Seeing Colors (Regensburg, 19-20 Sep 16)

Universität Regensburg, Sep 19–21, 2016

Prof. Dr. Christoph Wagner

SEEING COLORS. International Symposium on Color Vision

Color vision is a prevalent sensory modality in modern society. We use color to communicate messages (“red means stop”), to highlight selected information, to denote national identity (the colors in each country’s flag), and to enhance the salience of otherwise unnoticed information. It has a powerful role in grouping, which is why subway maps are often shown in color and virtually impossible to use when printed in grey scale. Color is abundant in nature and is used by animals to discriminate between ripe and unripe fruits or vegetables, edible versus nonedible foods, as well as between seasonal changes in foliage. We learn to associate certain colors with other sensory modalities, such as red with hot and blue with cold. Color also plays an important role in aesthetic appreciation. It is essential for pictorial works of art, architecture, design, cosmetics and fashion. The scientific understanding of color vision goes back to the work of Sir Isaac Newton (1672) who made important observations about the nature of light and the realization that the proper understanding of color is in the constitution of the nervous system. In the 19th century, Hermann von Helmholtz (1866) suggested that different receptors in the eye were needed to differentiate between spectral colors. Working independently, Ewald Hering (1872) put forth the idea that color is encoded in an antagonistic fashion with the opponent axes green and red, yellow and blue, as well as white and black. He proposed that these processes are antagonistic over space and time, in agreement with the earlier work of the French chemist Michel Eugene Chevreul (1839) who studied how the appearance of colored surfaces is altered by simultaneous viewing of another colored surface. Modern vision science has deepened our understanding of color vision. In order to gain reliable data on color perception the Institute of Art History in Regensburg has started test runs on how people look at works of art and what parameters, such as shape and color, attract the viewers' attention. These results can draw conclusions to the intention of an artist by detecting his/her potential of targeting at these effects. Eye tracking methods in particular are capable of transcribing color perception into empirical values that can be interpreted and evaluated by means of natural sciences and humanities. These analyses have yet to become an established method in the field of research in art history. Remarkably enough, as it was the Russian psychologist and pioneer of empirical eye-movement research, Alfred L. Yarbus, who exemplified his studies on a work of art, Ilya Repin's Unexpectet Visitors (1884 – 1888), and released his outcome in 1967. This symposium will bring together experts in color vision to discuss current theories of color and known phenomena related to color vision, including the underlying retinal and brain processes. These experts have been invited to present their results in a manner that is understandable to an educated audience, who have little or no specialized knowledge about color vision. The interdisciplinary approach established by the cooperation of the Institutes of Psychology and Art

History, will unite researchers from neuroscience, ophthalmology, vision and color science, cognitive psychology, art history and philosophy.

Programm

Monday, September 19, 13:00

Opening Remarks
Mark Greenlee and Christoph Wagner

Session 1: Origins of Color (Moderator: Christoph Wagner)

13:10
Phenomena of color and the quest for mechanisms
John S. Werner, University of California, Davis

13:40
Cortical response to categorical color differences in prelinguistic infants
Ichiro Kuriki, Tohoku University

14:10
How the world became colored: the evolution of conscious color perception in primates
Jay Neitz, University of Washington

Session 2: Early Stage Mechanisms (Moderator: Jan Drösler)

15:10
A comparative look at photopigments and color vision
Gerald Jacobs, University of California, Santa Barbara

15:40
Electrophysiological correlates of cone-opponent processing in the human retina
Jan Kremers, University of Erlangen-Nuremberg

16:10
Colour blindness and Coloured Filters: What Dalton saw about the attenuation of colour vision
Justin Broackes, Brown University

16:40 Final discussion

Tuesday, September 20

Session 3: Chromatic and Achromatic Pathways (Moderator: Herbert Jägle)

09:00
Segregated transmission of achromatic and chromatic signals in the primate visual pathways
Barry Lee, Max Planck Institute – Göttingen and State University of New York,

09:30
Seeing colors in achromatic stimuli: Grapheme-color synesthesia

Gregor Volberg, University of Regensburg

10:00
Multiple spatial systems for color vision Arthur Shapiro,
American University, Washington DC

Session 4: Discrimination and Hue (Moderator: Maka Malania)

11:00
Seeing colours as different
John D. Mollon, University of Cambridge

11:30
Assessing the severity of colour vision loss - implications for
occupational environments
John Barbur, City University London

12:00
Discriminating colours in tetrachromatic space
Gabriele Jordan, University of Newcastle

Tuesday, September 20
Session 5: Complexities of Color (Moderator: Anton Beer)

13:30
Blue and yellow in the world, the brain, and the dress
Michael Webster, University of Nevada, Reno

14:00
Distorted insights: from hue anomalies to colour mechanisms
Andrew Stockman, University College London

14:30
The neural basis of color "filling-in" and its attentional modulation
Peter Tse, Dartmouth College

Session
6: Color Constancy (Moderator: Alf Zimmer)

15:30
Why colour constancy needs more than colour
David Foster, University of Manchester

16:00
Color perception and memory - The impact of color on our experience and behaviour
Axel Buether, Bergische University, Wuppertal

16:30
Seeing (and feeling) the light

Anya Hurlbert, University of Newcastle

Wednesday, September 21
Session 7: Cortical Mechanisms (Moderator: Patrick Cavanagh)

09:00
Comparing color systems in monkeys and humans
Bevil Conway, Wellesley College

09:30
Colour vision across the life span: perception, brain imaging and individual differences
Sophie Wuerger, University of Liverpool

10:00
Colours in the human brain: of movies, the binding problem,
constancy, and predictive coding
Andreas Bartels, University of Tübingen

Session 8: Color in Art and Culture (Moderator: John S. Werner)

11:00
"Interaction of Color" – Concepts of Seeing Colors in Modern Art
Christoph Wagner, University of Regensburg

11:30
Color – from means of representation to object of representation
Matthias Bleyl, Weissensee School of Art, Berlin

12:00
The colours of paradise and its discontents
Karl Schawelka, Bauhaus University, Weimar

On-site registration: 200 Euros

Program Committee
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