AIC STUDY GROUPS

M. Rossi¹, V. Cheung², I. Calvo Ivanovic

STUDY GROUP ON ARTS AND DESIGN



CHAIR: MARIA JOÃO DURÃO (PORTUGAL) CO-CHAIR: DAVID BRIGGS (AUSTRALIA)

In 2023 the Study Group on Arts and Design (SGAD) organized its AIC 2023 workshop in collaboration with Colour and Light Research Group of CIAUD -Lisbon School of Architecture's Research Centre of Architecture, Urbanism and Design, the Portuguese Colour Association, and the Colour Society of Australia.

1. SGAD WORKSHOP INVITED LECTURE

The SGAD Workshop was held at 15th AIC Congress 2023 Chiang-Rai, Thailand, 1st December under the general theme: 'Colour research impacts in the Art and Design fields'. It included an invited lecture, "Colour research impacts in Design praxis: An analysis of academia and industry approaches to colour" by **Cristina Caramelo Gomes,** followed by the 2nd SGAD Virtual Exhibition of Arts and Design, presented by SGAD Chair **Maria João Durão**.

Cristina Caramelo Gomes, professor and researcher at the Colour and Light Research Group at CIAUD shared her experience and knowledge with the very interesting invited lecture: *Colour research impacts in Design praxis: An analysis of academia and industry approaches to colour,* where she examined academic and industrial aspects related to both colour research and practice in the broad field of design, followed by a group discussion.

Cristina's research was funded by FCT - Fundação para a Ciência e a Tecnologia, I.P., under the Strategic

Projects (UIDB/04026/2020, UIDB704008/2020 and UIDP/04008/2020).

2. II ARTS AND DESIGN VIRTUAL EXHIBITION

At the 2nd AIC SGAD Arts and Design Virtual Exhibition, curated by SGAD Chair **Maria João Durão** and Co-chair **David Briggs**, the following themes were featured by a total of 27 participants:

The Fundamental Elements of Colour, David J. C. Briggs; Shillito colour curriculum update, David J. C. Briggs & Eva Fay; The Nature of Redness, Natalie O'Connor; Organic Colour 2020-2023, Liz Coats; Colour contrasts in the work of Sá Noqueira, Alexandra Ai Quintas; Colour: Deviations and Intersections, Ana Guerreiro & Ana Cravo; Colours in Monocular Rivalry, Leone Burridge; Reverential Ecology: Projecting Colour into Urban Space, Helena Soares; Projecting Colour into Urban Space Using Reverential Ecology Concepts, Helena Soares & Maria João Durão; Patterns on Façades, Helena Soares & Filipa Santos; Color and Consumer Behavior, Luisa M. Martinez & Filipe R. Ramos; Colours, Places and Bridges, João Pernão; Colour in Architectural Space-Transfiguration Devices, Carlos Pesqueira-Calvo; Virtual Maze - Virtual Reality in the Creative Process of Artistic Installations, Carlos Pesqueira-Calvo, Lidón Ramos-Fabra, Emilio Delgado-Martos, David García-León, Maria João Durão; Cathedral of Portalegre: Restoration of the Glazed Tiles, Rui Duarte & Ana Paula Pinheiro; Amoreiras Tower Center a Post-Modern Building, Vanda Matos; Colours



A selection of the works presented at the 2nd AIC SGAD Arts and Design Virtual Exhibition,

of Lisbon: Living Model and Perfection, Joaquim M. Santos; Creating Colour webinar series, Jean Pretorius & Veronica Colvin; The Atlas of Colour-Emotion, Verónica Conte; Colour Theory: Understanding and Working with Colour, Lisa Cianci.

3. JOINT EVENT BETWEEN SGAD AND COLOUR SOCIETY OF AUSTRALIA FOR ICD 2023

On March 26 the Study Group on Arts and Design (SGAD) held an online ICD 2023 event jointly with the Colour Society of Australia, *Controlled Palettes in Painting.* After an introductory historical presentation by **Dr David Briggs, Tristan Elwell** of the School of Visual Arts, New York, spoke on the painting system of mid-20th century American illustrator and art teacher Frank J. Reilly and its subsequent influence. The speakers were introduced by **Professor Maria João Durão**. The event attracted over 300 registrants and the recording of Tristan's presentation has reached over 6,100 views.

4. INSTAGRAM ACCOUNT

We'd like to remind all our members and friends that SGAD now has an Instagram account with posts showing artworks, design objects and art- or designrelated projects, publications and events (https://www. instagram.com/aic.sg.arts.design/). SGAD members who would like to suggest material for the SGAD Instagram account are welcome to send their proposed content to us at any time in the form of one or more high-quality jpeg images (300 dpi) and a short description including hashtags in a text document.

STUDY GROUP ON COLOUR EDUCATION

CO-CHAIRS: MAGGIE MAGGIO (USA) & ROBERT HIRSCHLER (HUNGARY)

2023 was yet another thrilling year for the SGCE, full of actions and achievements.

COLOUR LITERACY FORUMS

The Colour Literacy Project organized three Forums:

Forum #4 Colour & Materials (March 31, 2023)

- 1. *Past: Colours of the ancient world* (Carolyn E. Boyd)
- 2. Present: The concept of cesia (visual appearance other than colour) (José Luis Caivano)
- 3. Future: Sustainable wood-based structural colour (Noora Yau & Konrad Klockars)

Forum #5 Colour and the Perceiver (June 15, 2023)

- Colour communication from design to production (Ming Ronnier Luo)
- 2. The role of context and memory in colour experience (Maria Olkkonen)
- 3. Teaching universal and accessible design for colour vision divers individuals (Bill Fischer)

Forum #6 Evolution of Colour Vision (September 29, 2023)

- 1. In the blink of an eye (Andrew Parker)
- 2. In some ways, we see colours remarkably the same; in others, we are remarkably different (Jay Neitz)
- 3. Is human colour vision scalable? (Kimberly A. Jameson)

The Forums have been recorded and are available at https://colourliteracy.org/colour-literacy-forum

JAIC SPECIAL ISSUES

JAIC (the Journal of the AIC) had two special issues in 2023 with contributions by SGCE members:

#32 Special Issue on Colour Theory

Editor: Robert Hirschler Contributors:

- Georges Roque
- Roy Osborne
- Zena O'Connor
- Ellen Divers
- Chiaki Yamane-Saihoji
- Daniel W. Dichter

#32 Special Issue on Contributions by the Colour Literacy Project Team

Editor: Robert Hirschler Contributors:

- Luanne Stovall
- Robin Kingsburgh
- Ingrid Calvo Ivanovic
- Marjan Vazirian, Wenwen Song, Stephen Westland
- Paul Green-Armytage, Maggie Maggio
- David J. C. Briggs
- Harald Arnkil
- Andreas Schwarz
- Robert Hirschler

Both issues are available on the AIC web site at https:// aic-color.org/journal-issues



Class exercise in the St. Teresa RCP Elementary Irlam (top) and group exercise in the Dongmaojie Elementary and Shazitang Elementary, Changsha, Hunan, China (bottom).

CLP CURRICULUM BETA-TESTING

The Colour Literacy Project continued to work with partner schools on beta-testing the exercises for basic colour education. In 2023 four partner schools were active: *St. Teresa RCP Elementary Irlam*, England (Coordinator: Colette Harrison); *Dongmaojie Elementary and Shazitang Elementary*, Changsha, Hunan, China (Coordinator: Huang Qian); *DaVinci Middle School*, Portland, Oregon, USA (Coordinator: Edin Cook) and *Morristown Beard School*, Morristown, NJ, USA (Coordinator: Peter Donahue).



Demonstrating interference colours in the DaVinci Middle School, Portland, Oregon (top) and additive mixing exercises in the Morristown Beard School, Morristown, NJ, USA (bottom).

CLP WEBSITE

The Colour Literacy Project website (www.colourliteracy. org) was expanded significantly over the past year. The new sections of the website are:

- 1. Colour Basics Section with entries on Foundations, Misconceptions, and Colour Basic Links
- Resources Section with entries on Books, Online Resources, Links to Colour Talks and Lectures, and Top Ten Lists
- 3. For Educators Section with entries on Foundations Level, Post-Secondary Level, and Partner Schools

STUDY GROUP ON COLOUR VISION AND PSYCHOPHYSICS

CHAIR: SHOJI SUNAGA (JAPAN) SECRETARY: CHANPRAPHA PHUANGSUWAN (THAILAND)

The purpose of this Study Group (SG-CVP) is to discuss basic and practical studies on colour vision, colour appearance, colour discrimination, brightness perception of colours, colour preference and application tools for planning and testing universal colour designs, and to share useful information among the members. We deal with topics ranging from colour vision models to universal colour design including colour perception of the elderly.

ACTIVITIES

- Currently, the number of members of the SG is 102 from 16 countries.
- We organized the session (Color Vision) at AIC2023 Thailand.
- We are hosting the SG homepage using the following website: http://www.okajima-lab.ynu.ac.jp/CVPSG/ (the URL will move to a new URL soon).
- SG members reported some interesting research related to the SG.

ANNOUNCEMENT

The chairman and secretary of SG-CVP changed as follows, until Oct. 2023: **Chairman: Katsunori Okajima** (Yokohama National University, Japan); **Secretary: Manuel Melgosa** (University of Granada, Spain).

From Oct. 2023, **Chairman: Shoji Sunaga** (Kyushu University, Japan); **Secretary: Chanprapha Phuangsuwan** (Rajamangala University of Technology Thanyaburi, Thailand)

RECENT TOPIC

Prof. Sunaga's master course student Hector A. Palomo (Kyushu University, Japan) presented "Influence of Color Appearance on Dichromats' Superiority in the Visual Search Task with Color" at the AIC 2023 15th Congress Thailand [1].

In general, it is assumed that dichromacy is an inferior colour vision to trichromacy because the colour space of dichromacy is reduced to two dimensions whereas that of trichromacy which is called normal colour vision is three dimensions. However, recently there have been a few reports indicating the advantages of dichromacy [2-4]. Although Sunaga et al.'s group also reported the superiority of dichromacy in colour search tasks with only the S-cone stimulus value as a cue [5-6], the reason for the superiority of dichromacy in colour search tasks with such a specific condition has been unknown. Palomo et al. showed one explanation for the superiority of dichromacy in colour search tasks.

Figure 1 shows the stimulus used by Palomo et al. The color stimulus consisted of 13 disks from one target colour and two distractor colors. The target colour was assigned to only one disk and each distractor color was assigned to six disks. The colours of the target and the distractors were defined in the MacLeod-Boynton cone excitation diagram on the equal luminance plane. The s-chromaticities of the distractors were part of that of the target by +0.2 and -0.2, respectively. The l-chromaticities of both the target and the distractors were identical. They changed the chromaticities



Figure 1. The stimulus used in the experiment for measuring the detection times of the target.

of the target and the distractors as parameters while maintaining the relationship of their chromaticities. They measured the duration time for detecting the target disk for trichromats and dichromats.

Figure 2 shows the duration thresholds for finding the target for one trichromat and one deuteranope. The duration thresholds of the dichromats were shorter than those of the trichromats. That is, it was found that dichromats have an advantage in the colour search task with the specific multi-coloured environment. Rather, when the entire stimulus is reddish or greenish, the duration thresholds of trichromats were shown to be longer.

The reason for the longer duration thresholds of trichromats was investigated from the viewpoint of the colour appearance of the disks. In the next experiment, they measured the colour appearance of the colour disks used as the targets and the distractors with the elementary colour scaling method. The colour appearances of the colour disks were plotted in the NCS (Natural Color System)-like color space based on the whiteness, blackness, and chromaticness consisting of redness, yellows, greenness, and blueness evaluated by the participants. They calculated each distance between the target colour and each distractor colour and their geometric average in the NCS-like colour space. The geometrically averaged distances between the target and diffuse colours (Figure 3) showed a similar chromaticity dependence of the target and the distractor colours to the duration thresholds (Figure 2). This suggests that the colour appearance affects the detection time and that dichromacy is superior to trichromacy in some specific multi-coloured environments.







Figure 3. The color distance between the target and the distractors for the trichromat.

References:

[1] Palomo, H. A., Muraya, T. & Sunaga, S. (2023) Influence of color appearance on dichromats' superiority in the visual search task with color. Proceedings of AIC 2023, 741-746.

[2] Morgan, M. J., Adam, A. & Mollon, J.D. (1992). Dichromats detect colour-camouflaged objects that are not detected by trichromats. Proceedings of the Royal Society B: Biological Sciences, vol. 248, 291-295.

[3] Saito, A., Mikami A, Hosokawa T. & Hasegawa, T. (2006) Advantage of dichromats over trichromats in discrimination of color-camouflaged stimuli in humans. Perceptual and Motor Skills, 102(1), 3-12.

[4] Sharpe, T. L., Luca, E., Hansen, T., Jägle, H. & Gegenfurtner, K.
R. (2006) Advantages and disadvantages of human dichromacy.
Journal of Vision, 6, 213–223.

[5] Katsura, S., Mitsuyasu, S. & Sunaga, S. (2016) Superiority of Dichromats in a Visual Search Task Cued by S-cone Stimulus Value. Proceedings of AIC 2016, 120-123.

[6] Hishikawa, Y., Katsura, S. & Sunaga, S. (2018) Influence of the number of distractor colors on performance in the visual search task cued by S-cone stimulus value. Proceedings of AIC 2018, 697-703.

STUDY GROUP ON ENVIRONMENTAL COLOUR DESIGN



CHAIRS: VERENA M. SCHINDLER (SWITZERLAND) JUAN SERRA LLUCH (SPAIN) WWW.AICECD.ORG

NEW CO-CHAIR

It is a pleasure to announce that Juan Serra Lluch (Spain) has been appointed as the new SG ECD co-chair. Juan Serra holds a Ph.D. in architecture, is a full-time associate professor and sub-dean for research at the School of Architecture of the Polytechnic University of Valencia (UPV) in Spain. He is a member of the Colour Research Group in Architecture of the Heritage Restoration University Research Institute (IRP-UPV) and has been a Fulbright Visiting Researcher at Rochester Institute of Technology. He is a specialist in colour in modern and contemporary architecture and has participated in competitive research projects on colour restoration, building integration, and colour in architectural interiors to improve wellbeing and performance. He is editor-in-chief of the journal VLC arguitectura and serves on the Editorial Board of Colour Research and Application. He is also author of the book Color for Architects (New York, NY: Princeton Architectural Press, 2019). http://www.upv. es/ficha-personal/juaserl1

ECD SPECIAL ISSUE

The Special Issue on Environmental Colour Design of Color Research and Application, Vol. 48, No. 5, September/October 2023 celebrates the 40th anniversary of the SG ECD (1982-2022) and was edited by CRA senior editor **Verena M. Schindler.** The special issue includes an editorial and 18 articles by authors from 15 countries. The cover image, photographed by René Robert, is based on Jean-Philippe Lenclos' methodology, The Geography of Color, and represents the initial stage of his Le Morayshire Scotland analysis. Enjoy reading the articles in this special issue and share them with your colleagues. https://onlinelibrary.wiley.com/toc/15206378/2023/48/5



Cover of the Special Issue on Environmental Colour Design of Color Research and Application, Vol. 48, No. 5, September/ October 2023, edited by Verena M. Schindler

NEW PROJECT

Past SG ECD chair **José Luis Caivano** and the present two **SG ECD chairs** launched a new Color Research and Application Special Collection on *Environmental Color Design Research*. The aim of this collection of

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Environmental Color Design Research

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original papers, which will be published over several issues and also on a special web page, is to discuss the multifaceted role of colour in indoor and outdoor spaces, the interaction of colour in natural and sociocultural environments, the impact of colour on human behaviour, cognition, emotion, and how the field will respond to future developments. Submission is now open: https://onlinelibrary.wiley.com/doi/toc/10.1002/ (ISSN)1520-6378.environmental-color

MEETING AT AIC 2023

During the AIC 2023 congress, an SG ECD meeting on the role of theory and practice in environmental colour design was held on 28 November, followed by a lively discussion on how Artificial Intelligence (AI) may change environmental colour design. https:// www.aic-color.org/publications-proceedings

IACC ACADEMY SALZBURG SEMINAR

The International Association of Colour Consultants/ Designers (IACC), founded in Hilversum (NL) in 1957, celebrated its 65th anniversary with a special seminar organized under the direction of Edda Mally, M.A., in cooperation with the Association of European Colour Consultants/Colour Designers (BEF). Verena M. Schindler was invited to speak on the topic of colour design in urban planning and was awarded honorary IACC membership. https://iacc-akademie.org/en/homeenglish/ and https://bef-farbdesign.com



Invited Speaker Verena M. Schindler at IACC Academy Salzburg Seminar, September 2023. Bottom: IACC Lecturers (from left) Stephan Bolli (CH), Alexander Karnutsch (IT), Edda Mally (AT), Markus Anderegg (CH)

NEW SG ECD MEMBERS JOINING IN 2023 INCLUDE:

Alexander KARNUTSCH (IT) Ana MOREIRA DA SILVA (PT) Andrea Luisa SUAREZ DMITRUK (UY) Blanca FERNÁNDEZ QUESADA (ES) Edda MALLY (AT) Eva-Lena BÄCKSTRÖM (SE) Franziska KOCKS (DE) Haisong XU (CN) Julian RENNIE (NZ) Iulie LAMARRA (US) Markus ANDEREGG (CH) Midori TANAKA (JP) Mikiko KAWASUMI (JP) Mira ENGLER (US) Natalie O'CONNOR (AU) Shuang HE (CN) Supawadee THEERATHAMMAKORN (TH) Vicky SYRIOPOULOU (IT) Vincent C. SUN (TW) Wona LHI (KR) Woon Lam NG (SG)

STUDY GROUP ON THE LANGUAGE OF COLOUR



CHAIR: A. PROF. DIMITRIS MYLONAS (UK) CO-CHAIR: PROF. GALINA PARAMEI (UK) WWW.LANGUAGE-OF-COLOR.AIC-COLOR.ORG

The purpose of the AIC Study Group on the Language of Colour (SGLC) is to share information on and discuss studies on psycholinguistics, computational linguistics, semantics and semiotics of colour names, and the relation of these to perception of colour and its underpinning cognitive and neural mechanisms. Currently the SGLC has 218 registered members from 58 countries. Social networking platforms of the SGLC in Twitter (@aic_lc) and Facebook (@languageofcolour) have currently 941 and 605 followers respectively. Our new LinkedIn group is available at https://www. linkedin.com/groups/12923723/.

On 29th November 2023, we hosted a SGLC meeting with approximately 25 members in attendance at the 15th Congress of the International Colour Association



SGLC meeting at the 15th AIC Congress, Chiang Rai, Thailand, 29th November 2023.

(AIC) in Chiang Rai, Thailand. **Dimitris Mylonas** chaired an open discussion on Exploring the Language of Colour Beyond Primary Colours in the Age of AI.

Vibrant conversations delved into the challenges posed to the traditional Hering's opponent theory, emphasising the need for alternative testable hypotheses to guide future research for a deeper understanding of the interplay between perceptual and cognitive aspects of colour processing. Furthermore, recognised was the potential of Large Language Models (LLMs) as a tool for translating colour names between different languages, while also acknowledging limitations of LLMs for scientific work in colour specification.

The discussion also ventured into the realm of social media, questioning the declining suitability of Twitter and suggesting LinkedIn as a more promising platform for fostering collaboration and knowledge exchange within the field. We encourage our members to join our new LinkedIn group.

Listed below are research activities of SGLC members in 2023.



Del Viva, M.M., Castellotti, S., & Paramei, G.V. (2023) - Semantic map (3D solution) of inter-term adjacencies for the Italian colour terms with the highest salience indices, S > 0.01 (NHS = 32).

Galina Paramei co-authored two publications related to Russian and Italian colour names:

Bochkarev, V.V., Shevlyakova, A.V., Solovyev, V.D., Rakhilina, E.V., & Paramei, G.V. (2023). Linguistic mechanisms of colour term evolution: A diachronic investigation of "Russian browns" buryj and koričnevyj. Diachronica, 40(4), 492-531. https://doi.org/10.1075/ dia.22013.boc

Del Viva, M.M., Castellotti, S., & Paramei, G.V. (2023). The Italian colour lexicon in Tuscany: Elicited lists, cognitive salience, and semantic maps of colour terms. Humanities and Social Sciences Communications, 10(1): 900. https://doi.org/10.1057/s41599-023-02393-4 **Lourdes García Ureña** (co-) authored a book chapter and a journal article:

García Ureña, L., & Durán Mañas, M. (2023). Color, símbolo y teología: la sangre en el Apocalipsis. In M. Salvá (ed.), Los primeros cristianismos ysu difusión (pp. 103-116). Rhemata Monografías. Reus (Tarragona). ISBN:9788412507812

Ureña, L.G., (2023). Darkness or blackness? A semantic study of רשח (Joel 3:4). Journal of Biblical Literature, 142(1), 111–127. https://doi.org/10.15699/jbl.1421.2023.6 Mari Uusküla published an article reporting results of a large-scale international project:

Uusküla, M., Mohr, C., Epicoco, D., & Jonauskaite, D. (2023). Is purple lost in translation? The affective meaning of purple, violet, and lilac cognates in 16 languages and 30 populations. Journal of Psycholinguistic Research, 52(3), 853-868. https://doi.org/10.1007/s10936-022-09920-5

STUDY GROUP ON THE LANGUAGE OF COLOUR

CHAIR: A. PROF. DIMITRIS MYLONAS (UK) CO-CHAIR: PROF. GALINA PARAMEI (UK) WWW.LANGUAGE-OF-COLOR.AIC-COLOR.ORG

Yulia Griber presented results of her two ongoing international projects at the 15th Congress of the International Colour Association 2023:

Griber, Y.A., Samoilova, T., Al-Rasheed, A.S., Bogushevskaya, V., Cordero Jahr, E., Gouaich, Y., Manteith, J., Mefoh, P., Odetti, J.V/. Politi, G., & Sivova, T. (2023). "Geometry" of color harmony in the CIELAB space: Evidence from an online experiment across countries. In Proceedings of the 15th Congress of the International Colour Association 2023, Chiang Rai, Thailand (pp. 431-436). International Colour Association. https://aic-color.org/publications-proceedings

Griber, Y.A., & Paramei, G.V. (2023). Impact of colour on recognition of cultural landscape images. In Proceedings of the 15th Congress of the International Colour Association 2023, Chiang Rai, Thailand (pp. 852-857). International Colour Association. https:// aic-color.org/publications-proceedings **Dimitris Mylonas** presented his work on colour naming at several meetings:

Mylonas, D. (2023). Colour naming brings people together. Human Sensory Experiences Symposium, University of Sussex, 20th April 2023, Brighton, UK.

Mylonas, D. (2023). Colour naming in humanity centred design. Leeds Colour Conference 2023, 4th July 2023, Leeds, UK.

Mylonas, D. (2023). Multilingual networks of colour synonyms. Color Workshop 2023, Justus-Liebig-Universitat Giessen, 17th July 2023, Rauischholzhausen Castle, Germany.



Dimitris also published the following works:

Mylonas, D., Koliousis A., Stutters J., Katemake P., Stockman A., & Eskew R.T. (2023). Augmenting colour communication in English, Greek and Thai. In Proceedings of the 15th Congress of the International Colour Association 2023, Chiang Rai, Thailand (pp. 425-430). International Colour Association. https:// aic-color.org/publications-proceedings

Norelli, M.F., Mylonas, D, & Koliousis, A.. (2023) The use of colour names over repeated trials. In A. Muco & F. Cherubini (eds.), Color and Colorimetry. Multidisciplinary Contributions, vol. XVIII A (pp. 19-25). Lecco, Italy: Gruppo del Colore. van Leeuwen, J.E.P., McDougall, A., Mylonas, D., Suárez-González, A., Crutch, S.J., & Warren, J.D. (2023). Pupil responses to colorfulness are selectively reduced in healthy older adults. Scientific Reports, 13(1): 22139. https://doi.org/10.1038/s41598-023-48513-7

Dimitris Mylonas, Galina Paramei and **Jules Davidoff** are co-editors of a *Special Collection on Color Cognition* in the journal Color Research and Application, Wiley.

We invite members of the SGLC to submit their articles for publication at: https://onlinelibrary.wiley.com/page/ journal/15206378/homepage/color-cognition