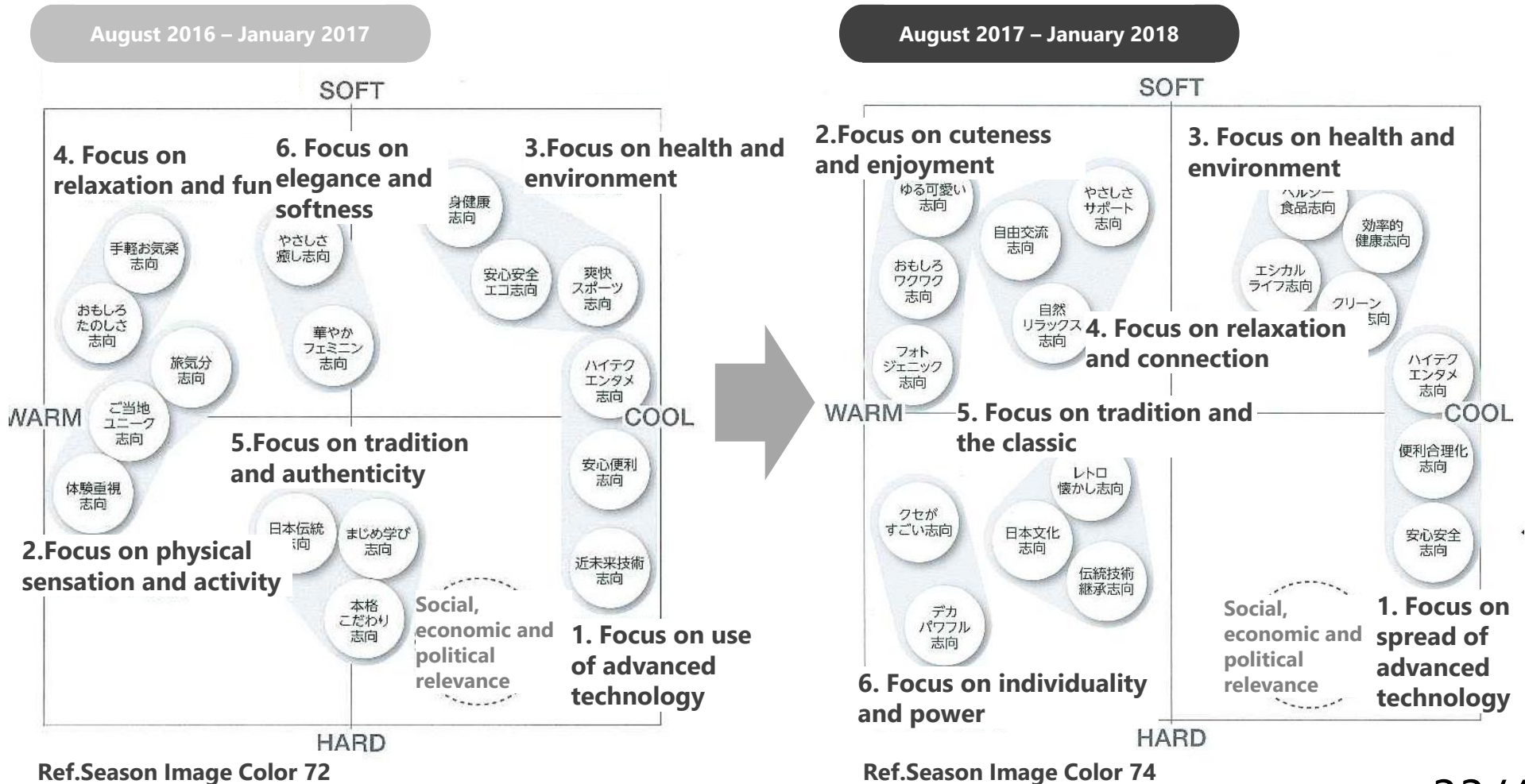
Wafu
Ref.Season Image Color



copyright 2006 (株)日本カラーデザイン研究所

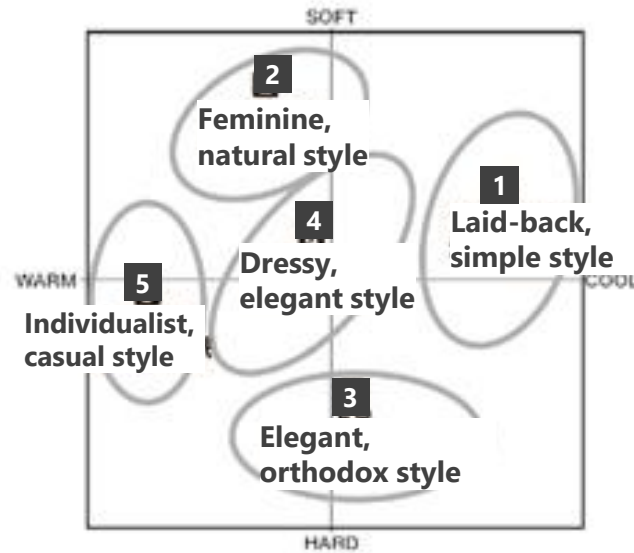
Application of Color Image Scale

Secular change of Era trend analysis



Study of Taste and Lifestyle in 2017

2 Feminine, natural style: 25.5% (112 /440)



1 Laid-back, simple style: 29.8% (131/440)



3 Elegant, orthodox style: 19.5% (86 /440)



4 Dressy, elegant style: 15.7% (69/440)



5 Individualist, casual style: 9.5% (42 /440)

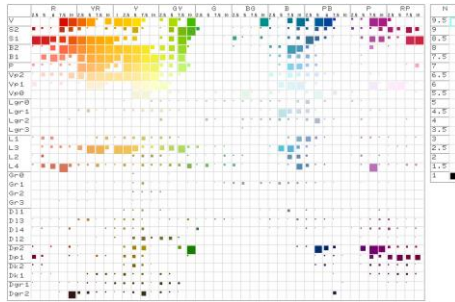


Ref.Season Image Color 74

Online Content Marketing

Analysis

Hue & Tone analysis



Data creation

Data of colors used



Database creation

Marketing data

Sales

Regions

Designed work

Image Scale analysis

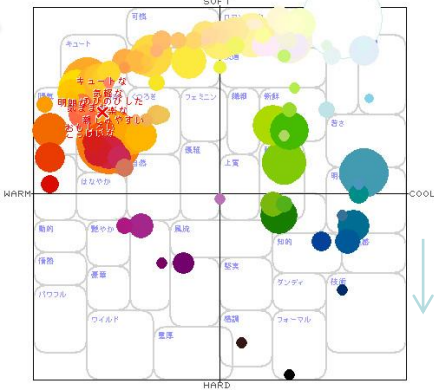


Image words

Color combination data



Into preference information database

Target

Preferred colors

Lifestyle

Materials

Designs

Sizes

Aim of Kobayashi3

Keywords of Founder

Ecological

Psychological

Historical

Economical



at Tokyo University's Botanical Garden
1996 photo by K.Iwamatsu

What we introduced today

Young Researcher's Aim

Munsell Color System

1. Hue & Tone System

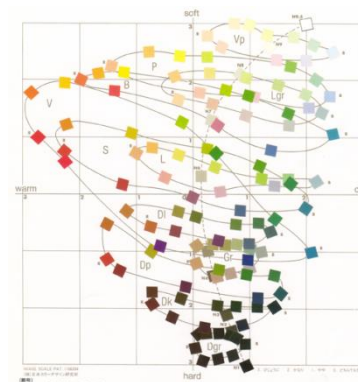
2. Color Image Scale



<http://http://munsell.com/color-blog/munsell-color-diary-easy-way-to-teach-color-theory/>

| 色相 | R | YR | Y | GY | G | BG | B | PB | P | RP | N |
|-----|---|----|---|----|---|----|---|----|---|----|-----|
| V | | | | | | | | | | | 9.5 |
| S | | | | | | | | | | | 9 |
| B | | | | | | | | | | | 8 |
| P | | | | | | | | | | | 7 |
| Vp | | | | | | | | | | | 6 |
| Lgr | | | | | | | | | | | 5 |
| L | | | | | | | | | | | 4 |
| Gr | | | | | | | | | | | 3 |
| Di | | | | | | | | | | | 2 |
| Dp | | | | | | | | | | | 1.5 |
| Dk | | | | | | | | | | | |
| Dgr | | | | | | | | | | | |

N=Neutralの色で無彩色を示す。



References

- S. Kobayashi, The aim and Method of the Color Image Scale, COLOR research and application, Volume 6, Number 2, Summer, John Wiley & Sons Inc.,1981
- S. Kobayashi, NCD, Color System, Kodansha, 1999
- Musell Renotation Color Book, Japan Color Research Institute, 1963
- S. Kobayashi, Yoshiyori Michie, Ouyou shikisai shinri (Applied color psychology) , Seishin shobo, 1975
- The Standard Color Card of America. 9th ed. Textile Color Card Association of the United States, Inc.; 1960
- Dictionary of Colour Standards. The British Colour Council; 1934.
- Dictionary of Colour Standards + 240 dyed woollen samples., The British Colour Council; 1951.
- Sanzo Wada. Encyclopedia of color names (Shikimei Soukan). , Tokyo: Shunjusha Publishing Company; 1931.
- Sanzo Wada, Japan Color Research Institute. Guide to Colour Standard (Iro no Hyoujun). Tokyo: Nihon Shikisai Sha; 1954.
- Colour Booklet. Tokyo: Nihon Shikisai Sha; 1961.
- Rokuro Uemura, Katsuhiko Yamazaki. Encyclopedia of Japanese Colour Names (Nihon Shikimei Taikan). Tokyo: Koubun-sha; 1943
- The Color Harmony Manual. 4th ed. Chicago: Container Corporation of America; 1958
- Kenneth L. Kelly and Deane B. Judd. ISCC-NBS Method of Designating Colors and a Dictionary of Color Names. National Bureau of Standards Circular; 1965
- Color Code for Market Survey . Tokyo: Japan Color Research Institute; 1964

Note

Every figure with no citation is either self-made or free.

Thank you.

