# Coloring your information: How designers use *Theory of Color* in creative ways to present infographic

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# Coloring your information: How designers use *Theory of Color* in creative ways to present infographic

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**Abstract.** Various methods of data presentation is now visualized through engaging infographics and perform the presentation techniques a new kind of storytelling. Geometric elements for infographics perform interesting data, which is developed with color harmony. There are categories of colors based on color circle from the theory of color design: primary color, secondary color and tertiary color. This color circle allows a designer to visualize the balance and harmony of colors when they are side by side. These composition of colors can be formed as a harmonious dyad, triad, or tetrads. A harmonious dyad is formed from two diametrically opposed colors on the color circle, which known as contrast complementary and works best in color harmonious if one of the colors is dominant. A harmonious triad is represented by three colors from the color circle which positions with an equilateral triangle. An triangle of yellow-red-blue shows the most powerful of harmonious triad and call as the fundamental triad. A harmonious tetrad is developed from two pairs of complementary colors, which can be formed by rectangle or square on the color circle. It help to figure out how objects are connected on presenting data. To create an efficiency infographic, presenting data has to prepare with some strategic. The color circle has the power to perform the infographic when it is made for a fascinating design.
**Keywords**: Infographic, Color Harmony, Color Circle, Theory of Color

## 1. Introduction

Presenting data is now changing with the new media how the way informations content are produced and influence the viewer´s understanding of the informations. Various methods of data presentation is a new kind of storytelling and make the presentation techniques more shorter and visualized through engaging infographics. [4] state the infographics should be viewed as a communication medium used by the organization to connect with different target audiences. Presentation techniques are done by visualizing data and reporting stories from new perspectives. According to [6] data visualization is a very broad concept, referring mainly to graphical methods to clearly and effectively distribute and communicate information. Geometric elements for infographics develop the attraction of data and can be enriched with emotional color. Using color is one of the easiest ways to take data visualization to a level of competence. There is a need for color selection in presenting data when dealing with complex topics. Color selection for data presentation is very important and is reflected in infographics.

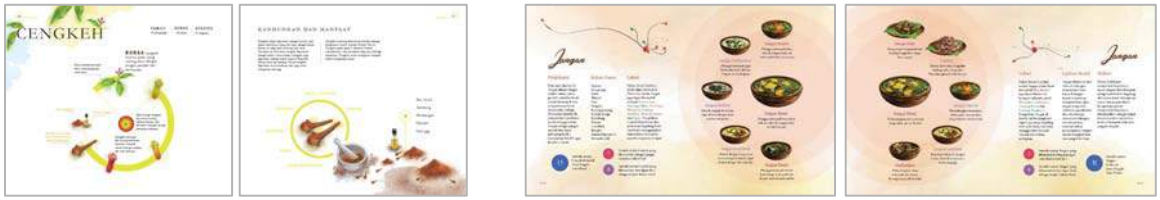


**Figure 1.** Infographic book from student final projects: Indonesian Spices and Javanese Culinary.

According to [5] graphics can be designed to have at least three viewing depths: what is seen from a distance, what is seen up close and in detail, what is seen underlying the graphic. In the field of graphic design, there are categories of colors based on color circle from the theory of color design: *primary color, secondary color and tertiary color*. [1] developed the 12-hue color circle based on primary colors: *yellow - red - blue*. These colors are placed in a equilateral triangle, yellow at the top, red at the lower right, and blue at the lower left. A circle is circumscribed about this equilateral triangle, in which a regular hexagon is inscribed. Three mixed colors which composed of two primary colors are placed between contiguous sides of the hexagon. It mentions as secondary colors: *orange - violet - green*. The six tertiary colors are located between the primary and secondary colors they are made from: *yellow-orange - orange-red - red-violet - violet-blue - blue-green - green-yellow*. This color circle allows a designer to visualize the balance and harmony of colors when they are side by side.

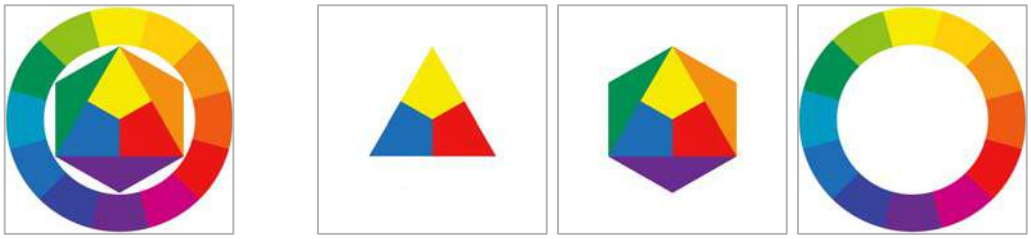

**Figure 2.** Theory of color by [1]:
primary colors, secondary colors, tertiary colors, and color circle.

## 2. Methods

According to [1] color harmony means the craft of developing themes from systematic color relationships capable of serving as a basis for composition. These composition of colors can be formed as two (dyads), three (triads), or four (tetrads) colors.

### *2.1. Dyads (two-color combination)*

Two diametrically opposed colors on the color circle form a harmonious dyad and well-known as contrast complementary. These complementary pairs show powerful combination. An number of harmonious dyad can be created on the color circle.

**Figure 3.** Harmonious dyads:
(*yellow* + *violet*) or (*red* + *green*) or (*blue* + *orange*).

**Figure 4.** Harmonious dyads:
(*yellow-orange* + *violet-blue*) or (*orange-red* + *blue-green*) or (*red-violet* + *green-yellow*).

*2.2. Triads (three-color combination)*

Three colors from the color circle which positions with an equilateral triangle represent a harmonious triad. An triangle of yellow-red-blue shows the most powerful of harmonious triad and call as the fundamental triad. The other triads are made up of these color combination from the secondary colors. Another particular triads can be formed by one color in the complementary dyad which replaced by its two neighbour colors.

**Figure 5.** Harmonious triads:
(*yellow* + *red* + *blue*) or (*orange* + *violet* + *green*)
or (*yellow-orange* + *red-violet* + *blue-green*) or (*orange-red* + *violet-blue* + *green-yellow*).

**Figure 6.** Harmonious triads:
(*yellow* + *red-violet* + *violet-blue*) or (*red* + *blue-green* + *green-yellow*)
or (*blue* + *yellow-orange* + *orange-red*).

**Figure 7.** Harmonious triads:
(*orange* + *violet-blue* + *blue-green*) or (*violet* + *green-yellow* + *yellow-orange*)
or (*green* + *orange-red* + *red-violet*).

*2.3. Tetrads (four-color combination)*

Two pairs of complementary colors show a harmonious tetrad. This color combination can be formed by rectangle or square on the color circle. Tetrads based on square are made up of two complementary pairs which connecting diameters are perpendicular to each other. Tetrads based on rectangle are obtained with a rectangle containing two pairs of complementaries.

**Figure 8.** Harmonious tetrads based on square:
(*yellow* + *orange-red* + *violet* + *blue-green*) or (*red* + *violet-blue* + *green* + *yellow-orange*) or (*blue* + *green-yellow* + *orange* + *red-violet*).

**Figure 9.** Harmonious tetrads based on rectangle:
(*yellow* + *orange* + *violet* + *blue*) or (*yellow-orange* + *orange-red* + *violet-blue* + *blue-green*) or (*orange* + *red* + *blue* + *green*) or (*orange-red* + *red-violet* + *blue-green* + *green-yellow*).

## 3. Result and Discussion

### *3.1. Harmonious Dyads for Infographic Design*

Complementary pairs may be the most frequently used color combination on infographic design. The idea of choosing contrast complementary is behind making graphical element on infographic effective. Using a harmonious dyad gives these infographic an efficiency of interpretation found in no other data composition. This type of combination works best in color harmonious if one of the colors is dominant and the other serves to create contrast. Because both colors are integrated, they need to blend together definitely. Graphical element with a harmonious dyad is the place to help viewers understand the infographic data better. The perfect harmonious dyad can attract attention the viewer and complement the data, all in one consistent information design. The success of complementary pairs compared to the black white visual gives viewer a lead on how graphical elements can communicate complex information easily.

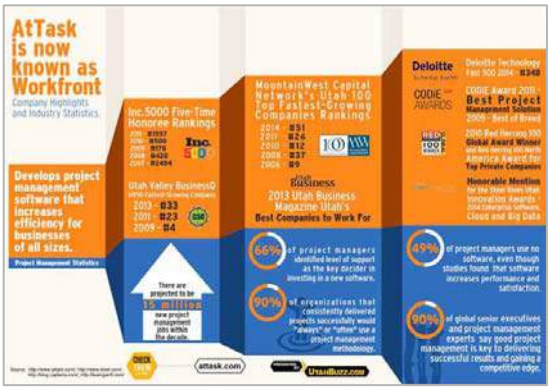


**Figure 10.** Infographic data using two-color combination: [7]

### *3.2. Harmonious Triads for Infographic Design*

The goal of a triad harmonious is to make complex data easier to understand. The infographic shown is integrated through its data content and separated several different information. Setting objectives does not have to be formal to be effective. The information needs to present some value to the viewer

consuming the content. It will be better at gathering and transforming information into infographics. The important thing to consider is the integrity of the data cause the data represent a complex concept within a specific information. This approach involves the viewer to think about presenting the data and showing the information with the infographic. The three-color combination should take those data in the viewer who find the informations in the infographic more clearly. The rule triads makes reasonable graphical information. It is important that the rule follow from the idea of maximizing the combination of colors. In these infographics, the concept of color theory are taken and present three popular and easy-to-use color-combinations to experiment with.

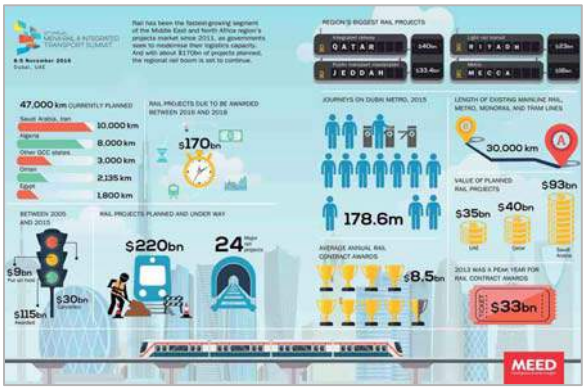


**Figure 11**. Infographic data using three-color combination: [8]

*3.3. Harmonious Tetrads for Infographic Design*

Color selection for presenting complex data is very important, because the colors chosen can help viewers understand the presentation more quickly in order to show information. If the viewer don´t see how objects are connected, it is difficult to explain a good processes that will impact understanding the information. A harmonious tetrad help to figure out which infographics are working and which ones are not. Thus design techniques for adding graphical clearness against of data complexity is developed with element of color. The content theme is reflected on infographics by the use of four colors as the combination color. This color combination guide to create objects and content the infographic communication to become more relevant and effective on presenting data. Different colors show different pieces of data. The four-color series perform the different sampled infographics shown.

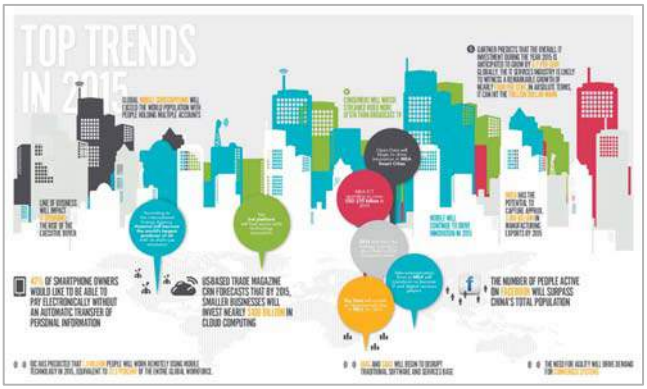


**Figure 12**. Infographic data using four-color combination: [9]

## 4. Conclusion

Data selection can influence the viewer´s understanding of the information. Different ways of presenting data obtain different informing information. [4] state thinking visually helps viewer synthesize the information more easily. Using infographics to visualize how data are related support

understanding of the connection that are significant to information. According to [5] the complexity of multifunctioning elements can sometimes turn data graphics into visual puzzles, crypto-graphical mysteries for the viewer to decode. To develop the efficiency of infographic, presenting data should be prepared in some strategic. Using color to deliver data on infographic help to impresse the point of information. [6] state when making infographics, rational use of geometric elements can increase the appeal of data, enriching the data with emotional color. The color circle has the power to perform the information and support the data on infographic when it is made for a fascinating design.

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