EinDfA TC NEWS #7/2018

Dear members and friends of the International Ergonomics Association (IEA) Ergonomics in Design for All Technical Committee,

Welcome to our second year and seventh newsletter!

Promoting Ergonomics in Design for All is a core activity of our EinDfA TC and on the **occasion of IEA2018 we are including a topic on standards.**

If you have any news on conferences, publications or standards, let me know **by the end of September** for the next newsletter.

You can find information about objectives, domains of interest, members of the TC here:

http://www.iea.cc/about/technical.php?id=56d641e4ddc48

I wish you good work,

Isabella T. Steffan

IEA Ergonomics in Design for All - TC chairperson

20th INTERNATIONAL ERGONOMICS ASSOCIATION CONGRESS IN FLORENCE August 26th-30th 2018

As you already know, the Italian Society of Ergonomics/Human Factors is pleased to host in 2018 in Florence, Italy, the 20th International IEA conference. The theme of the congress is "Creativity in Practice", with reference to the typical challenge of the Italian way to innovation engaged to transform the results of research on innovation to concrete actions to improve the quality of life and work.

The proceedings (and, thus, all the contributions) will be published by Springer. The publications will be referenced by SCOPUS and World of Science. There have been many abstracts submitted on Design for All-Universal Design, that is developing interesting synergies and practical results within Ergonomics.

Among others events, there will be five parallel sessions related to Ergonomics in Design for All.

Three parallel sessions and a symposium are planned on the 27th AUGUST, two parallel sessions and our Special Session on "International Standards on Accessibility and Design for All. Background and Evolution", together with our IEA Technical Committee Design for All meeting, are planned on the 28th AUGUST: they will be very busy days.

This congress will be not only an occasion to share new researches and case studies on Design for All/Universal Design, but also an occasion to meet professionals from different countries.

See: www.iea2018.org

We encourage you all to participate at the congress, we are looking forward to meeting you in Florence!

STANDARDS UNDER DEVELOPMENT IN TC159 "ERGONOMICS".

METHODS FOR CREATING COLOUR COMBINATIONS FOR OLDER PEOPLE, PEOPLE WITH DEFECTIVE COLOUR VISION, AND PEOPLE WITH LOW VISION (ISO 24505: PARTS 1 TO 4)

by Nana Itoh (Project Editor, TC159/SC5/WG5) and Ken Sagawa

When we use colours or colour combinations in visual signs or coloring products or environments, selection of colours is always a difficult, worrying and irritating task as so many colors exist in the choice and no rule can be found for the appropriate use of colour. However, being based on the theory of colour categorization, which has been established in recent color science studies, the problem could be simply solved.

The "colour category theory" tells us all the colours are perceived in groups of similar colours at the central level of the brain (not in the retinal level), such as red, green, blue, etc. According to the theory there are a limited number of colour categories (groups), 11 to 13 depending on the studies, in each of which colours are perceived as a group of similar ones. For example,
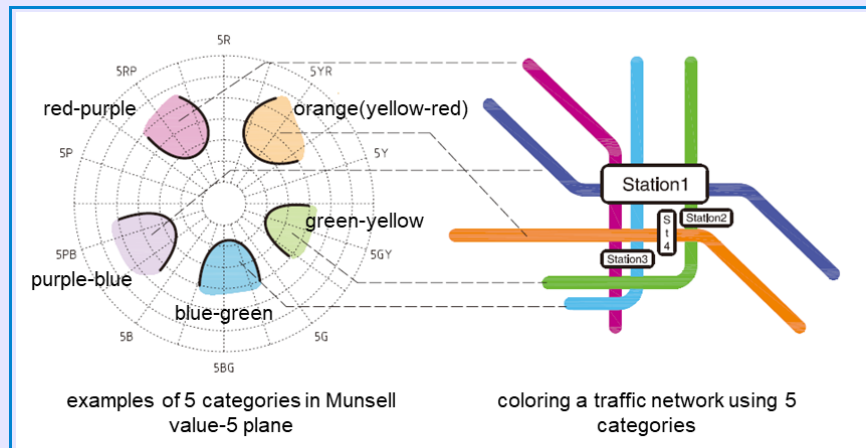

Figure 1 Examples of colour categories mapped into Munsell Value-5 plane (moderate brightness level) and an example of their application to coloring of a 5-lines traffic network

an orangish-red and a purplish-red are both perceived in the same colour category labelled "red". As intuitively understood from the theory, colours within a same category are apt to be confused, but on the contrary colours belonging to different categories can be easily differentiated. This idea could be applied to the choice of colors for color combinations. The problem is which colours belong to which categories.

ISO 24505 series are trying to develop the database for colour categories and to propose them for use in creating colour combinations. Database on colour categories mean defining the areas (or spans) for fundamental colours in human color space (such as red, orange, yellow, green-yellow, green, blue-green, blue, people -blue, purple, red-purple, white, grey, and black) using Munsell Colour Order System. Methods to create colour combinations are to combine these fundamental colours with different levels of differentiation based on the database.

Figure 1 shows an example of color categories (orange, green-yellow, blue-green, purple-blue and red-purple) shown in the Munsell Value 5 plane (moderate brightness level) and their application to coloring a traffic network. Five colours are selected, one from each of the categories, and used for coloring 5 lines of the network. As these colors are selected from "different categories", the combination of them consequently becomes discriminable each other. Other choices of colors may be possible as long as the colours belong to each of the 5 categories. This freedom is one advantage in colour selection with no need to use exact colors but to be able to use any color in a category.

From a view point of accessibility, the database should be developed to meet a wide range of people with different characteristics of color vision, such as older people, people with defective colour vision, and people with low vision. ISO24505 series are trying to develop four standards, three for those people, and the other one for the usage of those standards. Part 1 has already been published in 2016 for older people, and the others are now under preparation.