Inter-Society Color Council *News*

Issue 452 Jul-Aug 2011

Online Community Growing

Last issue we announced the creation of a new online group on LinkedIn. We are pleased to report that the group is growing all the time. As of this writing the membership stood at 67. It is easy to join us and become enabled to contribute to the success of our digital community. To join, visit `www.iscc.org` and click the button that will direct you to the group page. You will need a LinkedIn account.

As the group adapts itself to the needs of the greater color science community, we hope to facilitate a two-way path of information and communication between the ISCC membership and this online presence.

Henri Debar, *IsoColor Inc, ISCC Publicity Chair*

Table of Contents

President's Report

I hope you all had a safe and enjoyable Fourth of July holiday. Your ISCC Board of Directors met in teleconference on June 27th 2011. We discussed our electronic questionnaire to discover how we can improve and make the ISCC more meaningful to you. We are very close to having it ready to send to you for your input. As I mentioned in the last newsletter we are also looking at how we can change the bylaws to reflect the way the society is today. We are going to discuss this in a teleconference board meeting in September and we will present our findings to you.

We have implemented a new dues payment option for you using PayPal. We hope that you will find this convenient, if not you can still pay by the more traditional methods. We also have started an Inter-Society Color Council Linkedin Group, please visit it and join your fellow color enthusiasts.

As a reminder we are still planning our second meeting this year at the end of the CIC 19 conference. This will be a joint ISCC/AS&T meeting. It will held on Saturday November 12th 2011 and be located in San Jose. We expect to have our annual meeting the night before this on Friday 11th November 2011. This will be a dinner meeting. The Board of Directors are also making plans for next year and I will keep you informed on this. We are thinking of locating the 2012 meeting close to the Boston area.

Frank O'Donnell, *The Sherwin Williams Company President, ISCC*

Nominations being accepted for Godlove and Nickerson Awards

Contacts:
Godlove: Eric Zeiss eric.zeiss@kodak.com
Nickerson: Ann Laidlaw alaidlaw@xrite.com

ISCC EXECUTIVE OFFICERS

ISCC BOARD OF DIRECTORS

ISCC Website Upgrade!

You can now apply for ISCC membership on line via our new application form found at:

`www.iscc.org/applicationForm.php`

For credit card payment we use a secure site at Paypal.com. You do not need a PayPal account to make the payment. In the future we will use this feature to handle meeting registrations and purchases. Note that payments can still be made directly made through the ISCC office.

Member News

Nancy Kwallek Received Kent State University Lifetime Achievement Award

On April 1, 2011, ISCC Board of Directors Member Dr. Nancy Kwallek, director of the Interior Design Program and the Gene Edward Mikeska Endowed Chair for Interior Design, was honored by her alma mater, Kent State University, with a Lifetime Achievement Award for her career of interior design teaching, research and service. The event took place at the Cleveland Urban Design Collaborative during a Senior Interior Design Exhibition and Awards Ceremony under the auspices of Kent State University's College of Architecture and Environmental Design.

Dean Douglas Steidl, College of Architecture and Environmental Design, Kent State University and Dr. Nancy Kwallek at the Cleveland Urban Design Collaborative where Dr. Kwallek accepted her Lifetime Achievement Award.

Congratulations Nancy!

HUE ANGLES

(Send contributions to mbrill@datacolor.com)

Dr. Jerome Y. Lettvin, my de facto Ph.D. advisor, passed away on April 23. Many impressive obituaries have been written, but here is a reminiscence…

My First Experiment in Jerry Lettvin's Lab

Dr. Jerome Y. Lettvin (Feb. 23, 1920 – Apr. 23, 2011) was a professor of Electrical Engineering and of Biology in the Research Laboratory of Electronics at MIT. He is best known for the 1959 *Proc. IRE* article, "What the frog's eye tells the frog's brain," which he wrote with H. Maturana and W. Pitts. He is also known for his televised debate with Timothy Leary in 1967, in which he used the uncensored word "bull----" to describe Leary's rationale for endorsing drug-induced euphorias. To color science he gave a *Scientific American* article, and perhaps more significantly, "The colors of colored things" [1], which was formative to all who studied color with him (see the only English title in [2]).

Obituaries for Jerry abound (e.g., [3], [4]). His sons David and Jonathan have both created Web postings containing information and memorabilia (see [5], [6]). So rather than another obituary, I offer here a story from personal experience.

Having read "The colors of colored things" and heard Jerry's intriguing (to me spellbinding) lecture, I obtained permission to write my PhD. dissertation under Jerry *in absentia* from Syracuse University, I reported to Jerry's lab ready to create profound theories. Jerry had other ideas. He declared that I must first do a few experiments. We started talking about color effects, and he mentioned Abney's effect. I was eager to show off, so I said the effect was that most monochromatic lights shift toward yellow when mixed with white light. Then the conversation went something like this:

Jerry: No. *All* lights get yellower when mixed with white light.

Me: Surely not all lights, Jerry. Surely the yellow lights near the spectrum locus don't get yellower.

Jerry: Yes, they do. In fact, that is the first experiment I want you to do: Show that the yellows get yellower. You can use the materials around the lab.

Me: Surely there's some sort of trick. Can you give me a hint?

Jerry: Just remember what I said in "The colors of colored things." Pay attention to spatial boundaries.

Well, I found a 35-mm Wratten 15 filter, several lenses, and two projectors, and thought I would just project a spot of white light onto a diffuse yellow field created by the other projector. But I couldn't get the effect. I had to make the white spot have a very sharp edge, and to do this I directed a lot of light through a diaphragm aperture at the end of a collimating lens. That made the white spot too bright.

So I had to dim the white spot. I couldn't do it by decreasing the power to the projector, because that would make the light redder and it wouldn't be the same white that referenced the other projector. I would simply be adding one yellow to the other, and that wouldn't be fair. So I needed neutral-density filters---a lot of them.

Jerry suggested I enlist the help of John McCann (then at Polaroid, a short walking distance away). After some cajoling from Jerry, John offered his facilities to me. He had great projectors and as many neutral-density filters as I needed. John was very gracious. What harm could it do?

So I took my lens and diaphragm over to John's lab, set up the experiment, and started putting neutral-density filters one after the other in the various slots in his projector until the white spot had dimmed a lot. Then I noticed the effect. What Jerry had said was true! On the edge of the white spot, on the white side, a band of yellow appeared, which was much more saturated than the yellow in the dim diffuse field. Evidently the jitter of my eye was causing the edge to induce yellow color into the white field. Even now I am not sure of the exact mechanism, but it does work.

With great excitement I rushed down the hall to summon John McCann to be a witness, so I could put a checkmark "done" in the box that would bring me closer to theory and my Ph.D. dissertation. John came quickly, but not quickly enough. By the time I re-entered the room with the apparatus, smoke was streaming out of the white-light projector. The neutral-density filters were burning!

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Fortunately John and I are still friends. And fortunately Jerry took my word for having achieved the effect, perhaps fearful that my re-creating it in his lab would imperil the far more flammable Building 20. Jerry never told me how he himself had achieved the effect.

You can try the yellow-light Abney effect at home. But perhaps you'd better use a calibrated monitor and not my dangerous projectors!

Michael H. Brill
Datacolor

[1] J. Y. Lettvin, "The colors of colored things," MIT RLE Quarterly Progress Report No. 85, 15 Oct. 1967, pp. 193-229.
[2] www.iscc.org/resources/translations.php
[3] www.sfn.org/index.aspx?pagename=memberObituaries_Lettvin
[4]web.mit.edu/newsoffice/2011/obit-lettvin-0429.html
[5] jerrylettvin.blogspot.com/2011/04/jerry.html
[6] en.wikipedia.org/wiki/Jerome_Lettvin and jerome.lettvin.com

Apr/May Color Quiz

The question posed was:

Novelty light bulbs come in several colors. What two common color names will you never see in a light bulb?

We had one correct response, from Mike Brill, noting that GRAY and BROWN are not possible to produce by a light source.

Gray and brown, being *related colors,* require the presence of a surround in order to take on those color names. Without a lighter surround, gray appears black and brown appears dark yellow. Strange but true!

Color Research and Application
IN THIS ISSUE, August 2011

We open this issue with two articles that examine different issues relating to the enhancement of our visual experiences. In the first article, Carl Dirk, James Druzik, Monica F. Delgado, and Nathan J. Westfall deal with the issue of pleasing yet safe display of museum artifacts. The conundrum is to achieve a balance between providing good lighting conditions for museum goers to appreciate the works displayed and keeping the works undamaged for future generations to enjoy. Of the many techniques proposed, the one focused on in ''Lighting the world's treasures: approaches to safer museum lighting'' is tailoring spectral profiles that exclude portions of the visible radiation to reduce photochemical degradation or changes of appearance in works of art while maintaining adequate color rendering for the observer.

In our next article, ''Brighter, more colorful colors and darker, deeper colors based on a theme of brilliance,'' Rod Heckaman and Mark Fairchild demonstrate a methodology for achieving more pleasing reproductions of scenes while avoiding unnaturalness. I will give you a hint as to how they do it—gray content, but you will have to read their article for the full story.

Moving to color vision, it has been demonstrated that people with different distributions of the three types of cones and with cones that have different spectral sensitivities still can seem to have very normal color vision. We do not know how the later neural levels compensate for these differences in input, but one hypothesis is that people have all learned how to classify colors to agree with other people's sensations. In our next article, Tuija Jetsu, Yasser Essiarab, Ville Heikkinen, Timo Jaaskelainen, and Jussi Parkkinen examine how different vision models classify colors. They wanted to find out, whether it is easy to divide the output of the models into color classes or not. After examining four different color vision models, they report in ''Color classification using color vision models'' that it is possible to gain similar classification results either by using quite a simple two stage color model or by using a more complicated three stagecolor model.

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In recent issues, we have had several articles that relate to the work of International Commission on Illumination (CIE) technical committee 1.69. In our next article, Peter Bodrogi, Stefan Brueckner, and Tran Quoc Khanh describe an ''Ordinal scale based description of colour rendering.'' This article provides a good review of the recent work related to TC 1.69 on Colour Rendition by White-Light Sources as well as describing the newly proposed index. The new index is then compared with previously proposed color rendering indices. Although not too different from some of the others, the advantage of RCRI is that it adds a semantic value to its numeric value: the number of badly rendered color samples. Hence, users can easily interpret the differences on the RCRI scale.

Just as the development of white light emitting diode (LED) sources necessitated the work of CIE TC 1.69, the increased usage of LEDs is causing researchers to examine and produce standardized regulations for LED systems. Although LEDs for home use are just being developed, they are already widely used for automotive headlights and traffic lights. In these applications, glare is a phenomenon that deserves special attention because it can not only cause visual discomfort but also impair vision. Our next article, ''Evaluation of glare from color LEDs and its correlation with individual variations in brightness sensitivity'' deals with observers' discomfort glare from colored LEDs and the correlation between discomfort glare sensitivity and brightness sensitivity using heterochromatic brightness matching and flicker photometry. Takako Kimura Minoda and Miyoshi Ayama report on experiments where the level of discomfort glare was evaluated and compared with the brightness perception characteristics for each observer. They found a positive correlation between brightness sensitivity and discomfort glare sensitivity, with the blue stimulus showing a high correlation coefficient.

Our last two articles deal with the technique of principal component analysis. Colorimetric data can easily be obtained when the reflectance or transmittance data is available. However, the reverse is not true. It is not unusual to have colorimetric information, and to need the reflectance data for a particular application. Many methods have been suggested, and it has been found that for different datasets, different methods work better. In our next article, ''Using weighted pseudo-inverse method for reconstruction of reflectance spectra and analyzing the dataset in terms of normality,'' Vahid Babaei, Seyed Hossein Amirshahi, and Farnaz Agahian propose two parameters: generality and similarity that can be used as metrics to evaluate and compare different datasets and to determine which method of reconstructing spectra will work the best. Also, a simple technique based on dataset modification of pseudo-inverse method is introduced for the recovery of reflectance spectra of samples from their corresponding colorimetric data.

In our last article, Roberta Ciprian and Massimo Carbucicchio discuss ''Near-lossless compression methods for spectral images.'' The aim of their research is to present a new compression method where the data size reduction is carried out, considering only a few characteristic points of a spectrum, but still allowing the reconstruction of the original spectrum without loosing color and spectral information.

We close this issue with a review of Farbpigmente, Farbstoffe, Farbgeschichten (Color pigments, dyes, color stories), S. Muntwyler, H. Schneider, eds. Rolf Kuehni tells the two-year exhibition under the title ''Color laboratory'' at the Museum of Trades in Winterthur, Switzerland, and the resulting book.

Ellen Carter
Editor Color Research and Application

Partially reproduced from: `mentalfloss.com`

Cousins Edwin Binney and C. Harold Smith introduced their first eight Crayola crayons in 1903. Since then, the world has changed, and so, too, have the names of their waxy creations. Be it ever-shifting societal, racial, or political atmospheres, these crayons of yore have a revisionist history unto themselves.

"Flesh" Crayons Change Their Name

Prussian Blue receives Icy Treatment

Indian Red was a nod to India?!

Eight Men Out: Colors Get Waxed Off

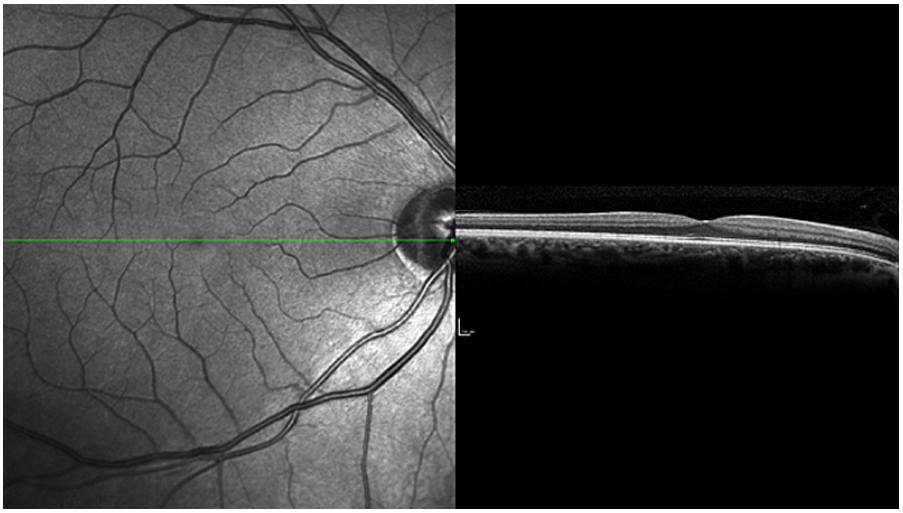
Kindergarteners Get Drunk with Power

Read the complete story here:
`mentalfloss.com/blogs/archives/17122`

Metameric Blacks: A Color Curious Column

Ever wonder ... "is there anything other than questions and answers in Mark's Color Curiosity Shop?"

In honor of summer and some more relaxing time around the university, I have decided to change things up a little bit with this *Metameric Blacks* column (already #8!). Normally I choose one of the modules from my *Color Curiosity Shop* online resource and paraphrase the question and answer. The questions all come from school students of various ages and the answers are aimed at various levels from pre-school to graduate school. The modules also cover color from the point of view of various disciplines (physics, chemistry, mathematics, biology, psychology, and imaging technology). For each level of depth (there are eight), I also have a *Challenge* category that consists of some fun multiple-choice questions to reinforce one of the concepts covered. I also used that *Challenge* section to include some more photographs that I couldn't fit into other parts of the resource. This issue's image is one of those.



The image is a composite of a pair of images that were made in the Ophthalmological Imaging Laboratory in RIT's Imaging and Photographic Technology program. They were demonstrating a laser retinal scanner that uses a technique called OCT to provide an depth-resolved image of the retina in addition to a normal two-dimensional image. OCT is optical coherence tomography, a technique that uses a laser to perform three-dimensional imaging in a manner similar to how an ultrasound scanner images a fetus. The system can also create full three-dimensional images of a retina (not shown here). One very helpful aspect of these scanners is that they do not require dilation of the patient's pupils. I literally sat down, was scanned, and had the images on a memory stick within a couple of minutes.

These are images of my retina (the back surface of my right eye). In the left panel you can see the blood vessels, the beginning of the optic nerve (right edge of image) and my fovea (near the center with no blood vessels). The right panel is a cross section of the area marked with the green line. You can see a slice through my fovea (the pit where the nerve fibers are pulled away to allow better vision) and the various layers of cells in my retina. The rod and cone inner segments are the dark gray area near the middle of the cross section. The beauty of this cross section is that no color scientists were harmed in the making of this image. What a wonderful, and non-invasive, way to learn details about your retinal anatomy and use your own eye to teach. Obviously the diagnostic capabilities are tremendous and I'd expect more of us will be getting OCT laser scans of our retinas when we visit the ophthalmologist in the future.

Content of this column is derived from *The Color Curiosity Shop*, an interactive website allowing curious students from pre-school to grad-school to explore color and perhaps become interested in pursuing a science education along the way. Please send any comments or suggestions on either the column or the webpage to me at <*mdf@cis.rit.edu*> or use the feedback form at <*whyiscolor.org*>.

-Mark D. Fairchild

Inter-Society Color Council

Office Manager: Ms. Cynthia Sturke
11491 Sunset Hills Rd.
Reston, VA 20190
Tel (703) 318-0263, Fax (703) 318-0514
Web: www.iscc.org
Email office: isccoffice@cs.com

Note from the Editor – The SS ISCC Changes Course

I am pleased to report that I received five detailed contributions for the calendar. This is a great help! But please do not stop now though. When you are surfing the web or perusing your favorite journal or trade rag, it is always helpful for me to get little pointers and snippets. Remember, if it is color-related and interesting to you, it is probably interesting to many other ISCC members.

Dave Wyble
Editor, ISCC News

ISCC News Issue #452 Jul/Aug 2011

Editor: Dave Wyble
(585)475-7310 wyble@cis.rit.edu

Editor Emeritus: Prof. Gultekin Celikiz
(215)836-5729 gcelikiz@yahoo.com

Newsletter Team
Cynthia Sturke, Mary McKnight, Mike Brill, and YOU!

All submissions must be in English. Please submit materials by the 15th of each even numbered month.

July/August 2011 Calendar

July 20 - 22 **Color Marketing Group 2011 Latin American Meeting:** ***Colores NaTurale*** Medellin, Colombia. www.colormarketing.org

July 20, 2011 – Detroit Color Council: Designing Color for the Future, NextWave, Troy, MI. www.detroitcc.org. 248-464-4948

Aug 11 11am **AATCC Webinar:** Introduction to Color Evaluation, Part 2, Ann Laidlaw, X-Rite Inc. Register: ww.aatcc.org/events/online/webinar12.htm

Aug 22-24 **SPIE Eleventh International Conference on Solid State Lighting**, San Diego Convention Center. San Diego, California.www.spie.org (search for conference 8123)

Sept 11-14 **NAPIM Graph Expo 2011**, Chicago, IL, www.graphexpo.com

Sept 18-21 **IES Street and Area Lighting Conference**. New Orleans, LA, www.ies.org

Sept 16-20 **Color Marketing Group 2011 International Conference,** Crown Plaza Riverwalk Hotel, San Antonio, Texas. www.colormarketing.org

Sept 23-24 **3rd Annual Conference of the Society for Color and Appearance in Dentistry,** Wyndham Downtown Chicago, www.scadent.org/about-2011-meeting

Oct 2-6 **IS&T NIP Conference,** Minneapolis www.imaging.org/ist/conferences/nip

Oct 16-20 **IES Aviation Lighting Seminar**. Wilmington, NC, www.ies.org

Oct 18-20 **NPIRI Technical Conference,** Itasca, IL, www.napim.org

Oct 30-Nov 1 **IES Annual Conference**. Austin, TX, www.ies.org

Nov 7-11 **CIC19, Society for Imaging and Technology**, San Jose, CA, www.imaging.org/IST/conferences/cic

Nov 12 **ISCC topical meeting on color spaces**, San Jose, California, (Co-located with CIC19)

Nov 14-17 **ASPRS 2011: Fall Pecora Conference,** Herndon, Virginia, www.asprs.org/pecora18/

Dec 7-9 **AATCC Denim and Outdoor Performance Wear Symposium,** Long Beach CA. www.aatcc.org

Jan 22-26 **IS&T/SPIE Electronic Imaging Conference,** San Francisco, CA www.imaging.org/ist/conferences/ei

ISCC Sustaining Members

Sustaining Members of the ISCC are organizations who support the mission and goals of the ISCC through financial or other support. With our Member Bodies, Sustaining Members also provide a critical connection to the color community. If you feel your company or organization should support the ISCC in this way, please contact the office for more information about member benefits.

Avian Technologies	www.aviantechnologies.com	603-526-2420
BYK-Gardner USA	www.byk.com/instruments	301-483-6500
Datacolor	www.datacolor.com	609-895-7432
Hallmark	www.hallmark.com	816-274-5111
Hewlett-Packard Company	www.hp.com	650-857-6713
Hunter Associates Laboratory, Inc.	www.hunterlab.com	703-471-6870
IsoColor Inc.	www.isocolor.com	201-935-4494
Chester F. Carlson Center for Imaging Science	www.cis.rit.edu	585-475-5944
X-Rite Incorporated	www.xrite.com	616-803-2113

Thank You!

ISCC Member Bodies

At its foundation, the ISCC is composed of many related societies. These societies, our Member Bodies, help the ISCC through small annual dues as well as maintaining a relationship with each organization's individual members. We frequently hold joint meetings to further the technical cross-pollination between the organizations.

If you belong to one of our member body organizations, we encourage you to work with ISCC and your society to further the connection. Contacting the ISCC President is a good place to start. If your organization is not on this list and you think it should be, the ISCC office can provide you with details about membership.

Or use our new online application: www.iscc.org /applicationForm.php

American Association of Textile Chemists and Colorists (AATCC)
American Society for Testing and Materials International (ASTM)
American Society for Photogrammetry & Remote Sensing (ASPRS)
The Color Association of the United States, Inc. (CAUS)
Color Marketing Group (CMG)
Color Pigments Manufacturing Association (CPMA)
Council on Optical Radiation Measurements (CORM)
Detroit Colour Council (DCC)
Gemological Institute of America (GIA)
Illumination Engineering Society of North America (IESNA)
International Color Consortium (ICC)
National Association of Printing Ink Manufacturers (NAPIM)
Optical Society of America (OSA)
The Society for Color and Appearance in Dentistry (SCAD)
Society for Information Display (SID)
Society for Imaging Science and Technology (IS&T)
Society of Plastics Engineers Color and Appearance Division (SPE/CAD)