



**ASSOCIATION INTERNATIONALE DE LA COULEUR
INTERNATIONALE VEREINIGUNG FÜR DIE FARBE
INTERNATIONAL COLOUR ASSOCIATION**

**ANNUAL REPORT
2016**



NO. 29

EDITED BY

Lindsay MacDonald
University College London

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Delegates at the AIC mid-term meeting in Tokyo, May 2015: Larissa Noury (France), Manuel Melgosa Latorre (Spain), Maria Elena Chagoya (Australia), Frank Rochow (Germany), Georgina Ortiz Hernandez (Mexico), Osvaldo da Pos (Italy), Carinna Parraman (UK), Alessandro Rizzi (Italy), Yoko Mizokami (Japan), Takahiro Horiuchi (Japan).

2015 was a year of significant anniversaries for several AIC member countries: Bulgaria 35 years, Great Britain 75 years, Spain 50 years and Sweden 50 years. Their enduring appeal and range of activities show that they have successfully changed with the times and remained relevant to the interests of both artistic and industrial practice. 2015 was also decreed by the



**INTERNATIONAL
YEAR OF LIGHT
2015**

UN as the International Year of Light, focusing on light science and its applications, to raise global awareness of how light-based technologies can provide solutions to global challenges in energy, education, agriculture and health. Because light is inseparably associated with colour, the year also raised the international profile of colour science and its many applications, particularly

through the International Colour Day (ICD). Diverse activities celebrating ICD on 21 March are reported here for Australia, Brazil, Bulgaria, Canada, Finland, Great Britain, Korea, Portugal, Slovenia, Sweden and Taiwan. A special report on ICD has been compiled by Prof Maria João Durão (pp.41-42).

The highlight of the year was the AIC mid-term conference in Tokyo (p.12), hosted with outstanding charm and efficiency by the Colour Society of Japan. Everything was ideal: the presentations, the social programme and the venue were stimulating and enjoyable, all in the best traditions of AIC. Especially memorable was the outing to the sumo wrestling.



In the poster session at AIC2015 in Tokyo with Maja Strgar Kurečić (left) and Lidija Mandić, both from the Croatian Colour Society.

Thank you very much to all the AIC member societies and study groups who have contributed the reports in these pages. Especially worthy of note are the illumination of a whole building façade in Brazil (p.16), coloured cocktails in Canada (p.18), a national colour training scheme for school teachers in Chile (p.19), a chromatic piano concert at Notre Dame de Paris (p.22), the handover of the presidency in Hungary from one Prof Nemcsics to another (p.25), a major research project on 'Colour and Quality in higher dimensions' in Norway (p.29), exploration of 'The unexpected' in Sweden (p.33), experiments into colour constancy in Thailand (p.36), and an award for outstanding service to Rolf Kuehni in the USA (p.37). Two societies, China and Spain, have adopted new logos with strong colour graphic design. In the Study Group on the Language of Colour it was a special pleasure to welcome the new Co-Chairs, my colleagues Dimitris Mylonas and Prof Galina Paramei (p.46).

The strength of colour design as a discipline within the AIC community continues unabated. Many of the activities, projects and teaching strategies reported by members show colour in the context of design, finding colourful solutions that fit within the envelope of constraints imposed by the client. Through the theory and practice of colour design, and by bringing together practising colour designers, the AIC is able to make a significant contribution to consumer products, living spaces and human well-being around the world.



Scenes from the colourful excursion to the sumo wrestling tournament at the Ryogoku Kokugikan stadium in Tokyo.

PRESIDENT'S REPORT

It is a great honour to hold the position of President of the Association Internationale de la Couleur for the two-year term 2016–2017, and I greatly appreciate the opportunities I have had over many years working with you all in the dynamic colour environment of the AIC. First I would like to introduce to you my colleagues on the AIC Executive Committee, who will be managing the affairs of the organisation for the next two years.

Tien Rein Lee, the Vice-President, will be responsible for coordinating the Deane B Judd Award for 2017 and the new AIC Colour Award in Art, Design and Environment.

Lindsay MacDonald takes on the role of Secretary/Treasurer in addition to his brilliant contribution as editor of the AIC Annual Report, a position which he has agreed to retain.

Jin-Sook Lee is Chair of the Organising Committee for the AIC Congress in October 2017 to be held on Jeju Island, Korea (see page 49). Early indications are that attendance at this Congress will break all records.

Maria João Durão will continue her work in coordinating and promoting the International Colour Day (ICD) which is growing in strength every year. A newcomer this year was Nigeria, still as yet to become a regular member. Maria will also continue to work with former AIC President Berit Bergström to obtain endorsement from UNESCO for the International Colour Day. Could I ask all of you please to work hard on promoting this day.

Gabriela Nirino will keep you all up to date on AIC and other international colour activities through the AIC E-news. For past issues please visit the AIC website at www.aic-color.org

Nancy Kwallek continues to look after the AIC Wiki and needs everyone's support in making this a valuable tool for members.

I look forward to working with Javier Romero in his role as Past-President and will be regularly seeking his valuable advice. I should also mention and thank others who actively support the AIC and the Executive Committee. Berit Bergström, in addition to working with Maria João Durão in obtaining UNESCO recognition for the ICD, is also responsible for reviewing the design of the AIC logo. Jose Caivano does an enormous amount of work behind the scenes keeping the AIC Website up to date, most recently overseeing the transfer of our domain name to a new home, together with Frank Rochow and Dimitris Mylonas. I would like to thank Frank and the Deutscher Verband Farbe, Germany, for allowing us to use their hosting facility over the years. Jose has also worked with Vien Cheung, Associate Editor of our Journal to incorporate the JAIC into the main AIC website. JAIC is now live on www.aic-color.org

Stephen Westland, Vien Cheung and Kevin Laycock do a fantastic job as Editors of JAIC, as do the technical review committee in creating a very high quality journal of which the AIC can be justly proud.



There are four active AIC Colour Study Groups: (1) Study Group on Colour Education, chaired by Robert Hirschler; (2) Study Group on Environmental Colour Design, chaired by Verena M Schindler; (3) Study Group on Colour Vision and Psychophysics, chaired by Katsunori Okajima, assisted by Manuel Melgosa; (4) Study Group on The Language of Colour, chaired by Dimitris Mylonas. The Chairs of the Study Groups all keep members of their groups regularly up to date with relevant colour research and event news. These activities greatly contribute to the image and professionalism of the AIC.

I would like to thank and congratulate Asao Komachiya, Hirohisa Yaguchi and their colleagues from the Color Science Association of Japan (CSAJ) for hosting the very successful Mid-Term AIC Meeting 2015 in Tokyo in May last year (see page 12).

I hope you have all noted in your diaries the dates for the AIC Interim Meeting 2016 in Santiago Chile organised by the Chilean Color Association. A large number of high quality papers have been submitted for this conference, ensuring its success: 18–22 October 2016 “Color in Urban Life: Images, Objects and Space” (see page 48).

The AIC is a very dynamic organisation with twenty-six Regular Members, two Associate Members, and more than 20 Individual Members. Future AIC Meetings for 2018 Portugal and 2019 Argentina are already in the planning stages.

Objectives of the Executive Committee include the establishment of an AIC Student Award to encourage the next generation of colour researchers, increasing the number of regular members particularly from regions where there is currently little involvement in AIC activities, and obtaining UNESCO endorsement for the ICD.

With colourful regards

Nick Harkness

Nick Harkness, AIC President



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ACCOUNTS

Bank account reconciliation statements for the period 1 January to 31 December 2015, prepared by the AIC Treasurer, Prof Tien-Rein Lee. All figures are in Australian dollars (AUD).



(1) St George Bank Freedom Business Savings Account (Australia)		
Opening Balance on 1st January 2015	AU\$ 2,380.01	
Income from members	+3,680.00	
Withdrawal on June 9, 2015	-1,103.12	Printing of Annual Report
Withdrawal on Sep 22, 2015	-325.46	AIC Wiki providing July 2015 ~ June 2016
Account Service Fees: 1 st Jan ~ 31 st Dec 2015	-100.00	
Closing Balance on 31st December 2015	AU\$ 4,531.43	
(2) St George Bank Business Access Saver Account		
Opening Balance on 1st January 2015	AU\$ 12,441.48	
Total Credits: 1 st Jan ~ 31 st Dec 2015	+192.71	Bank interest
TFN Withholding Tax: 1 st Jan ~ 31 st Dec 2015	-84.00	
Closing Balance on 31st December 2015	AU\$ 12,550.19	
St George Bank Total Funds	AU\$ 17,081.62	
PayPal		
Opening Balance on 1st January 2015	AU\$ 167.85	
Membership Income: 1 st Jan ~ 31 st Dec 2015	+ 1,250.00	
Service Fees: 1 st Jan 2015 ~ 31 st Dec 2015	-37.50	Transaction fee 3%
Closing Balance on 31st December 2015	AU\$ 1,380.35	

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Dr. Lindsay MacDonald
AIC Secretary / Treasurer

AIC Audit for 2014 and 2015 by Frank Rochow

Dear Lindsay!

I have received copies of the AIC accounts and bank statements relating to the two years 2014 and 2015, ending 31st of December 2015. Together with these statements I was able to check all invoices which led to payments from AIC to third parties. I am happy to report that all bank account statements agree with the records on income, expenditure and transfer for the above period. I would like to express my deep gratitude to all of you who worked hard and successfully on the AIC finances during this period. In detail (using dd/mm/yy for the dates):

St. George Bank Freedom Business Balances :

01/01/14	AUD 2,828.19	which in turn corresponds with the 31/12/13 balance and the audited treasurer's report 2013 and treasurer's report 2014
31/12/14	AUD 2,380.01	which corresponds with the treasurer's report 2014
01/01/15	AUD 2,380.01	which corresponds with the treasurer's report 2015
31/12/15	AUD 4,531.43	which corresponds with the treasurer's report 2015

St George Bank Business Access Balances :

01/01/14	AUD 12,276.08	which in turn corresponds with the 31/12/13 balance and the audited treasurer's report 2013 and treasurer's report 2014
31/12/14	AUD 12,441.48	which corresponds with the treasurer's report 2014
01/01/15	AUD 12,441.48	which corresponds with the treasurer's report 2015
31/12/15	AUD 12,550.19	which corresponds with the treasurer's report 2015

PayPal :

01/01/14	AUD 23.85	which corresponds with the treasurer's report 2014
31/12/14	AUD 167.85	which corresponds with the treasurer's report 2014
01/01/15	AUD 167.85	which corresponds with the treasurer's report 2015
08/05/15	AUD 1,380.35	which corresponds with the treasurer's report 2015
31/12/15	AUD 1,380.35	(after 08/05/15 no further transactions occurred in 2015)

Remark:

The balance of the PayPal account in 2013 was always kept at AUD 0.00 by transferring the incoming money immediately to the bank account. This was verified during the 2013 audit by checking all of the transfers. Therefore, no closing balance was given in the 2013 treasurer's report and audit. But as the transfer to the bank of the AUD 23.85 (25.00 - 1.15) received from Andrew Chalmers on 20/12/13 was executed not before 03/02/14 because of the year's end, there appeared a balance of AUD 23.85 in the opening balance 01/01/14.

The total amount of AIC assets was AUD 18,461.97 on 31st of December 2015.

Yours sincerely,



Frank Rochow
(Berlin, 31st of July 2016)

AUDITOR'S REPORT

August 15, 2016

Dr. Lindsay MacDonald
AIC Secretary/Treasurer
University College London

Dear Lindsay,

After receiving all the 2014 and 2015 bank statements from Tien Rein Lee, membership dues and missing documentation kindly provided by you and President Nick Harkness, I am happy to report that my audit is complete. It agrees with the 2014 and 2015 Treasurer's reports as well as with that of my co-auditor, Frank Rochow.

Here are the important specifics that are worthy of note for my report. Please be aware that all of the balances that I report agree with those contained in the Treasurer's report for the corresponding year, either 2014 or 2015. (Dates are mm/dd/year)

St. George Bank Freedom Business Savings Account

1/1/14 AUD 2,828.19 – which also agrees with the 12/31/13 number in the 2013 Auditors' report
12/31/14 & 1/1/15 AUD 2,380.01
12/31/15 AUD 4,531.43

St. George Bank Business Access Saver Account

1/1/14 AUD 12,276.08 – which also agrees with the 12/31/13 number in the 2013 Auditors' report
12/31/14 & 1/1/15 AUD 12,441.48
12/31/15 AUD 12,550.19

PayPal

1/1/14 AUD 23.85 – opening balance
12/31/14 & 1/1/15 AUD 167.85
5/8/15 - 12/31/15 AUD 1,380.35 –no further transactions from May – December, 2015

Please note that the opening balance for the PayPal account was not zero because a payment (\$25 - \$1.15 service fee = \$23.85) from Andrew Chalmers received on 12/20/13 was not executed before 2/3/14.

Thus the total assets of all three AIC accounts as of 12/31/15 was AUD 18,461.97

I commend the hard work of all who contributed to the very sound financial status of AIC with a liquid Freedom Account and a significant amount of money in an interest-bearing savings account at the end of the year 2015. If this philosophy continues, the financial future of AIC will continue to look good.

Respectfully submitted,



Paula J. Alessi

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In addition to the categories of regular member and associate member, Article 4 of the AIC Statutes defines the category of individual member: *'Persons may be affiliated with the AIC as individual members if they are interested in the aims of the AIC and show they have knowledge in the field of colour. Individual members may take part in the activities of the AIC and receive the information and documents intended for regular members. They shall, however, have no right to vote. They cannot make part of the AIC Executive Committee unless they belong to and are nominated by a regular member.'*

Applications for individual membership are scrutinised by members of the AIC Executive Committee to ensure that the applicant demonstrates an appropriate background and professional standing and experience in one of the disciplines of colour. An individual member may be based in a country that already has a regular member society. Individual members are encouraged to participate in the annual AIC meetings and to contribute to the AIC Study Groups. Every individual member receives the AIC e-news by email and a printed copy of this Annual Report.

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IN MEMORIAM



Prof János Schanda (1932-2015) worked during the 1980s and 1990s for the CIE in Vienna as its General Secretary and later as Technical Manager, and was responsible for many of the CIE standards and expert symposia. In 1994 he took up the position of Professor of Informatics at the University of Pannonia in Veszprém, Hungary, where he led a research group with great

energy and flair. He was Vice-President of AIC (1978–1981) and, as a member of the Hungarian National Color Committee, he was on the scientific committee of AIC 1976, and the organising committee of AIC 1982, and co-chairman of Color 93, the 7th AIC Congress in Budapest. I vividly remember his invited lecture on "Colour Measurement of LEDs, Problems and Corrections" at AIC 2007 in Hangzhou, China. Dr Schanda presented a paper at the 1st AIC Congress 1969 in Stockholm, where he talked on "Colour measurements of luminescent materials". He participated in the Helmholtz-Symposium 1971 in Driebergen. He talked on "Colour metrics in the service of colour dynamics" at AIC 1976 in Budapest, on "Correlated colour temperature and the Delta E_{ab} colour-difference formula" at the 3rd AIC Congress 1977 in Troy, then on "Colour metrics and colour dynamics" at AIC 1982 in Budapest, and continued to present papers at almost every AIC meeting up to the 12th Congress 2013 in Newcastle. Altogether it was a 45-year-long period of engagement and activity in the Association Internationale de la Couleur (AIC). We will miss him greatly. – Verena M Schindler



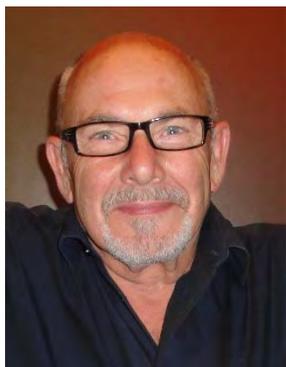
Cristina Manganiello (1946-2015), vice-president of Grupo Argentino del Color, passed away in October. She was for many years a fundamental part of the Argentine Color Group and also researcher, teacher, artist, companion, friend and our official photographer. She graduated from the Faculty of Fine Arts at the National University of La Plata, as Art Professor and Painter. She was Professor and Director of

research projects on colour in visual communication. She published numerous papers on the subject, some of which are on the GAC website. As an artist, she was devoted mainly to painting, participating in turn in the Mail Art Movement numerous times. Her work was shown in numerous exhibitions, both individual and collective, at local, national and international levels. Her work is found in numerous art museums: MUMART La Plata, Municipal de Concepción del Uruguay, Artemio Alisio de Concepción del Uruguay, Latin American Art Gallery Miami, USA, Provincial Fine Arts PBA, Fra Angelico UCALP, Museum La Plata UNLP, Art Museum of Rio Grande, Tierra del Fuego and Mail Art International European and American museums, in addition to galleries and private collections. She participated in numerous shows and painting competitions. More information about her artistic production is at www.cristinamanganiello.com.ar – Gabriela Nirino



Dr Arthur Tarrant (1929-2015) was a keen and practical supporter of the Colour Group (Great Britain), having been Chairman (1975-77), and was given Honorary Membership in 2006. After graduating with a BSc in Physics from the University of London, Arthur joined the National Physical Laboratory (NPL) in 1950 as an Experimental Officer working in spectro-

radiometry. In 1967 he successfully defended his PhD on the spectral composition of daylight, using results from many instruments in the form of miles of hole-punched paper tape. His main research topics were the spectroscopy of daylight, scattered light in optical instruments, lighting in the home, the names people give to colours and visual colour measuring instruments. His teaching included optics, instrumentation, spectroscopy and lighting. He was a Visiting Scholar of the University of Derby, where he helped build a novel visual colorimeter, and later Visiting Research Fellow of the University of Leeds. Few who saw them could forget his colour lectures – which he must have done several hundred times, yet always managed to keep fresh and inspiring, involving a series of spectacular demonstrations (such as jellies with mismatched flavours and colours). In 1997 he was awarded 'Lighting Personality of the Year' by CIBSE (Chartered Institute of Building Services Engineers), recognising his work in chairing several groups tasked with publishing Lighting Guides for lecture theatres, offices, hospitals and pubs. In short he was a very colourful character who made many contributions to colour science and was greatly loved and admired by his colleagues around the world. – Andrew Hanson



Frank H Mahnke, President of the IACC, died 27 September 2015 in Geneva, Switzerland. He dedicated his life to the study of colour and how it can be used to create beneficial and healthy surroundings for human beings in the places where they live, work, and heal from illness. He was first a partner of Mahnke & Mahnke Environmental Design, which in 1988 was renamed the American Infor-

mation Center for Color and Environment. Since 1977, he worked as an environmental designer and colour consultant on architectural projects for federal and state governments and in the private sector. His work emphasised the importance of environmental conditions for medical and psychiatric health-care facilities, offices, industrial and manufacturing sites, educational institutions, and correctional facilities. He was a permanent lecturer for the IACC on the psycho-physiological effects of colour and light, and human reaction to the built environment. He was author of the widely-admired text books *Color and Light in Man-Made Environments* (VNR, New York 1987) and *Color Environment & Human Response* (VNR, New York 1996). See also IACC/NA report (page 38). – Karen Collins



The AIC Mid-term Meeting was held in Tokyo 19–22 May 2015, hosted by the Color Science Association of Japan (CSAJ). The venue was the huge Ochanomizu Sola City Conference Center. The previous AIC meeting in Japan was the 8th Congress in Kyoto in 1997.



The architect Kayo Sejima delivering the keynote 'Gathering Space'.

The theme of AIC2015 was “Color and Image”. The word ‘image’ has a very wide meaning: not only visible presentation, such as imaging devices, displays and pictures, but also a presentation of anything from people’s minds. Since any topics of colour should be correlated to image, we called for papers from a variable field of colour. We could successfully provide a unique forum, bringing together researchers, academics, students, artists, architects, industrialists, engineers, designers, computer scientists, lighting experts, media types, exhibitors and business leaders. Also the 16th International Symposium on Multispectral Colour Science (MCS 2015) was incorporated.

Time to move out of the lab?’ On Friday 22, Prof Hidehiko Komatsu gave an invited talk entitled ‘Neural Representation of Color in Visual Cortex’. After the AIC General Assembly on Thursday, the AIC Judd award ceremony was held. Dr Françoise Viénot, Emeritus Professor, Muséum National d’Histoire Naturelle, Paris, received the award. Since she could not travel to Tokyo for reasons of her health, Prof Christine Fernandez-Maloigne delivered the Judd Award Lecture on her behalf, entitled ‘On dimensionality of the colour world’ (see page 13).

A social event was held every day, commencing with a welcome reception at the reception hall on Tuesday 19. Accompanying persons and delegates enjoyed Nerikiri Cooking: traditional Japanese sweets *wagashi* on Wednesday 20 and a Walking Tour of Historical Buildings of Old Edo (Tokyo) on Thursday 21. After the conference on Friday 22, an optional Sumo tour was arranged. Participants enjoyed a famous restaurant at lunch to eat *chanko nabe*, a stew consumed in vast quantities by the *rikishi* (sumo wrestlers), then watched their fierce battles from comfortable reserved seats. On May 21, there was a 120 minute sunset and dinner cruise on Tokyo Bay. The 70 metre yacht gracefully carried participants around the most popular sights in Tokyo Bay, including the Rainbow Bridge, Tokyo Tower, Tokyo Skytree, Tokyo Gate Bridge, Wakasu and Odaiba seaside parks with a delicious accompanying dinner.

We would like to thank all participants, sponsors and staff for making AIC2015 Tokyo such a successful meeting. We really hope that AIC2015 will inspire everyone, especially young researchers and students, to develop their research further in the world of colour and imaging. – Hirohisa Yaguchi (Chairman)



Kasumi Watanabe playing the 25-stringed koto (opening ceremony).

The total number of attendees was 370, of whom 259 were delegates, 97 were students, and 14 were accompanying persons. Delegates came from 28 countries, with the greatest numbers from Japan (167), Korea (30), Taiwan (24), China (23), UK (17), Spain (11), Thailand (11), Sweden (10) and France (10).

For the technical programme, 324 abstracts in total were submitted through *EasyChair* from 28 countries. Each of the 88 reviewers was assigned 15 papers, so that each paper should have been reviewed by four reviewers. The majority of papers received positive scores. During the conference 60 oral presentations were given in two parallel streams, plus 172 posters in two-day sessions.

At the opening ceremony on Wednesday 20, the world-famous architect Kayo Sejima delivered a keynote lecture entitled ‘Gathering Space’. On Thursday 21, Prof Jon Yngve Hardeberg gave an invited talk entitled ‘Multispectral Colour Imaging:



Delegates pose for the official photo in the Main Hall.

JUDD AWARD 2015: FRANÇOISE VIÉNOT



The AIC Judd Award was established in 1973 to honour the memory of Deane B Judd, and is presented every two years. It is the highest honour that can be bestowed by the international colour community. The Award recognises work of international importance in the fields of colour perception, colour measurement and colour technology. The members of the 2015 Judd Award Committee were: Nick Harkness (Chair), Paula Alessi, Berit Bergstrom, Roy Berns, John Hutchings, Mitsuo Ikeda, Daniel Lozano, Alan Robertson, Lucia Ronchi, Lars Sivik and Arne Valberg. There were six candidates, and the 2015 recipient was Dr Françoise Viénot of the Muséum National d'Histoire Naturelle (MNHN), Paris. For health reasons she was not able to attend the meeting in Tokyo, so her presentation was delivered by Prof Christine Fernandez-Maloigne.

The MNHN has a long tradition in natural science and particularly in colour. In the 19th century, Michel-Eugène Chevreul was Director of the Chemistry Department and Dean of the institution. In the 20th century, Yves le Grand was a researcher at the Museum and contributed to the first AIC Congress in 1969. The Viénot laboratory is devoted to the conservation of cultural heritage. The researchers investigate historical manuscripts, old photographs, gems and fossils. They design exhibition illumination and develop protective schemes for the public displays and conservation of the objects.

Professor Viénot received her PhD in 1975 from Paris University followed by a post-doctoral interlude at Billmeyer's Laboratory at Rensselaer Polytechnic Institute, Troy, New York. Her expertise is in the field of colour vision and the measurement of appearance. She has conducted research and supervised graduate and postgraduate studies at the MNHN in the relationship between colorimetry and physiology, colorimetry and mesopic photometry, colour-blindness simulation, LED illumination, BRDF analysis and gloss measurement, and conservation of museum artefacts. She teaches Colour Vision and Colorimetry at Paris-Sud University and Poitiers University (ESIP). She is co-author of approximately 70 journal articles and 120 conference papers, and of the books *Vision et Mesure de la Couleur*, and coordinator with Roque and Bodo of *Michel-Eugène Chevreul: Un savant, des couleurs!* She is Past President of the Centre National Français de l'Éclairage, chair of CIE TC 1-36 on the 'Chromaticity diagram with physiologically significant axes', and was Associate Director for Vision for Division 1 of the CIE. She serves on the editorial board of *Color Research and Application*. She received the Prix Alfred Monnier from Association Française de l'Éclairage (1997), and the Newton Medal from the Colour Group of Great Britain (2012).

In her presentation, Dr Viénot reviewed developments over the past 200 years in the knowledge of trichromatic vision, sensitivity of photo-receptors, and the molecular genetics of isolated photo-pigments. She showed how this led to specification of the cone fundamentals and the CIE



2006 framework for a standard observer with variable angle of view. She then turned to metamerism and its fundamental importance to colour science. The generic framework of metamerism implies that the number of sensors is smaller than the dimension of the stimulus. The three-dimensional colour space that we take for granted may be reduced in dichromatism by the absence of one of the photoreceptor types. The spectrum of illumination, in particular the changing phases of daylight, may give a contextual dimensionality. With additional receptors, colour worlds with expanded dimensionality may be perceived. In mesopic viewing conditions, where rod photoreceptors contribute to vision, all observers with normal colour vision become tetrachromatic. The recently discovered photopigment melanopsin, active in intrinsically photosensitive retinal ganglion cells, has been found to affect pupil size, circadian rhythm and other non-image-forming visual responses. This might yet be shown to affect colour vision through chromatic adaptation. The generalised metameric approach to colour vision thus has metamers in a four- or five-dimensional framework.



Two specimens of the Madagascar fody at the MNHN. By specifying the spectral power distribution of illumination on the older, faded, specimen (right) it was possible to obtain a close visual colour match.



The Argentine Color Group (Grupo Argentino del Color, GAC) was founded in 1980, and brings together institutions and individuals who share an interest in the study of colour science and colour applications. The

goals of the Group are to encourage research on problems related to colour, to promote the exchange of information with similar associations abroad, to manage a documentation centre, and to integrate the different fields from which the study of colour can be addressed: science, technology, design and education. There is also a strong interest in the Group from the artistic community in the diffusion of their works.



Robert Daniel Lozano speaking at the launch of his book.



In the first half of 2015, the GAC was invited to participate in *Sketches for Guided Tours*, organised by the Museum of Modern Art of Buenos Aires (MAMBA) in Ciudad Autónoma. Through the title SKETCHES A COLOR, we sought to link art and science. The keynote speeches included 'Color effects and visual appearance in artistic experience' given by Dr José Luis Caivano, 'Measurement of color: some considerations applied in mixtures with cement' given by Dra Anahí López, and 'Color appearance' by Lic María Paula Giglio.

The GAC was honoured to publish the book *Visual Appearance and its Measurement* by Robert Daniel Lozano, referent in the specific theme at international level. Lozano was president and founding member of this association. The book launch was held on 16 October in the library Dunken in the Ciudad Autónoma de Buenos Aires, with presentations by Claudio Salvador, José Luis Caivano and the author himself.



The GAC was invited by Dardo Bardier to participate in the COLOR + 1st Regional Meeting of Color, Cesia and Light, organised by the Faculty of Architecture of the University of the Republic of Uruguay. There were exhibited 49 posters presented earlier in congresses organised by GAC, with the objective of disseminating research carried out in Argentina. Representing the GAC were keynote speakers José Luis Caivano (History of research of Color in Architecture; Color and cesia: two aspects of visual appearance, color and visual semiotics), Roberto Daniel Lozano (The Contradiction color), and Maria Paula Giglio (Social color as construction of the urban).



In 2015 we grieved for the death of our dear Cristina Manganiello. Besides being the Vice-President of GAC, Cristina was researcher, teacher, artist, companion and friend. One admirer said, "Endowed with a natural instinct for the combination of colors and shapes that reach very personal harmonies and dynamics, she creates mythical spaces ..." There is no doubt that when she left us the sky was filled with colours! See also 'In Memoriam' on page 11.



Members of the organising committee and keynote speakers at the National Meeting of Color in the Arts in Mar del Plata.

On 4 September was developed the National Meeting of *Color en las Artes 2015*, organised by GAC and the School of Visual Arts 'Martín A Malharro' (EAVM), through the Group of Interdisciplinary Studies Color (GEIC); held the MAR Museum, Museum of Contemporary Art, and EAVM of the city of Mar del Plata. See: <http://colorenlasartes.blogspot.com.ar/>



AUSTRALIA



With a country as large as Australia and with each region showing different characteristics, our Colour Society of Australia divisions hold regular meetings on a wide range of colour topics.

Western Australia, following a successful national conference in late 2014, hosted a well-attended 'China Kaleidoscope' with many presenters to show and tell their experiences in the Orient. A Chinese calligraphy workshop was included as part of the experience. Another meeting discussed the science of the journey from the eye to the mirror and back and the science involved in the way we see colour. WA Division also hosted a stall during Perth's National Youth Week celebrations, aiming to capture a younger audience with the Munsell 100 hue test and other quiz challenges creating much interest.



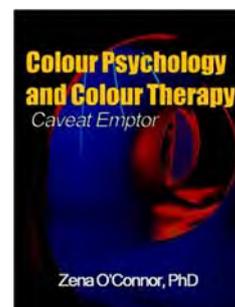
Event for International Colour Day in Sydney. President Judith Briggs (left) with the legendary Babette Hayes, who was awarded the Order of Australia in 2014 for her contribution to interior design.

New South Wales continues to be CSA's largest division with regular meetings covering topics such as the diverse origins of colour psychology dating back to antiquity and the many claims made today about the psychological, physiological and behavioural responses attributed to colour. A presentation that combined fine art, colour science and digital technology was presented by an artist with a PhD in Pure Mathematics and created much interest to attending members. Site visits included architectural offices, trade showrooms and the like.

Our Victoria division has again seen varying attendance levels at meetings. It is difficult to find locations that will encourage higher numbers, and this division continues to host joint meetings with other groups such as the Artisans' Guild, where topics include usage and understanding of colour.

All these divisions around Australia have been building good lines of communication with design schools setting up participation in colour projects, by offering end of year awards to graduating design students who have demonstrated an exceptional understanding and application of colour in their final assignments. This has also seen more students becoming CSA members and being involved in CSA meetings. NSW has been particularly successful with this strategy.

CSA continues to produce an online journal *Spectrum* which is available to our members, and both our CSA website and social media have proved to be very effective in communicating and promoting the society and have encouraged new members. Dr Zena O'Connor published a new book that explores theories about colour psychology as well as colour therapy practices. The aim is to disentangle the intermingling of connotative colour meanings and colour symbolism, and to examine the links with Traditional and New Age beliefs.



CSA welcomed a new National President, Judith Briggs, at the end of 2015. Judith has run a successful colour design consultancy in Sydney since 2001. New Division chairs have also been elected in NSW and WA, and we are all working together in colour.



Oriental colour secrets revealed at the China Kaleidoscope workshop.

Our Queensland division hosted a meeting in July with a locally based prize-winning artist Carole King in her Gold Coast studio to discuss habitats, landscape and still-life painting. Another meeting held in Brisbane had a lecturer in Art & Design explaining his 'Chroma 256 International Colour' project which involves mapping colour in countries including Turkey, South Africa, China and Australia. Site visits to colourful venues included an historic home and stained glass windows. This division is well into the planning stage for our next national conference, to be held in Brisbane late in 2016.



Queensland members immersed in environmental collage activities at the Carole King studio.



Associação ProCor do Brasil had a very intense and indeed productive year in 2015. January 2015 started with a new management, under the Presidency of Prof Dr Paula Csillag.

ProCor saw an increase of 108% in the number of members, not bad for an economic recession year in the country. Relevant companies like Sherwin-Williams, a RAL representative (2AGovoni), an X-Rite representative (Coralis), digital media specialist (Immaginare) and colour masterbatches manufacturer (Multicolor) all became ProCor members. Also Prof Dr Robert Hirschler (from AIC), is a new individual member, among other academics and one student.

ProCor actions included: creation of a discussion group in LinkedIn, now with 158 members; setting up a Member Directory in our site, with the goal of helping to promote members' work; members receive frequent relevant information and news on conferences and publications; a publication was created, the REVISTA PROCOR; partnerships

with Escola Senai Matarazzo (a prominent technical nationwide professional training centre), and with the Brazilian Watercolour Association; the finances were normalised; constructed a new site with new technological resources; and held a series of events, briefly mentioned below. The designer Fabiane Mandarino is responsible for the styling and art direction of the journal and shows her passion for colour.



On March 21 ProCor held an event to celebrate International Colour Day at FIESP building (São Paulo Industries Federation), via SITIVESP (São Paulo State Union of Paints and Varnishes Industries). Two lectures were presented to a public of 100 professionals and students in all sectors related to colour. Our President opened the event, explaining the ICD, the AIC and ProCor. After both lectures, a questions session was opened and the afternoon closed with a networking dinner. The event was sponsored by Lukscolor Paints.



CMG Workshop on colour design and marketing.



LED work of art displayed on the FIESP building façade.

Brazil also celebrates another day of colour, the Brazilian Colour Day, established on the Southern Hemisphere's Spring Equinox, on September 21. This year, the celebration was held in a fruitful partnership between ProCor and the North American Color Marketing Group (CMG). A two-day event was held with approximately 100 people from various sectors related to colour. On the first day, a workshop defined the 2017 Latin America colour trends. At night, the workshop participants met at a warm dinner reception with the sponsorship of Lukscolor paints. At this night, a multi-coloured LED work of art was exhibited on the façade of the FIESP building (where ProCor is hosted), colouring the night for people passing by. The second day of the event was in an auditorium for 100 people, and was opened by Patricia Fecci, Marketing Manager of Sherwin-Williams, and John West, President of CMG, followed by two lectures. Closing the event, a book signing was held launching Prof Dr Paula Csillag's book *Communication with Color*. This two-day event was sponsored by Sherwin-Williams, Lukscolor Paints, ESPM University, NCS, RAL, X-Rite and SENAI-SP Publisher.



ProCor held more colourful events in 2015 that can be seen at www.procor.org.br



Book signing by ProCor President Prof Dr Paula Csillag.

ГРУПА ЦВЯТ БЪЛГАРИЯ



COLOR GROUP BULGARIA

The Association of 'Color Group – Bulgaria' performs its intense research and promotional activities in the field of colour science by conducting scientific forums and lectures, together with remarkable publishing and social work.

All of our events in 2015 were devoted to the celebration of an anniversary – 35 years since this organisation's establishment. Both this motive and the International Colour Day (21 March), were commemorated with a traveling photo workshop entitled 'Colors of North-western Bulgaria'. During this trip, members of the CGB visited the town of Chiprovtsi and some key Orthodox monasteries nearby, including Lopushanski, Chiprovski and Klisurski. There we saw the traditional method of dyeing wool and also some ancient weaving techniques included in the UNESCO list of world intangible heritage.

The anniversary celebrations of CGB continued in April at Sofia University 'St. Kliment Ohridski' and University of Architecture, Civil Engineering and Geodesy with two lectures by a special member of our Association, Prof Michel Albert Vanel from France. He presented topics previously published in the Group research: 'Lesprit-et-la-matiere' (Spirit and matter, Sofia 2014) and 'Spiritualité de la couleur' (Spirituality colour, Sofia 2015), which received strong public attention.



Exhibition of student work at 'Color and Light in Architecture'.

In May we held the International Scientific Conference 'Color and Light in Architecture' together with our longstanding partners in the Faculty of Architecture at the University of Architecture, Civil Engineering and Geodesy. The fourth edition of this forum was devoted to the motto '2015 – a year of light' announced by UNESCO, and was included in its national calendar of events. Our Conference was accompanied by exhibitions of student projects from the National Academy of Art, The Forestry University and the New Bulgarian University. The scientific forum was opened by the Dean, Prof A Pisarski, who pointed out the benefits of a long-standing cooperation with CGB and presented his greetings on our 35th anniversary. In all, 37 scientific papers, binding architecture with colour and light, were presented, and were also published in the electronic collection (ISSN 1313-4884). The author of its graphical layout was Assistant Prof Dr Rangel Chipev.

During 5–10 October we held a workshop and conference on the theme 'Color and Food' focused on the problems of food and nutrition, together with Club 'Varna Europea'. Participants got acquainted with ecological food production and visited farms, businesses and specialised markets. Accompanying the

event was a thematic art exhibition in Mall Varna, where we were presented themed works of CGB members and a collection of children's drawings. The exhibition objects were gathered in a special catalogue – Vol III of the series 'Color and Food'. Conference materials were also published in the electronic collection (ISSN 2367-7813). In addition, we presented our partners' work 'Health and food for happiness – To teach the youth of Varna to cook healthy food', with the financial support of Varna Municipality Programme 'Varna – youth capital of Europe 2017'. The graphic design of our series 'Colour and Food' was made by Svilen Gavrailov.



Three CD cover designs: (left) Color and Architecture IV; (centre) Colour and Food; (right) Photocolor V.

On 4 December was held the sixth edition of the National Seminar FOTOKOLOR with the traditional partnership of the Technical University. As already established by custom, during the seminar was an exhibition of photos and artistic projects developed on the basis of previous photo-workshops in north-western Bulgaria and Varna, as well as independent works of individual participants. The exhibition was enriched with works created by members of Photo Club of Veliko Tarnovo University 'St. Cyril and Methodius'. All materials and works presented in the exhibition are published in the electronic collection 'PHOTOCOLOR VI' (ISSN 1313 - 9509). The author of its graphical layout was Assistant Prof Dr Sofia Angelova.

During the year were issued two more Bulletins of CGB, Nos 29 and 30. Along with the publication of materials from ongoing scientific and artistic forums, we published some works of our colleagues: Zheleva Martins, Goodness, Tasheva, Stella. *Theory composition*; Evtimova Maria. *Color and impact*; Evtimova Maria. *Synergy and art*. We continued our work on the web site of the Association <http://bgcolorgroup.org/> A new CGB leadership was elected in April 2016. Dr Ralitsa Gueleva-Tsvetkova was chosen as Chairman, and Dr Eng Sofia Angelova as Secretary. Their mandate is up to April 2019.



Members of CGB at 35 years event – Exhibition on Photocolor V.



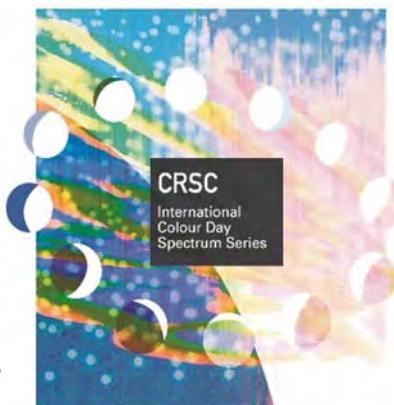
The Colour Research Society of Canada CRSC has a mission to encourage and promote Canadian colour research and practice/industry-driven knowledge across diverse arts and sciences disciplines, and to connect scholarly and practice-based research to application in industry and society. The CRSC

is working on building a strong, active and inclusive organisation, furthering Canadian contribution and presence in international colour research and knowledge. Our events, conferences and publications seek to develop and support a national, cross-disciplinary network, to encourage discourse between diverse fields, and to foster public interest in and access to colour research and knowledge.

Throughout 2015, the CRSC hosted a series of events showcasing colour across diverse disciplines and to a variety of audiences. The year started off with a joint collaboration with Pecha Kucha Toronto during the Toronto Design Festival. *Colour Clash!* on 20 Jan presented colour from a wide range of disciplines: biology, music, virtual reality, museum design, fine art, travel. This lively sold-out event featured 'coloured' cocktails by Action Potential Lab: muddled lime leaves and grapefruit bitters = green, Bombay Gin = blue, ginger ale = yellow, emulsified malva flower foam = blue/purple and marinated hibiscus flower = red, with beautiful hand-painted coloured cookies.



Celebrating both International Colour Day and International Year of Light and light-based technologies, board member Vivian Lo organised the very well attended Spectrum Presentation Series, 19–21 March. Part 1, 'Sensibilities in Colour and Light, Considering Colour and Light in Healthcare Environments' brought together Susan Black, Principal of Perkins Eastman Black Architects, and Stephen Kaye, Senior Lighting Designer, Mulvey & Banani International Inc, in a seminar focusing on the significance of colour and



Colour design at the Women's College Hospital in Toronto.

lighting design in the newly designed Women's College Hospital in Toronto. CRSC Spectrum Series Part 2 programme was a multidisciplinary presentation and panel discussion including Susan Black and Stephen Kaye along with CRSC president Doreen Balabanoff, Associate Professor, Environmental Design OCAD University, and Diane Humphrey, Professor Emerita, King's University College at Western University.

The CRSC's Festival of Colour, held every year in the spring, showcases the relationship between colour and culture, and this year on 27 May hosted presentations on significance of colour in Asian and Aboriginal cultures. This educational and entertaining event also included a talent show, live music, an art/ photography exhibit and all manner of cultural foods.



We continue to build our membership and to promote CRSC. We had a booth at IDEX, Canada's National Design & Architecture Exposition. We also welcomed two new Board members: Ali Bassidji, Treasurer, and Joy Lim, Member at Large. CRSC is pleased to be an active member of the AIC and to encourage the participation of Canadian colour researchers in international colour research, events and publications.



Joy Lim (left) and Vivian Lo (right) at the CRSC booth at IDEX 2015.



ASOCIACIÓN CHILENA DEL COLOR

The field of colour. It has been a member of the AIC since 2009.

The Chilean Colour Association (ACC) is where Chilean professionals and other interested people find a place for discussion, research, and work in the

Colour training for Visual Arts teachers

The ACC active member, Ingrid Calvo, has been part of a training course aimed to school teachers who teach subjects related to the Visual Arts. This course was organised as a way to contribute to the upgrading and updating of school teachers in different places of Chile, after a study conducted into the school curriculum of the Chilean Ministry of Education in 2015 which showed that the tools and training that these teachers can access are scarce and outdated. The course featured four topics: Photography, Art Installation, Art History and Colour, this last topic was conducted by Ingrid. More than 135 teachers attended this training course, which was held in the cities of Santiago and Temuco.



Colour training for school teachers.

Colour in the UNESCO International Arts Education Week

The University of Chile participates every year in the UNESCO International Arts Education Week, with an activity named 'An Artist in my School', which includes some academics with an artistic profile, who carry out their research topics and activities in the public school classrooms. For the last two years, Ingrid Calvo has been invited to conduct a Colour Workshop with students from 15 to 18 years old. In this workshop, every student is invited to propose his or her own intuitive meanings about colour, those that would make him/her sense and those that come from his/her own experience. Then the different meanings proposed are reviewed collectively, in a dynamic where some very interesting – and even funny – things are commented by each student.

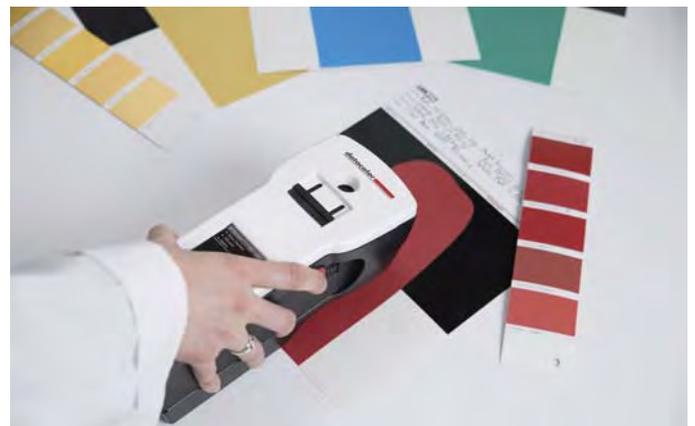


School students engaged in colour exercises.

With those reviewed meanings, each student is able to make a colourful composition, mixing different artistic techniques, such as collage and painting, focusing in their own relation to colour. The results of the Workshop are exposed in the school playgrounds, where every student becomes an author of an artistic and colourful work.

ColorLAB UCHILE, a colour laboratory in Latin America

At the end of 2015, Lina Cárdenas and Ingrid Calvo, both ACC members and academics of the University of Chile, won a grant from the government fund for Science and Technology (FONDECYT) to establish one of the first laboratories for scientific research about colour in Latin America. The ColorLAB is a Project that had been proposed since 2012, and the academics were looking for an opportunity to get funding. This laboratory will include a Spectrophotometer, a Spectralight illumination cabin and other colour measurement instruments which will help to further development of colour research both in Chile and throughout the southern region. ColorLAB will be implemented in July, and will be fully operational by the end of September to welcome all who wish to visit during the forthcoming AIC2016 Interim Meeting: Color in Urban Life, which will be held in Santiago 18–22 October (see page 48).



Reflectance colour measurement in ColorLAB.



The Color Association of China is one of the committees of the Chinese Optical Society (COS), specialised for

vision and colour. As the National Color Association it joined AIC in 1986, together with Division 1 (vision and colour) of the China Illuminating Engineering Society (CIES). Its objectives are to encourage the research of colour science and its application in different aspects, and through seminars to exchange information and new technology about colour.

The biennial symposium on the topic 'Color Science and Imaging Technology' was held 14–17 August in Chengdu of Sichuan province, along with the annual conference of the Chinese Optical Society (COS). The papers presented at this symposium were related to different directions, including colour perception, detection and classification of colour vision defects, image processing technology, image quality evaluation, metallic gloss assessment, measurement of chromatic contrast, automatic white balance algorithm, colour-difference estimation, colour space conversion, multispectral imaging, colour reproduction, LED lighting, colorimetry, and other applications of colour science, imaging technology, and illumination engineering in industry.



A series of scientific popularisation and professional training programmes in many cities for colour knowledge and technology.



The CAC 2015 symposium 'Color Science and Imaging Technology', with the annual conference of the Chinese Optical Society in Chengdu.

In 2015, a large number of scientific popularisation and professional training events were carried out for colour-related knowledge and technology, including a training programme for one thousand colour coordinators, colour collocation design entering campus activity, and various colour science lectures for the different enterprises and organisations. Several thousands of technicians, students as well as teachers benefitted from those events performed in many cities, including Qingdao, Heyuan, Nantong, Guangzhou, Fushun, Wuhan, Qinhuangdao, Foshan, Wenzhou, Ningbo, Chengdu, Shenzhen, Nanjing, Shanghai, and Beijing. Moreover, in memory of the International Year of Light 2015, the second City Science Festival with the topic of 'Light and Color' was successfully organised and hosted in Beijing on 17 July, at which an experience pavilion, the so-called 'color hut', of color science, technology and art was very much admired.

The China International Quilting Invitational Tournament and Quilting Art Exhibition 2015 opened on 14 October in Beijing. Numerous international and domestic participants exchanged and studied the quilting handicraft at this first such a big quilting event, for which quilting artists were invited from America, Canada, Australia, Singapore, Korea, Japan, and China (including Taiwan). Afterwards, the 2015 China International Fashion and Creative Forum was held 5–6 December in Shanghai, featuring the latest fashion trends in clothing, interior design, industrial product, macroscopic color management, microcosmic product design, and so on. More than 200 fashion professionals, from France, Italy, Japan, China, etc, discussed the related topics of new products, novel creativity, and fresh ideas in the fashion and creative industries.



The 2015 China International Fashion and Creative Forum.



The Finnish Colour Association celebrated the United Nations' International Year of Light 2015 and International Colour Day, 21 March, by giving the FCA's Iiris Award to the lighting designer and scenographer Markku Uimonen for his outstanding career as a versatile visual designer and teacher in the performing arts. He has designed visuals for over 60 large-scale productions for the Finnish National Opera, Operá du Rhin Strasbourg, Opera di Cosenza, Savonlinna Opera Festival, and most of the major theatres in Finland. In Sweden in the mid-90's he designed sets, lighting, and projections for the Gothenburg Folk Theatre and Riksteatern in Stockholm. His contribution to teaching design in the performing arts is profound and extensive. He worked as lecturer in scenography at the University of Art and Design Helsinki (now Aalto University School of Arts, Design and Architecture) during 1997–99 and as professor of lighting design at the Theatre Academy of Finland from 2000 until the end of 2014. He has also led numerous international lighting workshops, and has given talks in seminars and conferences in Sweden, France, USA, China, Japan and Russia. For more details about the award, see <http://www.svy.fi/en/2015/03/>.



Chamber opera 'La Voix Humaine', Savonlinna Opera Festival, 1993. Visual design by Markku Uimonen.



Harald Arnkil was an invited speaker at the annual meeting of the Norwegian colour association (Forum Farge) in Oslo on 17 April, where he gave a talk with the title 'Colour Harmony and Aesthetics'.

Four FCA members participated in AIC 2015, in Tokyo, during 19–22 May. Vice-President Harald Arnkil presented a poster entitled 'The art of colour harmony: the enigmatic concept of complementary colours' and a joint paper by Karin Fridell Anter, Harald Arnkil, Ulf Klarén, 'The ambiguous Term of

Saturation'. Ilona Huolman presented a paper 'Are There Ugly Colours?'. Textile artist Helena Lupari presented a poster, 'Colours relations to other things in my works' and textile artist Kristiina Nyrhinen's poster was entitled 'My Own Colours?'.



Fins in Tokyo: Kristiina Nyrhinen, Helena Lupari, Ilona Huolman.

The Finnish Dyers' Guild invited FCA secretary Kristiina Nyrhinen to their annual meeting in July to talk about the Finnish Colour Association and the AIC Interim Meeting in Tokyo. The dyers' meeting was held in Fiskars, an historic 17th century iron works village in South-Western Finland.

On 16 November the FCA held a 'Colour Evening', an open symposium at Aalto University School of Arts, Design and Architecture. Five invited speakers gave talks on: colour harmony (Harald Arnkil), ugliness and beauty in colours (Ilona Huolman), colours in textile art (Inka Kivalo), colours in animation art (Salla Myllylä), and colour as an element of composition in painting (Kimi Pakarinen). There were sixty participants and a lively discussion ensued.

The FCA launched its first Photo Challenge through its web site and Facebook group. The competition was open to all and participants were invited to send photographs with the theme 'Kaamosen värit' (closest English translation: 'colours of mid-winter') to Instagram, Facebook and the Association's Web page. From among the 70 entries the jury awarded the first prize to Saara Pyykkö for her elegant photo of the Aurajoki river landscape in South-western Finland.



Colourful menu selection on the FCA home page.



The «Centre Français de la Couleur» was created in 1976 and is the French representative of the AIC. CFC is, above all, a centre for exchange of ideas, at national and international level, through enhanced communication and cooperation between all disciplines and professions involved in the culture of colour.

In May several members of our association took part in the AIC 2015 Tokyo Midterm meeting: 'Colour Image, Fashion Design and Identity' by Larissa Noury, 'Influence of Odours Function and Colours Symbolism in Odour-Colour Associations: Comparative Study between Rural and Urban Regions in Lebanon' including Muriel Jacquot, 'Forsius Second Colour Order Diagram of 1611 from the Iconic Point of View' by Verena M Schindler, and 'High Dynamic, Spectral and Polarized Natural Light Environment Acquisition' including Patrick Callet.



French in Tokyo (L to R): Lea Nehme, Patrick Callet, Muriel Jacquot, Elizabeth Condemine, Christine Fernandez-Maloigne, Larissa Noury.

On 6 June, our annual colour meeting was held in Paris (École de photographie SPEOS) with five conferences: «Personnalisation des couleurs dans le logiciel Adobe Lightroom» by Philippe Chaudré, «La pratique assistée de la couleur dans les logiciels Adobe» by Stéphanne Baril, «Entrée en matière-lumière. Lorsque la science rencontre l'art» by Christian Stenz, «La couleur au cinéma: entre naturalisme et fantaisie» by Jessie Martin, «Rouge: une expérience inépuisable?» by Martine Lafon, 'La Queue de la Baleine' by Malvina Berguglian, and 'Couleurs de soi(e)' by Larissa Noury.

On 19 June we organised in collaboration with the Colour Group (GB) and the School of Mines Mineralogy Museum (Paris) the meeting 'Light and Colour in Paris', including sunset at Notre Dame de Paris, with commentary by Patrick Callet (Vice-President) plus a piano concert 'Chromatic Fantasia' with Mirette Hanna and Ilona Gault. 'Sky light: spectral and polarised characterizations thanks to a new device' by Philippe Porral, 'The extended possibilities of spectral simulation with Ocean software' by Etienne Sandré Chardonnal, 'From concrete to light' by Milène Guermont, and 'Colour virtual restitution: the case of Saint Margaret medallion' by Maelys Jusseaux.



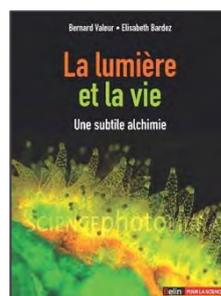
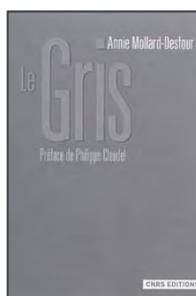
Musée de Minéralogie des Mines (Paris).

On 10-11 September we co-organised the XI Conferenza del Colore in Milan with the Associazione Italiana Colore, the Colour Group (GB) and the Association de l'Imagerie Numérique Couleur (France). Many CFC members were on the Scientific Committee. Our Secretary, Laurence Pauliac, gave an Invited Talk with 'On Viollet-le-Duc Restorations of the Monumental Gothic Polychromy. The Cathedral Notre-Dame de Paris'. Among many others Vanessa Lehner and Xaviere Ollier 'Le Touquet Paris-Plage: Thinking on the local colour of a "fashionable" seaside resort'. Verena M Schindler presented 'Environmental Colour: Green Algae in Responsive Architecture and Design'. She noted that in their short life cycle – from one to four days – microalgae change colour from green to bright red, so that all colours of the rainbow and all qualities from transparent to opaque will be options for biofaçades.



An installation of Algobags designed by XTU Architects, Paris.

The main publications of our members in 2015 were: Annie Mollard-Desfour: *Le Gris - Dictionnaire de la couleur, mots et expressions d'aujourd'hui, XXème-XXIème siècles* (CNRS) | Bernard Valeur and Elisabeth Bardez: *La lumière et la vie: Une subtile alchimie* (Belin) | Philippe Chaudré: *L'Essentiel de lightroom 6 CC* (Dunod).





The Annual Conference of the DfwG was held 6–8 October at the SKZ (Süddeutsches Kunststoff Zentrum) in Würzburg. The first afternoon was filled by

meetings of the DfwG working groups ‘Fluorescence’, led by Dr Claudio Puebla of Axiphos, and ‘Basics of Colorimetry’ led by Dr Peter Bodrogi of TU Darmstadt. The morning of the second day started with the DfwG working group ‘Multigeometry Colour Measurements and Industrial Colour Tolerances’, where Dr Alfred Schimacher of PTB was appointed the new chairman. He replaces the deceased Dr Andreas Höpe of PTB. Working group ‘Colour Image Evaluation’ with chairman Dr Andreas Kraushaar of FOGRA continued the committee work.



Delegates at the DfwG conference in Würzburg.

Thereafter the paper sessions of the DfwG Annual Conference started. Peter Bodrogi reported on ‘Visual evaluation of preference of coloured objects in a real room under different light sources’. Kathi Bergmann of TU Dresden gave some insight on ‘The function of integrating spheres and their application in color measurement devices’. Oliver Korten of Axalta Coating Systems followed with ‘-15°: What is the benefit of this additional measurement geometry?’ Werner Rudolf Cramer reported on ‘Optical properties of holographic pigments’. Then was a step back in history for André Karliczek of Friedrich-Schiller-Universität Jena with ‘Standardization and operationalisation of colours in the early sciences’.



Andreas Kraushaar of FOGRA spoke on ‘Colour management for transparent media’ and Benjamin Ruggaber of TechnoTeam GmbH added a ‘Discussion of systematic effects when operating a hyperspectral camera’. Georg Meichsner from the University of Applied Sciences Esslingen continued with ‘Precision in the reproduction of a colour recipe’.

Dorothea Marquardt of SKZ gave some insight on ‘Thermochromic effects and their significance when processing plastics’. A report on the meeting in Manchester of CIE Division 1 was given by Klaus Richter, and Frank Rochow of DfwG reported on the AIC Meeting 2015 in Tokyo, and the SID Display Week 2015.

DIN – FNF

In 2015 the new standard DIN 6163:2015-01 ‘Colours and colour limits for signal lights in railway traffic and in local public transport’ was published. It replaces DIN 6163-4:2011-07 and DIN 6163-5:2002-02.



The colours defined in this standard apply generally for signal lights in which the light colour is an integral part of operations. It sets the colour boundaries between red, yellow, green, white and blue. The colour selection complies with the CIE recommendations for a light signalling system with five colours.

Deutsches Farbenzentrum (DFZ)

Working with paint company RAL and University of Wuppertal, DFZ has developed www.colour.education, a website to impart knowledge and experience in all fields of colour.



Colour determines the visible pictorial form of matter, without which all our perceptions and ideas would be blind. Colour surrounds us in our living and working environments, enfolds us by clothing and accessories, and penetrates us with our food. Dyes may impact on our well-being and health. These and many other factors determine our biologically innate response to the colour of the environment, as well as our creative encounters with cultural spaces. There is hardly a working and living area where the confrontation with colour is missing. Thus colour is far more than wavelength, particle energy, pixels, dyestuff, surface quality, and impact factor. Colour.education aims to help you in the formation of your own idea of the inexhaustible variety of this phenomenon.



The DFZ is preparing the 2016 International Conference ‘Farbe im Kopf – Von der Wahrnehmung zur Kunst’ (Colour in the Head – From Perception to Art). It is organised by the Institute for Media Studies and the Research Institute of Ophthalmology at the University of Tübingen. For more information: www.deutsches-farbenzentrum.de and www.farbe-im-kopf.de



The year 2015 was a very significant one in the life of the Colour Group (GB) as it celebrated its 75th Anniversary. The Committee maintained its customary pattern of meetings, but also added some extra ones, with the AGM becoming a really special occasion.

The Palmer lecturer at the traditional one-day January Colour Vision Meeting was Anya Hurlbert, who elucidated the Limitations of Colour Constancy. The CRS lecture, delivered by Frederick Kingdom, was about how we combine information that is different in the two eyes and was entitled 'New Adventures with Dichoptic Colours'.

There were three further meetings that as usual were highlights of the annual programme. First, International Colour Day was celebrated in March in Clapham, London. The second was the April meeting, when the Turner medal of the Colour Group was awarded to the internationally renowned Venezuelan artist and colourist Carlos Cruz-Diez. The third was the Awards meeting in November when papers were presented by recipients of the WD Wright and Palmer awards.



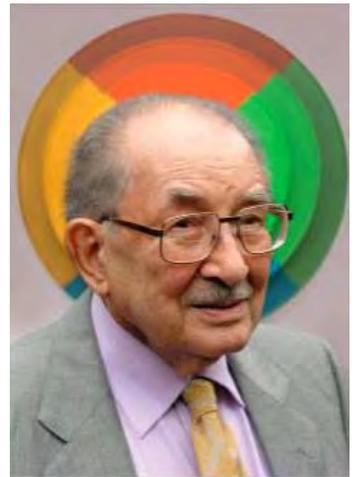
Artist and colourist Carlos Cruz-Diez on a video link from Panama.

The remaining meetings covered a wide variety of topics. For example, the artists and art enthusiasts in the group were treated in May to a workshop by the American artist and colourist David Hornung and again in June to a private lecture at Tate Modern about the work of Sonya Delaunay. In December 'Colour in Print' discussed innovations in that field at the Centre for Fine Print Research, Bristol. The June meeting celebrated the work of Robert Fletcher and the October meeting the life of the late Don Pavey. Roy Osborne, long-time friend and colleague, outlined Don's many achievements, from childhood, his time at the Royal College of Art evacuated to the Lakes during WWII, and his subsequent career as artist, teacher, mentor, humanist, inventor, philosopher and polymath. He was particularly influential in the understanding of the symbolism of colour and its effect on colour psychology. Don's extensive collection of rare historical books on colour became the core of the Colour Reference Library at the RCA.

The year marked a venture into new territory in a collaboration with the British Film Institute, with whom the Group staged a symposium 'Colour in Film'. Although limited to 100 delegates, this was greatly over-subscribed, with nearly 40 people asking to be placed on the waiting list for the 2016 event.

This year also saw five international events being partly sponsored by the Group. These were: 'Light and Colour in Paris', in association with Comité Français de la Couleur in June; a poster award presented at the 23rd Symposium of the International Colour Vision Society (ICVS), Japan, in July; sponsorship of a special session at the European Conference on Visual Perception (ECVP), Liverpool, in August; and a joint meeting with the Gruppo del Colore of Italy, the X Conferenza del Colore in Milan in September.

The Annual General Meeting became the highlight of the Jubilee year. Honorary Membership was conferred on two notable members: Ralph Brocklebank, former Chairman (1971–73) and John Mellerio, former Secretary (2006–13). Patrick Forsyth, past Chairman and Treasurer (1993–99) spoke about the Past, Present and Future of the Colour Group. The valedictory lecture of our outgoing Chair, Dr Valerie Bonnardel, was on 'Brief History of Comb-Filtered Spectra' while the incoming Chair, Dr Carinna Parraman, presented a note on 'Colour Mixing in 21st Century'.



Don Pavey (1922–2015): artist, humanist, philosopher and teacher.



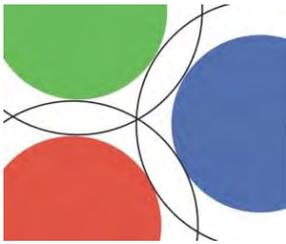
Lighting the 75th birthday cake.



Members at the Colour Group AGM in May.

The Colour Group (GB) remains an interdisciplinary society that draws together people interested in colour – its perception, measurement, reproduction and artistic expression. We are now looking forward to the next 75 years of propagation of interest in, and knowledge of, all aspects of colour.

HUNGARY



The Hungarian National Colour Committee was founded in 1969. The Associations of the Committee are maintaining their activities until today and have produced numerous reports and organised exhibitions and series of scientific lectures for the general public in

the fields of colour presentation, colour vision, colour environment design, fine arts, industrial application of colours, colour measurement, and colour and pattern harmony.

In the last year, in the life of our committee, more changes happened. We have to begin this report with sad news. Among the members of the management died: László Miskei, artist, János Schanda, electrical engineer, and Gábor Winkler, architect. Each was very active as member of the committee.

The topic of our latest meeting was the election of the new management committee, because of respect for the state of weak health and old age of the former president, Prof Antal Nemcsics. The management election took place on 8 October. With secret voting, Prof Ákos Nemcsics was elected as president by the committee members. At the same time the following members were also elected: Prof György Ábrahám, mechanical engineer, Dr Róbert Hirschler, chemist, Prof Tamás Megyesi, architect, Árpád Szende, architect, Prof András Mengyán, artist, and Gábor Horváth, biology teacher.

Our committee works under the supervision of the Hungarian Academy of Sciences. The result of the election was sent to the president of the Section of Engineering Sciences Prof Gábor Stépán, who confirmed the new president in his position. Some information about the new president: He is an architect, electrical engineer, a registered painter, and also full professor at Obuda University, in Budapest. The new president was the main organiser (chair) of the past three colour-related international conferences in Budapest. The first was held at the Hungarian Academy of Sciences, the last two at Óbuda University. The emphasised topic of all these conferences was colour harmony.



Exhibition of „Masters” in Budapest

In the headquarters of the Association of Hungarian Fine Art and Applied Artists, two topic-related exhibitions were organised, the first in January (entitled „Space – Colour – Shape”) and the other in September (entitled „Masters”). The organising of the Interdisciplinary Symposium of the Association of Hungarian Fine Art and Applied Artists came at the beginning of October. Our programmes related to the International Year of Light. The invited lecturers were:

Prof György Ábrahám (Human Vision and Colour-blindness)
Mr Árpád Szende (Disharmony in Colour and Light)
Prof Ákos Nemcsics (Light and the Built Environment)
Prof Tamás Megyesi (The Sacral Space and the Light)
Prof András Mengyán (The Role of Light in the Arts)
Mr Béla Tilles (Colour – Light as Environmental Forming Factor)



Óbuda University, venue of the VI LED conference.

Between 3–4 February, in Óbuda University, the two-day VI. LED conference was held. The conference was organised jointly by Obuda University and the Hungarian Electrotechnical Association. In the conference next to the technical topics was also an aesthetics-related lecture. The conference was accompanied by exhibitions of lighting engineering companies.

A permanent colour-related exhibition was opened in a small Hungarian city, Pápa, in the Castle of Esterhas. Here, the colour-related theoretical and practical life-works of Prof Antal Nemcsics, painter and former president are displayed. The exhibition was opened by László Miskei, artist. Many relatives, friends and former apprentices were in attendance.



Permanent exhibition in Pápa of the works of Prof Antal Nemcsics.



The 11th edition of the Conferenza del Colore was held on 10–11 September at the Dept of Design of Politecnico di Milano, in a

collaboration between the Associazione Italiana Colore, the Politecnico di Milano, the Colour Group (GB), the Centre Français de la Couleur and the Groupe Français de l’Imagerie Numérique Couleur. The aim of the conference was to encourage multi and interdisciplinary aggregation of research centres and individuals who deal with colour and light from a professional or scientific perspective. In particular, this year we wanted to emphasise the role of colour in the major themes of the Universal Exposition EXPO Milan 2015. Invited speakers were Manuel Melgosa (University of Granada), Laurence Pauliac (Historienne de l’Art et de l’Architecture), Katia Ripamonti (Cambridge Research System) and Paola Santagostino (Counselor Trainer). About 170 participants attended and 92 papers from various fields of colour study were published in the proceedings. During the Conference the ‘Premio Colore 2015’ was awarded to Gualtiero Marchesi, the world’s most famous Italian Masterchef, for making colour a characteristic feature of all his food, in a perfect combination of taste and aesthetics.

During 2015 we gave patronage and contributed to a lot of events in Italy. Our Member Francesca Valan designed the second edition of the workshop ‘Il progetto del colore: colore reale e colore percepito’, held in Brescia on 18 February. Specialised professors exposed the foundations of colorimetry, the NCS system and the variations of perception dependent on light, suggesting an approach aimed at raising awareness of colour in architecture, through correct perception. She also organised the event ‘Colore è luce’, about colour and light, and a workshop on the use of colour in the design of architectural spaces. We also gave patronage to the project ‘Mangiare con gli occhi il colore dei cibi: pigmenti e alimenti’ about colour and food, within the framework of EXPO 2015 Milano.



The exhibition ‘I Colori del Rosso’ at the Campari Gallery in Milan.

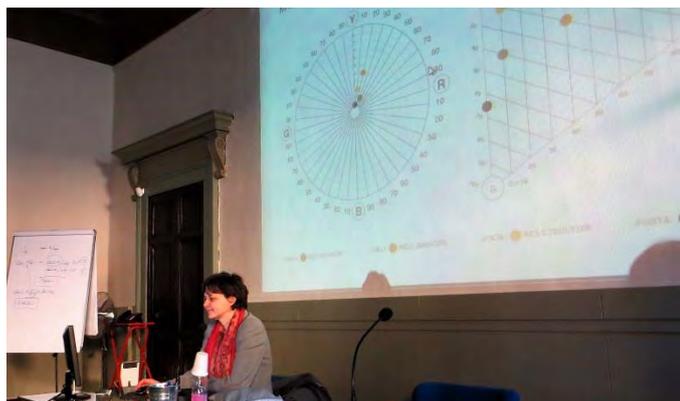


The winner of “Premio Colore 2015”, Gualtiero Marchesi, with some participants in the XI Conferenza del Colore.

Lia Luzzatto and Francesca Valan were curators of the exhibition ‘I Colori del Rosso’ at Campari Gallery in Milan: a multi-sensory journey through sounds, optic installations, tactile and visual experiences about the colour red.

The day before the conference opening, the workshop ‘Optical spectroscopy for food applications: a photonic tasting’ was jointly organised by Gruppo del Colore-Associazione Italiana Colore and Società Italiana di Ottica e Fotonica, to present and discuss the most promising applications of colorimetry, fluorescence spectrophotometry, hyperspectral imaging, and computer-screen photoassisted spectroscopy for food analysis.

We supported the workshop ‘Luce e colore: un nuovo modo di leggere la pittura di Vincent van Gogh’ on 18 September in Milano, dedicated to recent studies about colour conservation of Van Gogh paintings. With the participation of Dr Ella Hendriks, head of conservation of the Van Gogh Museum, it explored recent scientific research projects into some of his most important paintings. The special pigments used by van Gogh, the problems of deterioration of the paint layers, new non-invasive techniques for diagnosis and monitoring of the paintings, were the main themes.



GdC member Francesca Valan during the workshop “Il progetto del colore: colore reale e colore percepito”.



Digital restoration of ‘Bedroom in Arles’ (1888) by Vincent van Gogh.

Lastly we patronised the seminar ‘Gesù, fate luce: Conversazioni sulla luce, energia, forma, colore’ on 16 December in Napoli, with presentations by experts on themes of light and colour in astronomy, architecture and lighting.



2015 Annual Meeting

After a very successful AIC2015 mid-term meeting in May at the Sola City in Ochanomizu, Tokyo (see page 12), the 46th Annual Meeting of the Color Science Association of Japan (CSAJ) was held 25–27 September at Yamagata University (Faculty of Engineering) in Yonezawa, chaired by Yasuki Yamauchi. About 170 participants attended and 72 contributed papers from various fields of colour science and design were presented.



Main building of the Faculty of Engineering, Yamagata University.

structure in swallow-tail butterfly wings' and Yuki Nakajima (Joshi University of Art and Design) 'Relation of color rendering properties, illuminance and color attention' for their presentations at the 46th CSAJ meeting in Yonezawa.

Publications

The CSAJ published six issues of the *Journal of the Color Science Association of Japan* in 2015. Eight original papers and a number of feature articles including 46th Annual meeting papers were published.

Upcoming Meeting

The 47th spring annual meeting of CSAJ will be held 4–5 June 2016 at Meijo University in Nagoya. The autumn meeting is scheduled 26–27 November at Osaka Electro-Communication University in Osaka.

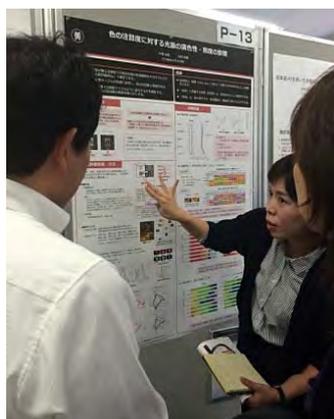
Local Chapters

Three local chapters in the Kanto, Tokai and Kansai areas worked actively and organised several meetings throughout the year. Kansai chapter (chair Koji Yoshimura) held its annual local meeting on 5 March at Osaka Electro-Communication University in Osaka. Three invited lectures by Professors Akira Kimachi (on 'Spectral imaging'), Shigeaki Morita (on 'Development of Udon with changing color appearance') and Masahito Suda (on 'Color and knowledge in making painting') were given. About 47 participants attended and 11 contributed papers from various fields of colour science, art and design were presented.



Lectures by Professor Kido (Yamagata University) (left) and Dr Kuchenbecker (Washington University) (right).

The day before the meeting opened (24 September), the pre-event symposium on 'the heritage of fine art preserved by Uesugi family' was given by Mr Takao Murano. On 25 September, Prof Junji Kido, of Faculty of Engineering at Yamagata University, gave a special lecture on 'Organic electroluminescence (OEL), present and future'. He talked about how he tried to make innovative development of OEL in his lab. An invited lecture on 'Genetic variation in the ratio of long- to middle-wavelength cones, and progress on gene therapy for tetrachromacy' was given by Dr James Kuchenbecker (Washington University) who is engaged in the study of gene-based colour vision.



Posters at meeting in Yonezawa.

Awards

8th CSAJ Research Award: Yi-Chun Chen (Innolux Corporation, Taiwan), Yunge Guan, Tomoharu Ishikawa, Hiroaki Eto, Takehiro Nakatsue, Jinhui Chao and Miyoshi Ayama 'Preference for color-enhanced images assessed by color deficiencies', *Color Research and Application*, 39:234-251.

19th CSAJ Research Encouraging Award: Keita Hirai (Chiba University) and Shoji Tominaga 'Color signal estimation in high dynamic range scenes', *Journal of the Color Science Association of Japan*, 37:149-158.

11th CSAJ Presentation Encouraging Awards: Erina Kakehashi (Tokyo Metropolitan University) 'Investigation of color



Exhibition booth for colour equipment in Yonezawa.



The General Meeting of the KSCS was held on 21 March at Chung-Ang University in order to commemorate the International Colour Day (ICD) as well. The theme 'Color: Treatment of Spring' was selected to bring attention to social issues with safety. The School of Korean Music from Chung-Ang University provided a celebrating performance. During the meeting, Prof YunSun Park at Hongik University received the Korea Design Excellent Education Award given by Korean Federation of Design Associations.



Retreat for KSCS members at Seto Inland Sea National Park in Japan.

KSCS has been providing awards through 'Korea Color Awards' to boost the color industry and its professionalism every year. The awards were open to eight categories including urban/residential environment, architecture and interior. In 2015, the design of Gwangju-Kia Champions Field (baseball stadium) was awarded by the Minister of Trade, Industry, and Energy as best award, and The Director of Korea Institute of Design Promotion award was given to Suwon AK Town.

In addition, KSCS held the 8th 'International Invitation Exhibition of Color Works' in November at the Hyungnam Engineering Building of SoongSil University, in Seoul. The theme was 'Color of Korea or Purple', and 118 artworks from 15 countries in Asia, Europe, and America were exhibited.



KSCS International Invitation Exhibition of Color Works in Seoul.

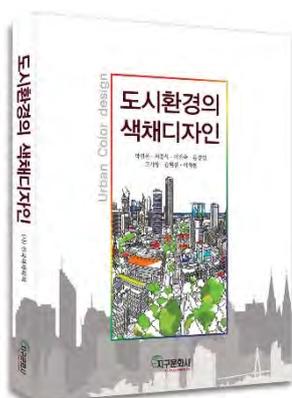
We had another General Meeting on 18 December. Fabio Dacarro from Italy, Prof at Korea University gave a presentation on 'Genius Loci, Colors of Italy' at the Hill-State Gallery, Seoul. And first of all, we have elected Prof JinSook Lee from ChungNam University as the 15th president of KSCS.

As for AIC, president YooNa Jeong, together with Organizing Committee Chair JinSook Lee, and 27 KSCS members participated in the 2015 AIC Interim Meeting held in Tokyo, Japan in May. JinSook Lee promoted the 2017 AIC Congress and we provided bookmarks made from Korean traditional costume to AIC participants at the promotional booth.



(left) Celebrating ICD in Chung-Ang; (right) Award to YunSun Park.

The KSCS had many academic activities. We published the academic journal, listed in the National Research Foundation of Korea, four times per year. A total of 59 papers were published after a rigorous review process in diverse colour research areas. The spring conference was held at Yeungnam University with the topic 'Colorful LED'. SeungNam Park at Korea Research Institute of Standards and Science gave a talk about 'Principles of LED and Color Measurement'. The fall conference was held at SoongSil University. Prof JinSook Lee at ChungNam National University gave a presentation on 'Color, Lighting and Human Body' under the theme of 'Smart Color'.



In December, KSCS published a book titled 'Urban Color Design' to contribute to the field and to educate the next generation of colour researchers. This book introduced the theories of urban design and case studies. In addition, the KSCS provided two workshops; 'Color Measurement for Designers' in March at Chung-Ang University and 'LED Color Experience' at Yeungnam University in May.

As a retreat program for members, we had a special opportunity to visit the Seto Inland Sea National Park project in Japan from June 25–28. The retreat was associated with a lecture, 'Symbology and Culture of Color', given by Prof ChangLim Jun at Hongik University. With this retreat, members experienced the world of beautiful colours and arts, while refreshed and inspired for their research and design work.

Forum Farge.

Forum Farge, the Norwegian Colour Association, was founded on 10 April 2013. Its purpose is to stimulate research on all aspects around colour, to disseminate

research-based knowledge about colour, and to facilitate applications of this knowledge to solve colour related problems within art, design, architecture, science and technology on a national level. The group became a member of AIC in 2014.

Annual conference: Forum Farge 2015

The annual conference Forum Farge 2015 was held in Oslo on 17 April. Presentations included topics such as colour perception, colour in education, architecture, and colour harmony. Invited talks were given by Yann Kersalé, Harald Arnkil, and Jan Henrik Wold. In addition short presentations were made by Forum Farge members. The conference was an excellent forum to discuss different colour related topics.

Six members attended the AIC Congress in Tokyo in May, and Prof Jon Hardeberg gave an invited presentation 'Multispectral colour imaging: time to move out of the lab?'.



Jan Henrik Wold presenting at the annual conference.

Seminar: Creative Colour

In September 2015 Forum Farge arranged a seminar 'Creative Colour' in collaboration with Canon in Oslo, Norway. The seminar included presentations on tactile printing from Henning Hagelund and Kine Angelo. The last part of the day included a creative workshop with demonstrations by Canon of different colour printing devices, equipment and tactile substrates in their showroom.



Interested participants in the talks at the seminar 'Creative Color'. Henning Hagelund shows different tactile prints.

Research activities

The Norwegian Colour and Visual Computing Laboratory at Gjøvik University College (now NTNU) was very active in 2015. They successfully completed the Marie Curie Initial Training Network project 'Colour Printing 7.0: Next Generation Multi-Channel Printing (CP7.0)'. The four key scientific areas in this project were: (1) Spectral modelling of the printer/paper/ink combination; (2) Spectral gamut prediction and gamut mapping; (3) Effect of paper optical and surface properties on colour reproduction of multi-channel devices; (4) Optimal halftoning algorithms and tonal reproduction characteristics of multi-channel printing. NCVCL is currently coordinating a large research project 'HyPerCept – Colour and Quality in higher dimensions', that deals with many topics from the visually impaired to colour in imaging devices. They have also been working on the 'Colourplay' project, where the goal is to create a game to educate the general public on colour and at the same time to collect research data.

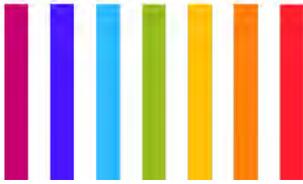


Bergen Academy of Art and Design worked on the project 'New approaches to colour in architecture and design'. This project includes discussion of colour contrast related to universal design. The leader, Prof Mette L'orange, argues that a persistent chromophobia has for decades characterised architecture and interior design. With the focus on sustainability, natural materials and their inherent colours (especially green) seem to dominate the arena, but why should our responsibility with the earth's resources leave us with environments devoid of red and blue, yellow and orange? The project will continue in 2016, working on Le Corbusier colours.

The Light & Colour Group at NTNU is involved in different research projects: the 'DayLighting' project focuses on daylighting issues at high latitudes, 'IEA Task 50' investigates advanced lighting solutions for retrofitting buildings, as well as several PhD projects focusing on colour related topics.



Norwegians in Tokyo: (L to R) Shida Beigpour, Raju Shrestha, Steven Le Moan, and Jon Hardeberg.



2015 was an important year for our Association, with a lot of activities involving our members, namely a memorable International Colour Day celebration with a

seminar/workshop counting more than 50 participants. We began to work deeply on planning the AIC2018 LISBON event, and we've already chosen a logo.

Unfortunately 2015 was a year of sorrow for us, because three honorary members of the 'Associação Portuguesa da Cor' passed away: painter Luis Badosa (18/05/2015); environmental designer and colour consultant Frank Mahnke (27/09/2015); and architect Pancho Guedes (7/11/2015). They all contributed enormously to the 'Master Programme of Colour in Architecture' of the Faculty of Architecture-Lisbon Technical University that I set up in 2003, with their lectures on Psychophysiological Affects of Colour, Colour for Interiors, Colour Symbolology and Colour Aesthetics, respectively. Luis Badosa, Frank Mahnke and Pancho Guedes had in common a life dedicated to colour and an extraordinary capacity to share their work. Their knowledge and enthusiasm encouraged students to pursue research in colour. It was a great privilege to have had them in our lives! They will be missed.

– Maria João Durão, APCor Honorary President

Seminário LABCOR

On 9 March Maria João Durão and João Pernão organised a Seminar in the Faculty of Architecture, Lisbon University, about the NCS Colour System, from theoretical approach to practical exercises. This Seminar is included in the LabColour activities.



Opening session and practical work at workshop on Reflected Colour.

International Colour Day Seminar/ Workshop

Our Association celebrated the 2015 International Colour Day with a 'Light and Colour' Seminar/Workshop held at the Faculty of Architecture, University of Lisbon. The event included a theoretical approach to the colour phenomenon, and a practical application of the learned concepts with more than 50 participants divided through different themes.



Conference presentations by APCor members

2015 was UNESCO's International Year of Light and APCor was represented at several events within this subject.

João Pernão was a keynote speaker at three events: 'Astratec2015 – Light Designer Workshop', Museu do Oriente, Lisboa, May; 'Lights on Cultural Heritage and Museums', Oporto University, July; and 'Light Technology as a Factor for Improving Life Quality', Museu Casa da Luz, Funchal, November.



Maria João Durão and Fernando Moreira da Silva coordinated the conference 'Colour and Light in Architecture', CIAUD/Caleidoscópio, Tektónica, May, with oral presentations by APCor members Zélia Simões, Margarida Gamito, Helena Soares, Verónica Conte and João Pernão.

APCor members João Pernão and Ana Paula Pinheiro presented oral papers at the 'XI Conferenza del Colore', Milan, September. Dulce Loução was a member of the Scientific Committee.

Zélia Simões presented an oral paper at 'Virtual, augmented, mixed reality: changing the face of learning', Dubrovnik, May.

Margarida Gamito, APCor President, and Miguel Aboim, APCor Treasurer, presented papers at 'AHFE – Intl Conf on Applied Human Factors and Ergonomics', Las Vegas, July.

João Pernão was an invited speaker, with José Aguiar, to the International Conference 'Colours 2015: Bridging Science with Art', Évora University, September.

Art exhibitions by APCor members

Ana Pais Oliveira held her exhibition 'Pintura Fora de Si (ou algumas soluções de habitação)' at the Museu Municipal Amadeu de Sousa Cardoso, Amarante, from 18 April to 7 June.



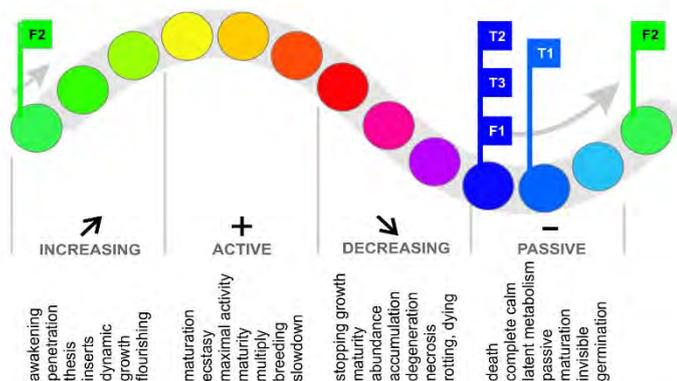
Sarah Frances Dias held her exhibition 'Beyond' at Farol Hotel, Cascais, from 23 April to 23 June.

AIC2018 Lisbon

The logo for the AIC2018 meeting was approved in our annual assembly. It represents a crow, Lisbon's symbol from a medieval legend that links St Vincent with this city. The theme is COLOUR AND HUMAN COMFORT and it will be held 25–28 September 2018 (see page 50).



Until now, three research studies of Slovenian colour preferences have been made, the first by our famous psychologist Anton Trstenjak in 1975 (T1) and 1979 (T2), the second by Maks Tušak in 2001 (T3) and the third by Andrej Skrbinek and Vojko Pogacar in 2006 (F1) within the research of Slovenian Municipal Flags. Results of Trstenjak were published twice and we assume that the colour table published in the second book was printed more accurately in offset printing technique than in the first book, which was printed in the older letterpress technology. This is the reason of presented discrepancies, but the tendencies in colour preferences are obvious.



Interpretation of Slovenian colour tendencies in Periodic Color Model shows that the general tendencies of three time research studies underline the general direction of colour preferences in Slovenia.



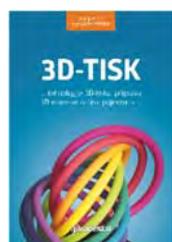
Many Slovenian sportsmen recently dressed predominantly in green.

New books by SZB members



Jožef Muhovič, published an excellent book in the Slovenian language, *Leksikon likovne teorije* (Lexicon of Art Theory). The book covers all terms related to colours and all correlated terms in English, German and French as well. Due to its universality, we are certain that the book will be translated into other European languages.

Tadeja Muck, together with co-author Igor Križanovskij, published the first book in Slovenian language on 3D-printing: *3D-tisk*. The first part briefly presents 3D printing technologies and provides a description of applications. In the second part, the workflow is presented from virtual ideas through 3D models to printed 3D objects. Pictorial representation of the 3D-modeling process is presented by using the design program *Blender*.



Meeting for the International Colour Day in Zagreb

Two of our members participated in the meeting on 21 March in Zagreb, Croatia, organised by the Croatian Colour Society (Hrvatska udruga za boje) in connection with International Colour Day. Boris Sluban delivered a lecture entitled 'Colour constancy, Chromatic adaptation and Metamerism' in which brief information on Chromatic Adaptation Transform and Colour Inconstancy were presented, followed by explanation of metamerism and paramerism of two samples. Alenka Debenjak spoke about visual highlights in architecture. Visual accents on façades in the sgraffito technique were used in ancient Egypt and Persia and later emerged during the Renaissance and in Art Nouveau style. In Slovenia they can be seen on buildings designed by the famous architect Jože Plečnik (1872–1957). Numerous decorative colour elements can be found on his churches all over Slovenia and also in Vienna and Prague, where he worked as main court architect consultant until he returned to Slovenia and became a professor at the University of Ljubljana, Faculty of Architecture.



Jože Plečnik: Žale Central Cemetery, Ljubljana.

Colours and Graphic Days

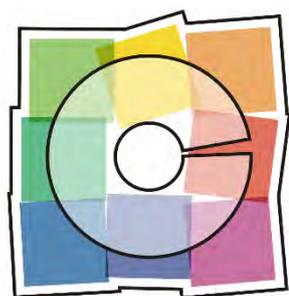
In autumn the Faculty of Natural Sciences and Engineering, Chair of information and graphic arts technology, organised Graphic Days, an event predominantly intended for pupils of primary and secondary school. Some basic phenomena connected with colour and light were explained.



Influence of light on perceived colour.



Visitors at the Graphic Days.



Comité del Color

The Color Committee of Spain celebrated its 50th Anniversary in 2015. We organised an event in the University of Granada where the members remembered our long and distinguished history of colour research activities from 1965 to 2015. Francisco J Heredia, President, summarised the most important milestones by using an animated timeline, see:

www.sedoptica.es/SEDO/color/web/informacion/historia.htm

On the other hand, Dr José María Artigas from the University of Valencia, gave a talk focused on 'Color Vision and Cataract Surgery'. Finally, different senior members were recognised for their valuable work in the fields of colour science and technology. Thank you very much to Dr Eduardo Gilabert, Dr Antonio Corrons, Dr José M^a Artigas, Dr Enrique Hita, Dr Ignacio Negeruela and Dr Angela García.



Francisco J Heredia, President of the Committee, in his 'Colour and Food Quality Lab' at the University of Seville.

Once more, the Committee supported the training course 'El Color: Fundamentos y Aplicaciones' (Universidad de Sevilla) and the new master's course about colour science and technology 'Colour in Science and Industry (COSI)'.

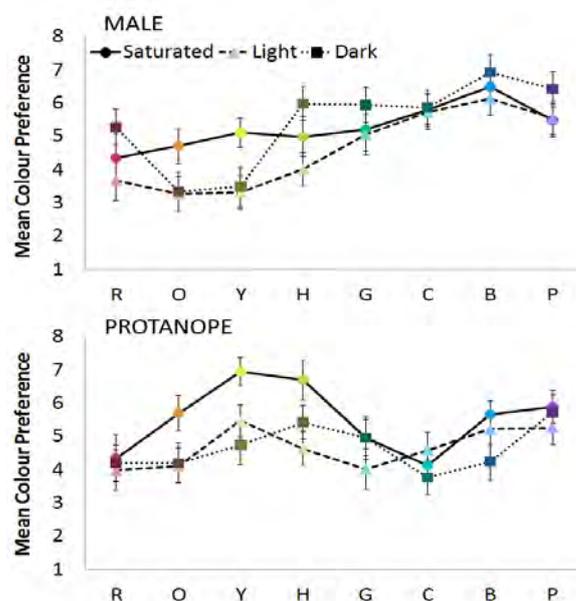
Finally, we would like to draw attention to the research into colour vision deficiencies, conducted by the research group formed by Prof Julio Lillo (head), Dr Moreira and Dr Álvaro (Universidad Complutense de Madrid), in collaboration with Prof Anna Franklin (University of Sussex). They performed a pioneer study of colour preferences in red-green dichromats. Thirty-two red-green dichromat males (15 protanopes; 17 deuteranopes) and 32 normal trichromats (15 males; 17 females) were tested in a colour naming and a colour preference task. They found the following main results: (1) red-green dichromacy affects colour preference, especially protanopia; (2) cone-contrast between target stimulus and background partly explains colour preference, both in normal trichromats and red-green dichromats; (3) the variables related with fluency in colour naming also partly explain colour preference in protanopes, deuteranopes and normal trichromat males, but not in normal trichromat females.



Members of the Committee in the 50th Anniversary celebration.

The new logo (above) was introduced by Dr Francisco José Rodríguez Pulido, from the University of Sevilla, who was the designer of our new image. He briefly explained his design, where the letter 'C' represents the pupil and iris of an eye as an open window to the light (that's why its centre is white). Eight coloured squares are represented around the 'C', with colours distributed in the same way as in the CIELAB colour space. The squares are rotated a little to break up the perfect geometric shapes and to give dynamism to the image. In addition, these rotations produce some overlapping areas and the corresponding subtractive colour mixtures are shown, like coloured filters. Just for curiosity, if we extend the two segments that transform the circle in the letter 'C' towards the centre, they will form two angles with the horizontal equal to 2° and 10°, signalling the two CIE standard observers.

On the occasion of the International Year of Light, different activities were conducted for members of the Committee: conferences, exhibitions and workshops on light and colour. Of particular note was the workshop 'Light, Color and Food' with participation in the European Researchers' Night. Another interesting activity was a talk in the CIMET coffee break season "...a dose of Colour Science to accompany your coffee" by Prof Shigeki Nakauchi (Toyohashi University of Technology, Dept of Computer Science and Engineering, Japan) at the University of Granada (28 January), introducing his lab and research.



Álvarez et al, Proc. Natl. Acad. Sci. USA, 112(30), 9316-9321, 2015.



The celebration of Swedish Colour Centre 50th anniversary gave birth to the work that we are running now in the Colour Centre. An important focus is to attract design and architecture students for the importance of colour studies and colour training. We want to increase their knowledge of colour and

encourage them to use colour as an important element in the design process. We will create multiple tasks for design and architecture students to highlight the interest and importance of colour! We are doing this through two important projects:

(1) A colour design competition 'Prisad Färg' (Awarded Colour) for students of design, architecture, visual communication and art in Sweden. The theme in 2015 was *The unexpected*. Things,



The winners of Prisad Färg 2015.

products, environments, etc. are expected to have certain colours. Colour is visual information and associates to different experiences. It evokes many feelings and thoughts, it affects our mind-mood, it

gives us guidance and information, it can affect our desire to work and it offers choices. The competition task consisted of colouring in a totally unexpected way. For example, the unexpected can be to change ingrained colours in an urban space, a house, an optional environmental, a product, everyday objects, appliances, and a phenomenon. What is unexpected, provocative or desirable?

(2) A network for colour teachers and students 'Ung färgkraft' (Young colour force) has during the year focused on various opportunities to reach teachers and students at architectural and design schools to highlight the importance of education. Students are invited to our colour meetings and given free membership in Colour Centre. A colour seminar for teachers is planned for March 2016 where colour education is the focus.

Members meetings

In January we visited the exhibition 'Inspiration Matisse' which showed how Matisse was a big inspiration to many Swedish artists.



In March we celebrated the International Colour Day, see page 42.

In April we visited an exhibition 'Pompeji in Millesgården'. Millesgården is an art museum, the former home of the artist Carl Milles, with a garden inspired by Pompeii.

In May we arranged a very popular and fun exclusive guided tour in the Amusement Park 'Gröna Lund' which has 1000 different colours! This was just before season opening so we were alone in a newly painted colourful park.

In September we listened to a talk about 'Colour, typography and signs' in the Botanic Garden in Gothenburg by Christel Copp and Eva Amborg. Specific colours have been used to facilitate orientation to find your way and at the same time harmonising the garden.



'Colour, typography and signs' – Eva & Christel in action.

In October we had Henrik Gidlund, Light Specialist at the Swedish Transport Administrations, as guest speaker. The new way tunnel 'Norra Länken' in Stockholm has been decorated with signs and landmarks to make motorists feel secure. Using coloured lights in the roof of the tunnel, pictures along the walls and installations on the wall in the background where the tunnel sections separate, each junction will have its own identity to help motorists find their way. These decorations are all landmarks and natural characteristics of Stockholm.



Butterflies in the new way tunnel in Stockholm.

In November we had the annual meeting, which ended with a colour talk titled 'Indigo the most loved colour' by Leif Runefelt, historian of ideas. He gave an interesting and amusing talk about how Indigo reached Swedish folk art at the end of the 1700's and how this is seen as a serial problem of order.

In December we had a guided tour of the Museum of Modern Art and the exhibition 'Reality Machines' by Olafur Eliasson of Iceland/Denmark. He is an artist who works within many media, such as installations, painting, sculpture, photography and film.



Berit Bergström, Secretary
Swedish Colour Centre Foundation
www.colourspot.org



2015 was a year of major change, challenge, and realignment for the association. For the

first time, pro/colore participated with a stand at the important trade fair appli-tech. After the departure of the President and cancellation of two meetings, however, the executive committee had to position the association anew, which provided an opportunity to review the association's objectives and strategy.

The executive committee expresses deepest gratitude to its 215 members, who include individuals, as well as partners and sponsors (these count as single members). Contributing through their respective annual fees, members enable the organising of activities and maintaining of a platform for further networking and exchange among colour experts. The recruiting by members is important to help the association grow, e.g. by inviting interested parties to meetings, who then decide themselves to join the association. For students interested in joining the association, there is a special introductory offer.

The most important events of 2015 are described here briefly.

February 4–6: The year began with the association's presentation in the appli-tech trade fair for painters and plasterers in Lucerne. The differently painted cabins called "colour space for sensuous experience" were a great attraction and success. More than a thousand people tested how colours act on the subconscious as members measured blood pressure and pulse before and after visiting a colour cabin. Many were surprised at the results.



Monochrome cabins at appli-tech to measure colour effects.

March 25: The 24th Ordinary General Assembly was held at the powder coating production firm Karl Bubenhofer AG in Gossau in the Canton of St. Gallen. In addition to statutory business, Peter Ullmann, Sales Manager at KABE Paints, talked about Le Corbusier's polychromy and its connection to the hues of FARBwerk collection.

September 24: At the Gewerbemuseum Winterthur, Prof Ulrich Bachmann, founder of the Institute for Colour and Light, guided members through the exhibition *OLED – Light for the future?*. OLEDs are organic light-emitting diodes for thin and flexible lighting devices that can be introduced into furniture,

architecture and textiles to create ambient lighting. Then the Co-Director of Haus der Farbe, Lino Sibillano, presented the exhibition *Colour Strategies in Architecture*.



OLED demonstration at Gewerbemuseum Winterthur.

October 12: A guided tour through the newly restored, truly extraordinary and exotic Villa Patumbah completed in 1885 in the Riesbach district of Zurich transported the members to a lavish architectural treasure conceived through the skilful interweaving of many distinctive styles and colours. The visit culminated in a talk by conservator Claudio Fontana. Participants also gained insight into Swiss architectural culture through an exhibition of the Swiss Heritage Society, which rents the villa as its centre.



Villa Patumbah means "much longed for land" in Malay.

November 19–21: A two-day workshop *Small Pictures – Big Effect* at Atelier Benad in Munich, Germany, introduced members to the techniques of optical illusion painting. Applied on walls, the trompe-l'œil playfully explores the boundary between image and reality, as in the painting of a parrot perched on a coat hook.



Further information related to the association's events is available in the e-letters at www.procolore.ch



The Color Association of Taiwan (CAT) continued to thrive with well-attended activities throughout the year 2015. Highlights included the International Color Day, the

AIC 2015 Tokyo meeting 'Color and Image' and the CAT 2015 International Color Conference.

International Color Day

A colour exhibition and fair was planned and conducted by Prof Tien-Rein Lee along with CAT executive members on 21 March. It aimed to establish the urban colour space of the city and appearance of district colours. The event was incorporated with International Color Day activities held worldwide, and contributed to improving the general understanding of colour aesthetics in urban space, and spread ideas for developing a concept of city colour identity.



International Color Day Exhibition and Fair at Hwa-Shan Creative Park.

CAT delegation attended AIC 2015 Tokyo

Prof Tien-Rein Lee and Prof Yuh-Chang Wei led the CAT delegation to attend the AIC 2015 Interim Meeting in Tokyo. Prof Tien-Rein Lee was elected to the position of AIC Vice-President during the General Assembly.



CAT delegation attending the AIC conference in Tokyo.

Color Seminars in Science, Arts and Vision

Two colour seminars took place on 25 May and 30 June. The invited speakers were: Prof Javier Romero, University of Granada, Spain, topic 'Color Atmospheric Phenomena and Paintings'; and Prof Joel Pokorny, University of Chicago, USA, topic 'Quantal and Non-Quantal Color Matches'.



Prof Joel Pokorny (centre) at the CCU colour lab.

CAT 2015 Conference and Symposium of Urban Color Design

This international colour event was held 14-15 November in Taipei at the Chinese Culture University. The speakers were: Prof Tien-Rein Lee, Taiwan; Prof Hong-Yu Kuo, China; Prof Yamamoto Sari, Japan; Jaap le Poole, Amsterdam; Neville Mars, Holland; Emmanuelle Moureaux, France; Ray King, USA. Over 100 participants attended the conference to exchange thoughts on the latest trends, future developments of interdisciplinary colour studies and urban colour design.



Participants at the CAT Annual Conference at CCU.



Prof Javier Romero (2nd from right at front) along with CAT participants, after his keynote speech at the Color Seminar.



Education and research for color science, technology and design are gradually becoming active in Thailand, centred at present at the Dept of Imaging and Printing Technology,

Chulalongkorn University in Bangkok and the Color Research Center (CRC) at Rajamangala University of Technology Thanyaburi (RMUTT), located at a city about 50 km north of Bangkok. The CRC organised the international symposium 'New era of color science, technology and design' in August 2015, where three Japanese professors (Ikeda at CRC, Yaguchi at Chiba Univ and Yamauchi at Yamagata Univ) and one Thai Assoc Prof Katemake at Chula presented invited lectures. Twenty posters were also presented, including one from Prof Kim at Yonsei Univ, Korea. The picture below shows the atmosphere of the symposium.

and districts to participate at international conferences. The organiser sets the registration fee low and prepares economical residence, and tries to make the conference informal as much as possible. The ACA is not held in the year when the AIC comes to Asia. No conference will take place in 2017 as the AIC Congress will be held in Korea.



Staff members of RMUTT at the AIC meeting in Tokyo.



Prof Yaguchi speaking in the symposium.

The CRC continues its efforts to spread colour science and education. A seminar 'Color management for displays in printing and graphic design' was held at RMUTT last year and many participants came from industries. The effort is being made also for ASEAN countries. In 2014 a lecture group comprising five speakers visited the Industrial University of Ho Chi Minh City, Vietnam and in 2015 the group visited the University of Information Technology at Yangon, Myanmar. The CRC hopes that staff at universities in ASEAN Community will begin to get interested in colour science, technology and design, and will join the ACA and eventually join the AIC.

There were two classes on colour for undergraduate students: 'Color and vision', and 'Color technology', plus a PhD course 'Color science and human vision' at RMUTT.



Two experiments at CRC: (left) the visibility of a stimulus placed in a test room that simulates the indoor of a building is judged by a subject with cataract experiencing goggles from a very brightly illuminated subject room which simulates the outdoor environment; (right) chromatic adaptation in a room illuminated by LED.



Dr Phuangsuwan, the CRC director, and Prof Ikeda, a former president of AIC, standing at the entrance of the symposium.

Six staff members of RMUTT attended the AIC meeting in Tokyo and presented papers. Some had presented papers at the 2nd Asia Color Association (ACA) conference held at Taipei, Taiwan in 2014 and several will also present papers at the 3rd ACA at Changshu, China in May 2016. The ACA was established to encourage students and young researchers of Asian countries

The human visual system can recognize the intrinsic colour of objects in spite of change in the illumination colour. A white paper appears white even if it is seen under an orange illumination. This is an important function of the visual system called colour constancy. Because of this function we can live our daily lives without mistaking a white paper as an orange paper. The CRC laboratory aims to solve how colour constancy functions. Dr Chanprapha recently succeeded to demonstrate its influence in the viewing of photographs by perceiving the picture as a 3D scene. The CRC continuously gets cooperation from Japanese colour scientists such as the invited speakers mentioned above, and Prof Shinoda at Ritsumeikan Univ, Prof Ayama at Utsunomiya Univ, Assoc Prof Mizokami at Chiba Univ, Assoc Prof Kawasumi at Meijo Univ, and Dr Takeuchi, who have all visited the CRC from time to time.



Meetings

The ISCC had a joint meeting with the Society of Plastics Engineers Color and Appearance Division (SPE/CAD) Regional Technical Conference (RETEC) in Indianapolis, Indiana, 4–6 October. It was very well attended with 450 participants. The color section featured ten speakers and a panel discussion on ‘Color Trends for 2016 and Beyond’. The four panelists discussing ‘Color Trends for 2016 and Beyond’ were: Doreen Becker, Global Color Strategist from Schulman Inc; Linda Carroll, Color Insight Manager from Ampacet Corporation; George Ianuzzi, Key Account Manager from Sudarshan; and our own ISCC member, Danny Rich, Senior Color Physicist from Sun Chemical Corporation. Each panelist shared thoughts on what color trends we should look for starting next year and into the future. Then the audience was asked to answer a series of questions like ‘What car color will be most popular in 2016?’ with multiple choice answers. After the answers were tallied, the panelists commented on the results. It was refreshing to hear the comments of such a diverse panel.

Publications

The *ISCC News* was published quarterly in 2015. Michael Brill’s *Hue Angles* columns featured such fascinating topics as ‘Cobalt Blue – from runway to road’ written by Leslie Harrington as guest author, ‘Equal-Energy White: Does it illuminate or

obscure?’, ‘Red like you’ve never seen it before’ written by Paul Centore as guest author, and ‘How do slow visual signals keep up with fast ones from a moving object?’. Mark Fairchild’s *Metameric Blacks* columns opened our color curious minds to such questions as ‘Why is color?’, ‘Why does the moon look large on the horizon, but this doesn’t show up in photos?’, ‘How does the light affect how bright a color appears?’ and ‘Do you attribute the incredibly complex workings of the eye to evolution or

creation?’, which was Mark’s last contribution. ISCC is pleased to offer our entire newsletter archive 1933–2014 online at: www.iscc.org/resources/NewsletterArchive.php

Webinars

In September ISCC started a quarterly online seminar series. Our first webinar was given by Ann Laidlaw (ACL Color Consulting, LLC). with ‘The Future of Lighting: Color, Efficiency, and Compliance’. The second repeated Françoise Viénot’s presentation given at the joint ISCC/SPE/CAD meeting. These 60-minute webinars are free and open to anyone around the world. If you are interested in learning more, please join our LinkedIn online community. Instructions for joining can be found at www.iscc.org

Awards

The 2015 ISCC Nickerson Service Award was presented to Rolf G Kuehni, who was recognised for his substantial contributions to color education that have been posted to the ISCC website. Under *Historic Translations* on that website, he contributed many translations of color articles and books from German and French to English, biographical information on the authors, and often technical introductions as well. (These authors include such famous scientists as JH Lambert, A Koenig, W Ostwald, R Luther, E Schrödinger and PO Runge, as well as an anonymous French author.) In addition, Rolf edited the ISCC-posted manuscript by IH Godlove entitled ‘The Earliest People and their Colors’. He has touched virtually every part of the ISCC electronic presence, including a column on AH Munsell that he wrote for *Hue Angles* several years ago.



Rolf G Kuehni receiving the Nickerson Service Award.

History

The Hagley Museum and Library is home to the ISCC artifact collection that used to reside at the Cooper Hewitt Museum in New York City. After Dorothy Nickerson passed away, Joy Turner Luke donated all of Dorothy’s color collection to the Hagley. ISCC is revising the cataloging of this historical collection. For a complete listing, visit the Finding Aid at:

<http://findingaids.hagley.org/xtf/view?docId=ead/2188.xml&hunk.id=&toc.depth=1&toc.id=&brand=default>

Marjorie and Richard Ingalls are taking down their color science shingle. They have gathered so much equipment and archival materials over the years. Before they dispose of their collection, they would like to offer it to ISCC members and any other color enthusiasts. Several classic spectrophotometers are included, along with many color samples. An inventory can be found at: www.iscc.org/resources/IngallsInventory.php

Upcoming Events

There will be an ISCC morning workshop on Friday 11 Nov, 2016 during the week long Color and Imaging Conference (CIC’24) at the Westgate Hotel in San Diego, CA. The Annual ISCC Business and Awards Meeting will follow the workshop. More details for the Friday morning ISCC workshop and Annual Meeting will be available on the ISCC website at www.iscc.org



Among these colored shadows, the yellow hand waves to you most slowly. From ‘*Hue Angles*’ (10 Nov)



The International Association of Color Consultants/Designers – North America is the English-language chapter of the IACC. We are based in the United States but are comprised of color professionals from around the world who have chosen to become more educated about color, its proper application, and the human response it elicits.

Our 2015 Annual Meeting was held in beautiful Tempe, Arizona, in April. In addition to the General Meeting and presentation by Sherwin Williams, attendees participated in round table discussions and a hands-on Munsell Color System activity. We also enjoyed a group tour of Frank Lloyd Wright's wonderful Taliesin West studio!



Group activity at the Annual Meeting, creating a Munsell Color chart.



Karen Collins has been President of IACC-NA since 2013. She is an interior designer for JBA Architects in Newark, Ohio. The 9,500 sq ft cafeteria renovation for the Nestle Product Technology Center is a recently completed project. Neutral finishes are used throughout the entire facility. Since the cafeteria is approached from several different directions consisting of office space, testing areas and laboratories, she was able to incorporate fresh colors into the existing color scheme as a transition into the break area.



Cafeteria area at the Nestle Product Technology Center.

Sadly, our organization received news in Fall 2015 of the death of Frank H Mahnke, President of the IACC, Director of the AICCE, and founder of the IACC seminars in the United States. He died 27 September in Geneva, Switzerland, with his beloved wife, Danielle, by his side, Frank dedicated his life to the study of color and how it can be used to create beneficial and healthy surroundings for human beings in the places they live, work, and heal from illness. He was president of the IACC International Association of Colour Consultant/Designers since 1988 and directed the IACC Education/Accreditation Programs conducted worldwide. In this capacity he was a permanent lecturer for the IACC on the psycho-physiological effects of color and light, and human reaction to the built environment. In addition to his lectures on applied and psychodiagnostic color psychology, he lectured on the role of color as information and communication in the field of marketing. See also 'In Memoriam' on page 11 and <https://iaccna.com/aicce/>



Frank H Mahnke presenting a color seminar.

Frank Mahnke's principal achievements can be summarised as:

Lecturer

IACC Academy: Salzburg Seminars for Color and Environment, since 1990.

IACC Academy Branch USA: Seminars for Color and Environment in San Diego, USA, since 1991.

IACC Seminars, IACC School for Color and Design, Nagoya-City and Fukuoka Branch, Japan, 2000-2008.

Technical University of Lisbon, Portugal, Faculty for Architecture, Masters in Color in Architecture, since 2003.

IACC Italy Seminars in cooperation with Politecnico di Milano, Italy, since 2011.

Author

Color and Light in Man-Made Environments. Van Nostrand Reinhold, New York 1987. Paperback 1993. Now distributed by John Wiley and Sons Inc, New York.

Color Environment & Human Response. Van Nostrand Reinhold, New York, 1996. Now published and distributed by John Wiley.

Mensch, Farbe, Raum (Humans, Color, Space). Co-Author. Verlagsanstalt Alexander Koch, Germany 1998.

Il colore nella progettazione (Color in Planning). UTET Torino, Italy 1998.

Color: Communication in Architectural Space. Co-Author. Birkhäuser Publisher Basel, Boston, Berlin. 2007.

ASSOCIATE MEMBER – CMG



Founded in 1962, Color Marketing Group (CMG) is the premier international association for color design professionals. Our mission is to create color forecast information for professionals who design and market with color. CMG's major focus is to explore the trends and influences driving color, and to forecast the direction in which color is moving across multiple industries. These include automotive and transportation, consumer goods, action/recreation, home, technology, visual communications and juvenile products, as well as commercial markets including healthcare, hospitality/entertainment and retail. This is achieved through the collaborative efforts of CMG members and color professionals who attend CMG's Conferences and global color forecasting workshops, called ChromaZones.



Workshop participants explore materials and finishes.

The results from these events were then consolidated by volunteer Steering Committees from each region who reviewed the final results and identified the top 16 colors from each of the four regions that best represent the direction that color will take in 2017 and beyond. The final 64 colors – CMG's World Color Forecast – was later revealed to Members and attendees at the 2015 International Summit, held in San Diego California USA in November. Over 250 color design professionals from around the world attended the Summit.

2015 also saw CMG Committee members engaged on a number of other projects including the development of a new Future Thinking Workshop to be launched at the 2016 International Summit. The Workshop will complement the Color Forecasting process and offer attendees the chance to strengthen their trend-spotting skills by exploring ways to look for and identify trends; to develop, use, and work with trends; and to evaluate how trends impact consumer products and behaviour.

In 2015 CMG's Color Forecasting Committee was tasked with identifying additional member benefits including the addition of 4 printed Color Cards displaying color chips of each of CMG's four regional forecasts from Asia, Europe, Latin America, and North America. CMG partnered with Dorn Color who printed the cards and NCS Colour AB who provided the chips. Members now receive CMG's World Color Forecast electronically, in fan deck format and on a 8.5x11" printed card showing color notations in Munsell, Pantone, NCS, RAL, LAB, and sRGB. Members also receive the monthly *Color Alert*, illuminating one color from the World Color Forecast and validating our predictions in the market. For more information on the Color Marketing Group, our events, International Summit or membership, please visit our website at www.colormarketing.org or engage with us through social media on Facebook, Twitter, Instagram, Pinterest, Google+ and LinkedIn.



Color Alert for April 2015



CMG's 2015 North American Steering Committee

In 2015 CMG held ChromaZone Color Forecasting Workshops and Conferences throughout four key regions: Asia, Europe, Latin America, and North America. The location list included Osaka, Shanghai, Milan, Stockholm, Krakow, São Paulo, and myriad cities in the United States. Each participant contributed to the process by sharing ideas and observations on what is shaping color and the driving influences behind color directions, as well as the products and industries that will see their proposed color introductions.



Exploring color trends and influences in a ChromaZone Workshop.



COLOUR & SPACE IN
CULTURAL HERITAGE

Colour and Space in Cultural Heritage (COSCH) is a European COST action funded by the Horizon 2020 programme, in which the goals are to promote R&D for the needs of heritage documentation. Although it is not directly connected with AIC, it involves many people in European countries who belong to AIC member organisations. The project started in 2012 and spans four years with a total budget of €680K, and is mainly focused on optical techniques for 3D digitisation in the emerging field of heritage science. Activities include expert meetings, organisation of training schools and the promotion of multidisciplinary case studies. COSCH also provides grants for short scientific missions to academic laboratories or research sites. COSCH is really an international consortium, with 235 members from 28 different countries. They include students, academics, researchers, managers from companies and museum staff, from curators to conservators. The chairman is Prof Dr-Ing Frank Boochs, from the Hochschule Mainz – University of Applied Sciences, Mainz, Germany. See: <http://cosch.info>

Five working groups deal with different aspects of heritage objects: spectral and spatial digitisation, restoration, visualisation and algorithms for information processing. One of the goals of COSCH is to organize all the information collected during the action and to build a knowledge base that can help individuals dealing with heritage artefacts to select the right technology that suits their specific application.



Russian icon (left) and wooden panel painted by medieval Tuscan technique (right), employed in the COSCH Round Robin Test.

In the colour domain COSCH has focused on spectral imaging techniques. The first task was the identification of existing multi- and hyperspectral imaging in the visible and near-infrared regions. COSCH is working towards the development of standardised methodologies and best practices regarding their application in the art conservation field. In a major 'Round Robin Test' (RRT), five test objects, including an X-Rite ColorChecker, a Russian icon printed by chromolithography onto tinned steel, and a specially produced panel painted by medieval Tuscan technique, were digitised by different spectral imaging technologies in more than 20 laboratories across

Europe. The goal was to compare the performance of the different imaging systems and to understand their impact on colour accuracy. The outcome of the exercise will be a comprehensive set of guidelines for spectral imaging.



Participants at the COSCH training school in Florence, standing in the main cloister (Chiostro di Sant' Antonino) of the San Marco complex. The fresco 'Saint Dominic in adoration before the Crucifix' was painted by Beato Angelico, dated to approx 1435.

One case study focusses on Germolles' palace, the private country estate of Margaret of Flanders, Duchess of Burgundy, and one of the best preserved princely residences (end 14th C) in France. Its mural decorations were rediscovered in the 1970s under modern plaster, with traces of expensive metallic decoration (tin foils uncoated white and green in addition to vermeil-coated) mentioned in the medieval records. The Germolles case study aims at re-documenting the unique wall paintings using the most innovative spatial and spectral imaging techniques (macro and micro-technical photography, photogrammetry, reflectance transformation imaging, spectro-colorimetry, multispectral imaging, IR thermography) in combination with more traditional non-invasive or slightly invasive analytical techniques such as X-ray fluorescence.



From the COSCH case study at Germolles palace, Burgundy. Application of different imaging techniques on a teal of one of the mural decorations: (left) Macro-technical photography; (centre) structured light imaging; (right) reflectance transformation imaging.

The long-term objective of COSCH is the formation of a sustainable European network of researchers, solution providers, end-users and industrial partners for cultural heritage documentation, preservation and reconstruction.

INTERNATIONAL COLOUR DAY (ICD)



INTERNATIONAL COLOUR DAY

The concept of an international day of colour was proposed to the AIC in 2008 by Prof Dra Maria João Durão, Honorary President to the Portuguese Colour Association (APCOR), and was adopted as International Colour Day (ICD) by the AIC Executive Committee in 2009. The date of March 21st was suggested by Leonhard Oberascher (Austria) because it is the equinox – *aequus* (equal) and *nox* (night).

Around the equinox, the night and day are approximately equal in length, symbolically related to the complementary nature of light and darkness, illumination and shadow, expressed in all human cultures. An international competition for logo design led to the announcement of the winner at the AIC2012 meeting in Taipei. As expressed by designer Hosanna Yau, from Hong Kong: "Two circles form an eye, with an equal half of rainbow colour and black representing light and darkness, day and night; everyone feast one's eye on the international colour day." This special report, compiled by Prof Maria João Durão, describes some of the diverse activities undertaken by AIC members around the world to celebrate ICD in 2015.

Colour Society of Australia

The NSW Division of CSA hosted 'Classics and Curiosities of Colour', an exhibition of important and unusual works marking the history of our understanding and use of colour, on 22 March at the National Art School, Sydney. See the video: <https://www.youtube.com/watch?v=F-KglCbe4hk>



Brazilian Colour Association (ProCor)

On March 21, ProCor's President, Prof Dra Paula Csillag opened an event, explaining the ICD, the AIC and ProCor. The first lecture was: 'How to Compare Colours and Control them on Industry Level', offered by ProCor member and chemist, Marcos Quindici. The second lecture was: 'How to Choose the Right Pigments for your Colour Formulation', offered by Roque Antunes, owner of Transcor Pigments industry. Afterwards there was a question session and the afternoon closed with a rich networking dinner. The event was only possible due to the sponsorship of LUKSCOLOR PAINTS.

Color Group – Bulgaria

CGB devoted all events of 2015 to the celebration of its anniversary – 35 years since the organisation's establishment. Hence, this motive, same as ICD (21st March), were commemorated with a trip – a traveling photo workshop entitled 'Colors of North-western Bulgaria'. During this trip, members of the Color group visited the town of Chiprovtsi and some key Orthodox monasteries nearby: Lopushanski, Chiprovski and Klisurski. They saw the traditional method of dyeing wool and also some ancient weaving techniques included in the UNESCO list of world intangible heritage.

Colour Research Society of Canada

Celebrating both ICD and the International Year of Light, board member Vivian Lo organised the very well attended Spectrum Presentation Series. Part 1, Sensibilities in Colour and Light, Considering Colour and Light in Healthcare Environments brought together Susan Black, Principal of Perkins Eastman Black Architects, and Stephen Kaye, Senior Lighting Designer, Mulvey & Banani International, in a seminar focusing on the significance of colour and lighting design in the newly designed Women's College Hospital in Toronto. CRSC Spectrum Series Part 2 program was a multi-disciplinary panel discussion.



The Finnish Colour Association

The FCA celebrated ICD and the International Year of Light 2015, by presenting the FCA's Iiris Award to the lighting designer-scenographer Markku Uimonen for his outstanding career as a versatile visual designer and teacher in the performing arts. His contribution to teaching design in the performing arts is profound. He has led many international

lighting workshops, and has given talks in seminars and conferences in Sweden, France, USA, China, Japan and Russia.



Colour Group of Great Britain

ICD was celebrated on 21 March with the 'Colour in Clapham' festival. With support of the National Physical Laboratory (NPL) who provided some exciting demonstrations and expertise, CGGB members offered interactive games, a colour puzzle, a colour name game, demonstrations of thermal imaging, microwaves, pigments and materials for the artist, jewellery and a new colour-based phone app. Also there was a Pop-Up art exhibition 'Chroma and Hue'. CGGB members were invited to bring along unframed art works on the day.

INTERNATIONAL COLOUR DAY (ICD)



Nicoline Kinch demonstrates the Kolormondo model in Clapham.

Korea Society of Color Studies

The General Meeting of KSCS was held on March 21 at Chung-Ang University in order to commemorate the ICD. The theme 'Color: Treatment of Spring' was selected to bring attention to social issues related to safety. The School of Korean Music from Chung-Ang University provided a celebrating performance. During the meeting, Prof YunSun Park at Hongik University received the Korea Design Excellent Education Award given by Korean Federation of Design Associations.

The Portuguese Colour Association

APCOR celebrated ICD with the 'Light and Colour' Seminar/Workshop held at the Faculty of Architecture, University of Lisbon. The event included a theoretical approach to colour phenomena, and various practical applications. Over 50 participants were grouped according to themes related to the subjects of Light, Colour and Matter; Colour and Form; Colour and Space; Interaction of Colour. Participants interacted directly with Light and Colour experiments, and afterwards were able to share and compare experiences with the other groups. Many lessons were learnt on how colour phenomena behave when their theories are applied to practice.



Slovenian Society for Colours/ Croatian Colour Society

Two members of SSC participated in the meeting organised on 21 March in Zagreb, Croatia, by the Croatian Colour Society (Hrvatska udruga za boje) in connection with ICD. Boris Sluban delivered a lecture entitled 'Colour constancy, chromatic adaptation and metamerism'. Benefits and problems due to metamerism were discussed, the special index of metamerism

(change of illuminant) and additive parametric correction were presented. Alenka Debenjak spoke about visual highlights in architecture. Visual accents on facades of important objects in the technique *sgraffito* were noticed as early as in ancient Egypt and Persia and later emerged during the Renaissance and in Art Nouveau style. In Slovenia facades with decorative details in the technique of *sgraffito* can be seen on buildings designed by the famous architect Jože Plečnik (1872–1957).

Swedish Colour Centre Foundation

"Colour has a central place in my work with glass. It is in the search and longing for colour the process takes off." (Gunnel Sahlin) The SCCF celebrated the International Colour Day on 19 March at NCS with a very colourful guest speaker Gunnel Sahlin, a famous Swedish Glass artist/designer. Colour has a central place in her heart and in her work with design of glass.



Gunnel began her career at Katja of Sweden in New York. She was approached by Kosta Boda to expand from Glass and Crystal to a range of home accessories but this ended up with designing glass objects for nearly 20 years. She was very attracted to how glass captured colour and wanted to move Kosta in another direction away from all that traditional crystal to a new aesthetic. One main thread that runs through all her art glass is the strong use of colour. In the exhibition 'Hortus Poetica', which appeared on 'Art Craftsmen' a year ago, she expressed her characteristic design language creating a strong expression of lust and pleasure inspired by nature's colours.

The Color Association of Taiwan (CAT)

The colour exhibition and fair was held on 21 March at Hwa-Shan Creative Park, led by Prof Tien-Rein Lee with CAT members, aiming to establish the urban colour space of the city and appearance of District colour, linked with ICD activities held worldwide. This great event contributed to improving the general understanding of colour aesthetics in urban space, and spread ideas for developing a concept of city colour identity.



AIC STUDY GROUP ON ENVIRONMENTAL COLOUR DESIGN (SG-ECD)



In his 2016 book *Half Earth*, Edward O Wilson claims that, “To save biodiversity, we need to set aside about half the earth’s surface as a human-free natural reserve.” We ask: What about the other half of the earth, the man-made, built environment?



ECD Study Group Meeting at AIC 2015 Tokyo.

At the Study Group meeting at AIC 2015 in Tokyo, members discussed different environmental colour design approaches. Based on the theories of Galen Minah (USA), Yulia Griber (Russia) compared Oriental carpets to cities in her book *Urban Color: The Experience of American and European Traditions*, Smolensk State University Press, 2014. In both, at the beginning there is a conceptual design, which considers the complexity of the composition, forms, and colours, as well as viewing the whole as a synthesis of parts. The book also studies different methods such as: 1) an account of field research including colour observation on-site, collecting colour samples, photographs and descriptions; 2) a survey among inhabitants concerning their experience of dominant colours in the city; and 3) an analysis of the existing dominant buildings and monuments. Griber further presented *Color in Urban Environment*, a collection of twelve essays translated into Russian, by twenty-three ECD members from ten different countries. And finally, she talked about her paper ‘Color and Image of City in the Environmental Design of Kazimir Malevich’.



Yulia Griber compares Oriental carpet with Italian city of Palmanova.

Malvina Arrarte Grau (Peru) examined the colours of Lima’s houses, with the goals of confirming that: a) colours enhance the perception of architecture; b) colour has a positive effect when used knowingly; and c) colour schemes for future design should be identified. Arrarte-



Grau also gave an excellent talk on ‘Pritzker Prize Laureates’ Colour Preferences’, including the building colours of AIC 2015 keynote speaker Kazuyo Sejima and the brilliant woman architect Zaha Hadid (1950–2016).

The Chair discussed the documentation of a Lisbon Workshop carried out by Karin Fridell-Anter (Sweden) that shows the different steps for studying Colour as a Perceptual Quality in Architecture and Nature. Verena M Schindler also presented the approach of Chromatictownscape as in the case study of Neyron, developed by the Atelier Cler Etudes Chromatiques in Paris. Harald Arnkil (Finland) presented his book *Colours in the Visual World*, a study of colour and visual phenomena in art, design and architecture from the viewpoint of colour perception. Further, Arnkil gave an interesting talk about ‘The Art of Colour Harmony: The Enigmatic Concept of Complementary Colours’. Georgina Ortiz Hernandez (Mexico) presented her book *Tópicos del Color en México y el Mundo*.

Oracle	Chinese Name	English Name	The phases of Generating		
☰	黄	Yellow	Yellow	Earth bears Metal	White
☲	赤	Red	Red	Fire Creates Earth	Yellow
☱	青	Cyan	Blue	Wood feeds Fire	Red
☵	黑	Black	Black	Water Nourishes Wood	Blue
☶	白	White	White	Metal enrich Water	Black

The five traditional Chinese colours and their mutual influence.

Is environmental colour design of the 21st century still aiming at aesthetically based colour harmony? Jie Xu (UK) discussed an approach based on the five traditional Chinese colours and their relation to the elements and natural scenes, as well as how the concept of harmony developed as a fundamental theory of traditional Chinese aesthetics.

New ECD members accredited in 2015 are Kyoko Hidaka (Japan), Muriel Jacquot (France), Beata Stahre Wästberg (Sweden), Ruth Genevieve Ong (Taiwan), Jie Johnny Xu (UK), and Georgina Ortíz Hernández (Mexico).

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AIC STUDY GROUP ON COLOUR EDUCATION (SG-CE)

The SG-CE didn't meet in 2015 but our members were active in the classrooms presenting papers, giving lectures and conducting courses all over the world. Here are some examples of the activities of SGCE members around the globe.

In March 2015, the Colour Society of Australia NSW Division conducted the workshop, 'What's in a Colour Name?' to celebrate International Colour Day. Participants from art, design, colour science and paint manufacturing industries were challenged by workshop activities that provided the opportunity to consider colour combinations from a conceptual perspective. A colour-coded alphabet, inspired by the research of Paul Green-Armytage, provided CSA Committee members Glen Bowden and Annamaria di Cara with the framework for workshop activities. Visually captivating personal artworks in simple grids of colour combinations could reflect the name of a person. In a separate activity participants selected from the same series of alphabet colours to express feelings such as 'pleasure' and concepts such as 'trust'. The workshop culminated in the wall-arrangement of small canvasses, painted by participants in individual colours to form a grid according to the words 'INTERNATIONAL COLOUR DAY 2015'.



Colour-coded alphabet exercises at the CSA, NSW Division workshop 'What's in a Colour Name?'.

Kolormondo, the simple but efficient representation of colour space used in teaching was very successful also in 2015. In June Kolormondo was invited by the London Affordable Art Fair to hold a workshop on colour. This was sold out and successfully led by Janet Best and Shirine Osseiran. 'The Art of Education', a major US network for art teachers, reviewed Kolormondo and called it "A revolutionary tool for color teaching".



Visitors getting familiar with the Kolormondo colour model at the London Affordable Art Fair

In September, the Australian Institute of Architects (AIA) invited Dr Marisha McAuliffe from Queensland University of Technology (QUT) as national keynote speaker for a seminar series for all eight capital cities of Australia. This symposium entitled 'The Application of Colour in Architecture' was well attended with over 400 participants who were professionals within architecture and design.



Marisha McAuliffe explaining a colour app at 'The Application of Colour in Architecture' seminar

ESPM (Escola Superior de Propaganda e Marketing) is a private school in Brazil with over 60 years of history, offering undergraduate, graduate and postgraduate courses in various areas with a strong focus on design. In the colour course Dr Paula Csillag, SGCE member and the President of ProCor, offers for design students one full semester dedicated to colour, four hours a week. Among the several colour-related activities the highlight was a visit to a great Kandinsky exhibition in São Paulo. The exhibition included an interactive area where visitors could experience one of the artist's paintings.



Students of Paula Csillag at ESPM visiting a Kandinsky exhibition in a new way that was both provoking and inspiring.

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AIC STUDY GROUP ON COLOUR VISION AND PSYCHOPHYSICS (SG-CVP)

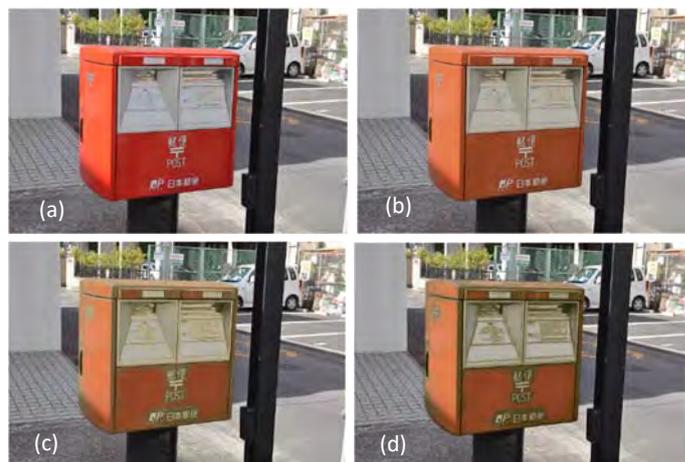
The purpose of this Study Group (SG-CVP) is to discuss basic and practical studies on colour vision, colour appearance, colour discrimination, brightness perception of colours, colour preference and application tools for planning and testing universal colour designs, and to share useful information among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

Activities

1. Currently, the number of members of the SG is 85 from 16 countries.
2. We are planning to hold our next meeting at AIC2017.
3. The SG homepage is at: www.okajima-lab.ynu.ac.jp/CVPSG
4. SG members published/presented some papers related to the SG and gave invited talks.

in AIC2015 Tokyo, the Chairman (Dr Katsunori Okajima) presented five papers entitled 'Pupillary light reflex associated with melanopsin and cone photoreceptors', 'Human monochromatic impressions on multichromatic/colourless phenomena and concepts', 'Differences of generation dependences of preferences between colors and styles in women's fashion', 'Color measurement of meat in cooking under LED lighting with different spectral distributions' and 'Effects of color and aroma of roasted tea on the predicted taste and palatability'. He published a CR&A paper entitled 'Color Scheme Adjustment by Fuzzy Constraint Satisfaction for Color Vision Deficiencies' with Takuto Yanagida and Hidenori Mimura. This paper was awarded the best-paper prize from the Color Science Association of Japan.

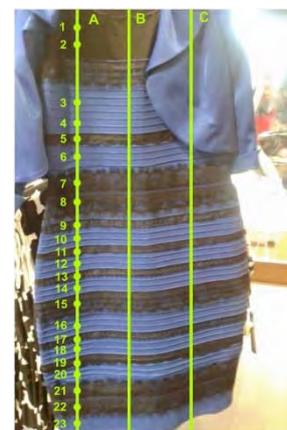
Dr Okajima also gave some invited talks, such as 'Measurements and Simulations of Aging Visual System' in the 38th European Conference on Visual Perception (ECPV2015) and 'Real-time Simulations of Senile Miosis with Optical Device and Image Processing' in the 31st International Pupil Colloquium 2015 (IPC2015). He presented two papers entitled 'Effects of human skin color distribution in the skin's appearance' and 'Effects of Spectral Distribution of Light on Appearance of Face with Makeup' with his colleagues at International Federation of Societies of Cosmetic Chemists (IFSCC2015) Conference in Zurich, Switzerland. In his Japanese paper entitled 'Oldness by Aging of Exterior Wall and Preference of Building Façade' published in the journal of Japan Society of Kansei Engineering, a novel artificial colour-aging technique was used. This operation is based on physical aging data and can be applied to any 2D image. The figure shows four images of the appearance of the original and various stages of aging of a Japanese mailbox simulated with this technique.



Simulated images of aging of a Japanese mailbox: (a) original image; (b) aged image; (c) very aged image; (d) far-gone image.

In addition, the SG Secretary (Prof Manuel Melgosa), who is also the Chair of CIE TC 1-55 'Uniform Colour Space for Industrial Colour-Difference Evaluation', gave an invited talk entitled: 'What is new in color-difference evaluation – A tribute to Prof Claudio Oleari, Università degli Studi di Parma, Italy' in the XI Conferenza del Colore on 10–11 September in Milano. He and his colleagues proposed specific solutions which provide good predictions of corresponding colours and colour appearance datasets in the papers: CJ Li, CJ Ji, MR Luo, M Melgosa, MH Brill, 'CAT02 and HPE Triangles', CR&A 40:30-39 (2015) and J Jiang, ZF Wang, MR Luo, M Melgosa, MH Brill, CJ Li, 'Optimum solution of the CIECAM02 yellow-blue and purple problems', CR&A 40:491-503 (2015).

Moreover, on 26 February a user of the social networking service *Tumblr* raised an unusual polemic on the internet, as people strongly disagreed over whether the colours of the dress in a specific image were black and blue or white and gold. Some people reported being able to see both colours at different times or even swap the colours of the dress at will. Some experimental colour measurements and potential reasons for this phenomenon



were addressed in the paper by M Melgosa, L Gómez-Robledo, MI Suero, MD Fairchild 'What can we learn from a dress with ambiguous colors?', CR&A 40:525-529 (2015). The authors conclude that multiple reasons can be given to explain the different perceived colours of the dress in this image, and that further analysis is needed.

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AIC STUDY GROUP ON THE LANGUAGE OF COLOUR (SG-LC)



The purpose of the Study Group on the Language of Colour (SG-LC) is to discuss and share information on studies related to linguistics, semantics and semiotics of

colour names and the relationship of these to the neuroscience of colour perception. Key topics are colour cognition, colour naming, colour categorisation, colour memory, colour semantics and semiotics, and cross-cultural differences. This study group was formed in 2010, and has 136 registered members from 39 countries, a rise of 77% in the past year.

Dimitris Mylonas has become the new Chair, with Professor Galina Paramei as Co-Chair, of the Study Group in 2015. An announcement of the new leadership of the Study Group was published in the journal *Color Research and Application* (Wiley) in August 2015. We thank Prof JinSook Lee and Dr Paul Green Armytage for their excellent leadership of the SG since its formation in 2009.

We designed a new website <http://language-of-color.aic-color.org>, having moved details of members and resources from the old website. The current website presents the Study Group's ongoing activities in greater scope and more detail. It also enables us to share relevant resources and launch new initiatives related to development of research and practices in the language of colour.

We are honoured to host, as the first resource on our new website: 'The English Language, a Colour Word Compendium' by John B Hutchings, a long-term member of the SG. New resources are welcome. In addition, and to enhance the online presence of our Study Group as well as to instigate and carry out discussions, we have created two social networking platforms, in Twitter and Facebook, currently with 203 'followers' and 381 'Likes' respectively.

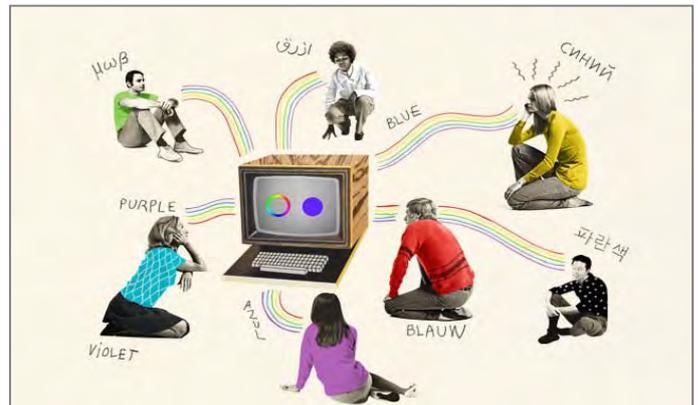
At the AIC 2015 Midterm meeting in Tokyo, three members of the SG-LC – Norifumi Kunimoto (Japan), Pichayada Katemake (Thailand) and Dimitris Mylonas (United Kingdom) – presented their work on colour naming.



Presentations at SG-LC meeting by Norifumi Kunimoto (left), Pichayada Katemake (middle) and Dimitris Mylonas (right).

Norifumi Kunimoto gave a talk on changes of Japanese colour names and colouring materials in Japan. His historical overview highlighted three changes in the colour name nomenclature and meaning that reflect multilayered colour names in Japan.

Pichayada Katemake compared three experimental methods for studying Thai colour names. Two psycholinguistic experiments were conducted in controlled viewing conditions and a third one on the Internet. Dimitris Mylonas talked about colour communication across languages and presented results from a long-running online colour naming experiment at www.colournaming.com. He highlighted the large size of colour vocabularies in English, German, Spanish and Thai and demonstrated a probabilistic web application where users can explore colour names in wide use in different languages.



Representation of an online colour naming model by Valero Doal.

The future direction of the Study Group activities was also discussed. A number of members suggested adding the 'Colour memory' topic to the list of SG-LC interests. The suggestion of Galina Paramei, the SG-LC Co-Chair, to promote on our new website and social media new research articles and activities related to the Study Group was welcomed. Further, Dimitris pointed out the importance of international collaborative research on colour naming supported by the AIC to facilitate communication between languages. This project implies collective actions from members of our group and in the past year Pichayada Katemake with Dimitris Mylonas and Lindsay MacDonald collaborated for a paper in Thai colour naming, and Yulia Griber worked with with Dimitris Mylonas for a paper in Russian colour naming. We expect that 2016 will be another active and fruitful year for SG-LC.

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CIE DIVISION 1



The Terms of Reference of CIE Division 1 are: "To study visual responses to light and to establish standards of response functions, models and procedures of specification relevant to photometry, colorimetry, colour rendering, visual performance and visual assessment of light and lighting." There are currently 18 Technical Committees (7 Vision + 11 Colour), 1 Joint Technical Committee, 10 Reporters and 10 Liaisons, all active in Division 1. An Activity Report giving details of the membership and current activities of the various Technical Committees can be downloaded from <http://div1.cie.co.at/>

2015 Meeting

CIE Division 1 held a successful meeting at the University of Manchester, UK on 30th June 2015 as part of a week-long 28th CIE Session. During the meeting three new Division Officers were approved: Dr Youngshin Kwak (Korea) as the new Division Director, Dr Li-Chen Ou (Taiwan) as the new Division Secretary, and Dr Nana Itoh (Japan) as new Associate Director for the Vision Section. Later in the year, Dr Peter Hanselaer (Belgium) was approved as the new Division Editor by email ballot. Dr Ellen Carter (USA) remains Associate Director for the Colour Section.



During the meeting, there were visual tributes to two elder statesmen of colour science who passed away in 2015: Prof Janos Schanda (1932-2015) and Prof Taihe Dong (1916-2015).



Prof Janos Schanda (1932-2015) and Prof Taihe Dong (1916-2015).

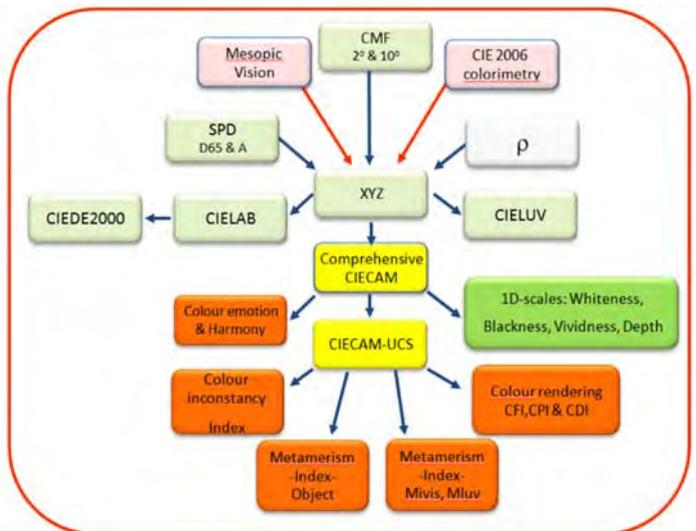
Work Items Closed

In Manchester, 10 technical committees were closed by the Board of Administration, including TC1-61 (Categorical colour identification), TC1-64 (Terminology for vision, colour and appearance), TC1-67 (The effect of dynamic and stereo visual images on human health), TC1-70 (Metameric samples for indoor daylight evaluation), TC1-71 (Tristimulus integration), TC1-73 (Real colour gamuts), TC1-75 (A comprehensive model of colour appearance), TC1-77 (Improvement of the CIE whiteness and tint equations), TC1-82 (The calculation of

colour matching functions as a function of age and field size) and TC1-88 (Scene brightness estimation).

New Work Items

Three new technical committees were started after the Division meeting in Manchester: TC1-95 will look into the validity of the CIE whiteness and tint equations, which will be based on the work of former TC1-77; TC1-96 is looking to develop a comprehensive model of colour vision, which will be based on work of former TC1-75; and TC1-97 will investigate age- and field-size-parameterised calculation of cone-fundamental-based spectral tristimulus values, which will be based on work of the former TC1-82.



Roadmap for future colour science development activities in CIE D1.

In addition, four new reportershops were started. R1-63 will investigate tristimulus integration, which will be based on the work of former TC1-71; R1-64 will look into the gamut of real colours, which will be based on work of former TC1-73; R1-65 will study categorical colour identification, which will be based on the work of former TC1-61; and R1-66 will investigate the effects of dynamic and stereo visual images on human health, which will be based on the work of former TC1-67.

Next Meeting

The next meeting of CIE Division 1 will be included in the 4th CIE Expert Symposium on Colour and Visual Appearance, to be held in Prague, Czech Republic, 5–7 September 2016.

– Dr Li-Chen Ou, Secretary of CIE Division 1



Some delegates at the CIE Division 1 Meeting in Manchester, UK.

18 – 22 October 2016

The Chilean Color Association (ACC) and the AIC2016 Organizing Committee is pleased to invite you to Santiago, Chile, for the AIC 2016 Interim Meeting: Color in Urban Life.

WHAT YOU WILL DISCOVER IN CHILE

With the mighty Andes, stunning Pacific coastline, the highest, driest desert on the planet, turquoise mountain lakes, massive glaciers, rolling vineyards and the remote Easter Island; Chile offers a mind-blowing combination of landscapes and experiences. There's a legend in Chile that says that once God had finished creating the heavens and the Earth, a little of everything was left and through a hole in his pocket, there fell mountains, deserts, lakes, glaciers, volcanoes and valleys, and so created the amazing Chilean landscapes. The slim ribbon of Chile compresses an extraordinary array of terrains between its Andean spine, the coast of the Pacific Ocean and even further out to the mysterious Easter Island.



Santiago has developed infrastructure services such as a modern airport, high-quality hotels, restaurants and also has a comprehensive transportation system that connects various parts of the city. It has a rich cultural life with about 40 art galleries and 30 museums of different types. Lovers of good wine will have the opportunity to visit important vineyards and wineries considered the best in the country, located a few kilometres from the city. Also nearby is Valparaíso and Viña del Mar, where you can enjoy the sea.

AIC2016 INTERIM MEETING

The meeting will be held from 18 to 22 October at the main venue Centro de Extensión of the Pontificia Universidad Católica de Chile. The conference will feature 150 oral and poster presentations from more than 30 countries, and aims to generate critical knowledge about colour within visual communication, architecture, urbanism and art, among others.



Centro de Extensión de Pontificia Universidad Católica de Chile.

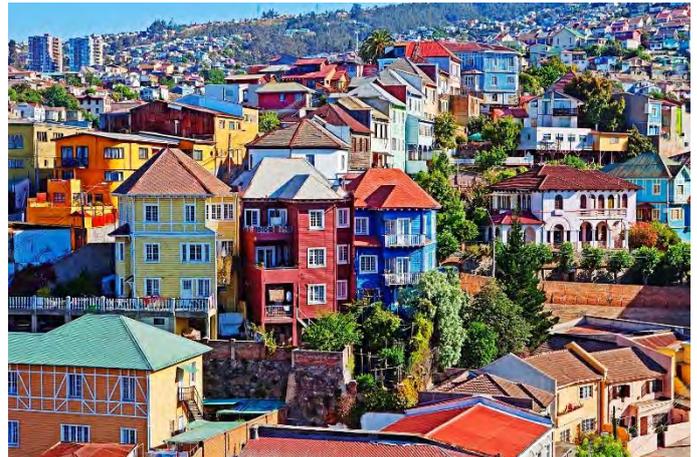


COLOR IN URBAN LIFE
Interim Meeting * October 18th - 22th

The main venue, Centro de Extensión UC, is located in the heart of downtown and is easy to access through the metro and buses. The main conference auditorium is the Fresno Hall, next to the Central Plaza Hall, an ideal place for sponsors and the exhibition of posters. It has other rooms for parallel meetings.

EXCURSION TO VALPARAÍSO & VIÑA DEL MAR

A drive of just a little over an hour on modern highways separates Santiago's Andean walls from the mighty Pacific Ocean. Valparaíso is a port city, known as 'The Jewel of the Pacific', famous for its steep funiculars and colourful, clifftop homes. Discover the maze of houses nestled snugly into the hills with picturesque elevators, colourful neighbourhoods, sea views and the historical downtown area. Valparaíso was declared a UNESCO World Heritage Site because of its architectural and cultural importance. Adjacent is the city of Viña del Mar, with its modern buildings, groomed beaches and the Quinta Vergara, which hosts an international music festival each year.



TEXTILE ART & MOVIES EXHIBITIONS ABOUT COLOUR

During AIC2016 at the Art Gallery in UC will be an exhibition of Chilean textile artists, who make outstanding use of colour. There will also be a selection of films about communication through the use of colour at the Cinema UC.



MORE INFORMATION

Latest updated information is available at www.aic2016.org We hope you take this great opportunity to share your colour knowledge and experience. Remember: Chile is good for you!

Maria Rosa Domper, Paz Cox, Mariana Kaplun & Ingrid Calvo
Organizing Committee of AIC2016

www.aic2016.org twitter: @aic2016

AIC 2017 – JEJU ISLAND, KOREA

16 – 20 October 2017

Korea Society of Color Studies (KSCS) is pleased to introduce the 13th Congress of AIC, which will be held in the International Convention Centre in the beautiful island of Jeju in South Korea. It is called the 'Clean and Green Island', most appropriate for the congress theme of 'Color and Health', and it is one of the most beautiful destinations in Korea. The location of Jeju is in the heart of northeast Asia and has easy access via major cities, with over 100 domestic flights a day. An important fact of Jeju is visa-free entry for 180 countries and it is the only island with the UNESCO Triple Crown. The climate is sub-tropical.



ICC JEJU is located in the Jungmun Tourist Complex, 50 minutes' drive from JEJU international airport, with the cobalt-blue Northern Pacific stretching away to the south and towering Mount Hallasan in the north. It provides world-class facilities and equipment for any kind of international conference. It also can be a Hot Spot for recreation and shopping with various natural landscapes, museums and duty-free shops. ICC JEJU has proven capability with the organisation of more than 1,500 large meetings since its opening in 2003.

Where you will stay...

ICC JEJU is surrounded by wide range of accommodation facilities with beautiful scenery. There are about 1,440 hotels and 1,247 pensions (apartment-style condominiums) available within a 10 km radius. The luxurious ICC Hotel and Resort, which opened in 2014, is connected to ICC JEJU via an arcade, and will offer a special rate for AIC 2017 (30~40% discount).



Call For Papers

The Congress theme of AIC2017 is 'Color and Health' and the schedule for AIC2017 Jeju is as follows:

- January, 2017 : Submission Deadline for Short Abstract
- April, 2017 : Authors Notified of Oral/Poster Presentation
- July, 2017 : Submission Deadline for Final Paper Submission
- July, 2017 : Early Registration ends (via Online)
- August, 2017 : Late Registration ends (via Online)

What we will do during the Congress

1) Social Programme : A cocktail party is to be held at Jeju Stone Park where visitors can view the formation of Jeju-do, the Jeju

residents' traditional life phase, and a variety of stone artworks. Also included will be tea time at the O'sulloc Tea Museum, at the centre of a vast green tea plantation.



2) Banquet : A banquet is to be provided at an outdoor garden located at a shore cliff. Visitors can relish a high-end hotel meal while appreciating the endless blue sea.



3) Event : A place of experience will be offered where visitors can create their own natural dyeing, and pieces of cloth, etc.



4) Performing Arts : a variety of attractions including 'Jeongga', which is Korean traditional vocal music, and tradition dance.



5) Tour : Programmes will be available in connection with major tourist attractions in Seoul, capital of Korea, not to mention the major tourist spots in Jeju-do.

6) The 50th Anniversary of AIC : An exhibition by participating countries is planned with the subject of 'Color and Culture', and along with this, many Korean traditional artworks, such as embroidery and fold painting, are to be displayed.

More Information

More up-to-date information is available at www.aic2017.org – Professor JinSook Lee, Chair, AIC2017 Organising Committee, js_lee@cnu.ac.kr

25 – 28 September 2018

The Portuguese Colour Association (APCOR) is happy to announce that we will host the AIC 2018 Conference in Lisbon. The aim of this conference is to bring together an interdisciplinary group of specialists who use colour in both scientific research and professionally, addressing a key issue in the relationship of colour to society: human comfort.



RELEVANT FIELDS AND TOPICS

- Colour in the Built Environment
- Colour and Landscape
- Colour and Culture
- Colour Science
- Colour and Design
- Colour and Lighting
- Colour and Psychology
- Colour and Technology
- Colour and Physiology
- Colour and Health
- Digital Colour



*Cor e conforto humano:
fundamentos de um estilo de vida cromática.*

The crow, as the guardian of Lisbon, is present in the city symbol. Its story is founded on the legend of Saint Vincent, the city patron. This legend, which recounts to the times of the first king of Portugal, says that crows had always protected the Saint's body and, when it was carried out to Lisbon, in 1176, the crows escorted the boat. So, for the graphic image of the International Conference AIC 2018, we opted to develop an iconic symbol – a crow – being the bird most easily recognised by its shape, while in the lower part the image is fragmented into several small squares. These squares symbolise some of the determinant elements of Lisbon's historic identity, namely its glazed tiles and cobbled stones. Simultaneously, the squares refer to pixels – the building blocks of light and colour – associated with contemporary design and digital images.



AIC LISBOA 2018
colour & human comfort



Lisbon, near the mouth of the River Tagus, is the capital of Portugal. The city enjoys a Subtropical-Mediterranean climate with mild winters and warm to hot summers. The weather and proximity of the river provide the city with a high quality of light that enhances the varied colour of its buildings. Lisbon is also the home of the Calouste Gulbenkian Museum with an outstanding collection of over three thousand works of art from 2000 BC to the early twentieth century.

More information is to be found at www.aic2018.org





**ASSOCIATION INTERNATIONALE DE LA COULEUR
INTERNATIONALE VEREINIGUNG FÜR DIE FARBE
INTERNATIONAL COLOUR ASSOCIATION**

www.aic-colour.org