

INTER-SOCIETY COLOR COUNCIL

Inter-Society Color Council

Quarterly Newsletter

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Shifting Light #1, 2025

Director's Corner

Max Derhak

Hi, my name is Max Derhak, and I am a new board member with the ISCC. It is an honor to be asked to serve on the board of one of the leading organizations that addresses color topics and color education in professional, scientific and art industries.



Max Derhak

My color journey began several years ago while I was still working on a B.S. in Computer Science at the University of Utah (U of U). A close friend who had co-founded a company (Onyx Graphics Inc.) offered me a job that I took developing software that repurposed large format electrostatic plotters used for CAD/architectural plots to print large format images. The technology involved "wells" of liquid toner for each color station being raised into contact with the medium (substrate) that had electrostatic charges placed where the toner particles from the liquid toner were attracted and fused to the medium. The medium would be wound back and forth to "tone" each of the color channels. The colorants were not formulated for color image reproduction, and the toner stained the medium resulting in poor white reproduction. However, these plotters allowed for short-run large-format images to be printed at a significantly lower cost than the overhead of plate creation and setup required for conventional printing processes.

This work predated Windows, so it involved developing DOS-based 32-bit applications that required the creation of our own UI with direct hardware interfaces to display adapters, scanners and plotters/printers. We had to manage large image data efficiently and necessity dictated a crash course in color reproduction on multiple fronts.

Among our reference textbooks were those from Evans and Hunt.

I completed my B.S. degree at the U of U and then focused on improving and expanding things at Onyx. We created transformations going directly from scanners to the plotters we supported and incorporated a postscript rip. After just a few years, we added support for the new large-format bubble-jet ink jet printers which eventually replaced the use of electrostatic plotters. We also migrated to OS/2 and later to Windows NT. Ongoing learning and changes have resulted as printing technology, inks and media related to large-format printing have evolved over time.

In the latter part of the 1990s, I began attending the Color Imaging Conferences (CIC) held by the Imaging Science and Technology (IS&T) organization. I was exposed to a whole new world of color and met like minded individuals engaged in their own color journeys. Shortly thereafter Onyx joined the International Color Consortium (ICC) that provides open standards for communicating about color. I started attending these meetings representing my company.

Through the CIC, I discovered that the Rochester Institute of Technology was offering a remote master's program in Imaging Science. This program involved aspects of both imaging as well as color science and application. As this related directly to my job, I applied and was accepted and over the course of 5 years I completed my M.S. in 2005 in Imaging Science from RIT with an emphasis on Color. As part of the program, I became associated with esteemed color scientists like Dr. Roy Berns and Dr. Mark Fairchild learning about color science and color appearance. For my master's project, I developed my own Color Management System (CMS) which was later offered as an open-source project that was adopted by the ICC. As a result of this, I became the chair of the Architecture Working Group in the ICC, later becoming a co-chair of the ICC.

In 2007, RIT started offering a Ph.D. in color science. I enrolled in 2008 and began the process and completed my Ph.D. in 2015. My thesis was titled "Spectrally Based Material Color Equivalency: Modeling and Manipulation." This dovetailed with work I was doing in the ICC to extend color management to allow for more robust color transformations and spectrally based color management. Eventually, this resulted in the iccMAX specification formalized as an international standard - ISO 20677. In this process I became involved in the US (CGATS/PPC) and international standards (ISO TC130) groups for printing. Additionally, I took on the role as US representative for Division 8 of the CIE (an international color standards organization) related to color imaging.

I have really enjoyed working with individuals from many different backgrounds as it relates to various standards involving color and color reproduction. I have learned so much over the years and developed friendships with people from around the world. I also enjoy helping others on their color journeys, sharing with them things that I have learned in my journey.

The Inter-Society Color Council is a 100% volunteer-run organization, and I will be helping to boost our membership and participation over the next few years. Members can socialize with experts in the field, learn from peers and share information about what is happening in color. Our membership is the foundation of our knowledge, growth and strategic direction of the council that will bring opportunities for success for all who belong.

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	ISCC EXECUTIVE OFFICERS	
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	Dr. Christopher Thorstenson	Rochester Institute of Technology catpocs@rit.edu
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ISCC 2026-2028 Board Nominees

We would like to express our sincere gratitude for the work and service of our colleagues: outgoing Directors Karl Tylman, Alicia Keshishian and Christopher Thorstenson (all with a term of service of 2023-2025). We wish them success and hope to have their support, continued counsel, and assistance.

The Nominating Committee, consisting of Rachel Schwen, Dave Wyble, Jean Hoskin, Justin Laird and Maggie Maggio (chair), considered several potential nominees for the Board of Directors elections and recommends the individuals named below.

In 30 days, a link to the ballot will be sent via email to all members. Ballots will be due on January 2. On January 16, the secretary shall report the results of the election to the Board of Directors. I encourage you to show your support for the many activities of the council by participating in the elections.

Note: This serves as the report of the Nominating Committee to the membership.

From the By-Laws

The report of the Nominating Committee shall be sent to all voting members at least thirty (30) days before the date on which ballots are provided to the voting members. Additional nominations may be made at the request of five (5) voting members, provided they are forwarded to the Secretary within twenty (20) days after the report of the Nominating Committee is sent out. The Secretary shall give notice of all additional nominations to all voting members at least ten (10) days before the ballot is provided to the membership at large.

Cristi Brewer

Indianapolis, IN



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Cristi Brewer retired from public education in 2020 after a fulfilling career that included 17 years in the classroom and 13 years on the school board. Seeking a fun, part-time job in retirement, she unexpectedly discovered her true passion – color. As a Master Color Specialist, Cristi has been extensively trained by industry leaders such as Pantone, Munsell, X-Rite, Sherwin Williams, Benjamin Moore and PPG. She also holds a certification in Color Management and is dedicated to advancing color education and awareness professionally and as a member of the Colour Literacy Project Foundations Team.

Cristi is a self-proclaimed "hunter/gatherer" with a passion for collecting unique treasures. From Fiesta dishes and vintage clothing to color fan decks and lapel pins, she has an eye for the eclectic and nostalgic with a deep appreciation for Gen X culture.

Previous Board Experience:

- Head Start Parent Committee – President
- Head Start Policy Council – President
- Indiana Head Start Association – Member
- Elwood Haynes PTO – President
- American Red Cross Howard Co Chapter – Vice President
- Volunteer of the Year 2014
- Noon Kiwanis – Vice President
- Kokomo School Board – President, Vice President, Secretary, Member
- Indiana School Board Association Awards Committee – Member
- Beginner's Luck Bowling League – Secretary/Treasurer
- Women's Resource Group - Sherwin Williams –Leader

Brittany Cox

Kernersville, NC



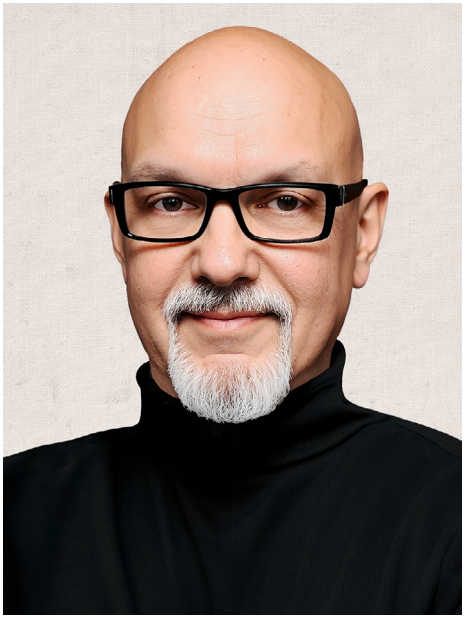
Phone: 828-775-7980
Email: brittdcox@gmail.com

Dr. Brittany Cox holds a Ph.D. in Color Science from Rochester Institute of Technology, where her research focused on scientific imaging of cultural heritage. During her academic career she published proceedings and presented talks and workshops on imaging and computer graphics rendering techniques for cultural heritage at various institutions including The Getty and the Smithsonian's Museum Conservation Institute.

While her current role as a Metrology Engineer in the optics industry lies outside the color science field, Dr. Cox continues to look for ways to incorporate her Color Science background and interest in the arts in both her personal and professional lives. Professionally, this includes incorporating considerations in graphical user interfaces and presentations for perceptual accessibility for her coworkers with color vision abnormalities. Personally, this consists of pursuing various hobbies including painting, sketching and digital art.
Dr. Cox is excited about reconnecting with the color community and working with the Color Council as a potential board member to help promote collaboration between those in a variety of color related fields from diverse backgrounds and disciplines.

Bill Fischer

Grand Rapids, MI



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Bill Fischer is the creator of the Fischer Universal Color Blueprint, which enables artists and designers to create colorful, decipherable, and emotional experiences for everyone, including the 50 percent of us who will experience one or more vision deficiencies in our lifetime. Currently, Bill is a consultant for companies and organizations in the realm of accessible and universal design.

He is professor emeritus and founder of the Digital Art & Design program at Kendall College of Art and Design of Ferris State University, the author of the I-See-U blueprint for Inclusive, Socio-Emotional, Entertaining, and Universal design, and was the executive producer for The EPIC Project (Engaging Production Inspiring Classrooms) an ongoing collaboration with faculty, K12 educators, and field experts that build and test digital media products focused on media and product innovation. He's designed toys, buildings, automotive interiors, animated, and interactive media for over 40 years.

A Blast from the Past: ISCC Newsletters 50 Years Ago

Dave Wyble

This Blast from the Past is based on ISCC News Issues No. 238 (September-October 1975) and No. 239 (November-December 1975).

Issue No. 238

Selection Considerations of Pigment Colors

This issue begins with a reminder that the colors we select for certain applications might have far-reaching implications. As an example, there is a list of dyes based on benzidine and benzidine compounds that were confirmed to cause certain cancers. They did not use the modern terminology "green," but they were in fact recommending the same consideration that we should all be applying today. What happens when the color we select results in a pigment or dye that ends up in a landfill? Or enters the local watershed? Or gets into a child's body? Suddenly our color palette might change.

New Booklet on Color

The next article highlights the availability of a new resource, Color in Our Daily Lives, a new booklet published by the Commerce Department's National Bureau of Standards (NBS, now NIST, the National Institute of Standards and Technology). The booklet presents an interesting, if dated, perspective on the use of color in the early 1970s. No. 6 in the NBS Consumer Information Series; it was conceived by Deane B. Judd, who wrote the original text before his passing in 1972.

Member-Bodies Highlights

The bulk of the issue consists of communications from Member-Bodies and the members themselves. Updates from the Federation of Societies for Coatings Technology, the Society of Motion Picture & Television Engineers, the Society of Plastics Engineers Color and Appearance Division, and the US National Committee of CIE.

Letters to the Editor, Book Reviews and More

The issue also includes a series of Letters to the Editor. Most of these would be unnecessary today with the advent of the internet and modern search engines. But of course, these ubiquitous tools were unavailable in 1975, and this was perhaps the only means for folks to communicate these general requests and comments.

After a few book reviews, this issue includes something that today would probably be considered too commercial for our current 501c(6) non-profit status: product announcements. In particular, the 15th Pantone® Printer's Edition.

Today, those of us in the USA are approaching our 2026 Semiquincentennial (250th anniversary of the Declaration of Independence). Back in 1975, the editor chose to include this humorous tidbit relating to the (then) upcoming 1976 bicentennial:

> An acquaintance of mine, a systems programmer, reported that a salesman stopped by a few weeks ago with some print-out paper especially designed for use in 1976. It had red, white, and blue stripes, an Apollo symbol in one top corner, and a Bicentennial in the other. To check whether another sensory modality had been brought into it, I asked if the paper smelled like apple pie when you scratched it. After sniffing, he replied that it did not.

Issue No. 239

Memorial Symposium for Ralph M. Evans

This issue begins with the announcement of a memorial symposium for Ralph M. Evans. Mr. Evans was born in 1906 and was an active participant in ISCC since its inception in 1931 until his retirement in 1970. Apparently the ISCC in 1931 could recruit and retain folks

in their 20s! Armed with a degree in Optics and Photography from the Massachusetts Institute of Technology, Evans worked in research and control work. Later, he was supervisor in the Color Process Development Department at Kodak Research Laboratories. He went on to become Director of the Color Technology Division and then the Photographic Technology Division.

For an in-depth biography, download the 2006 document prepared by Ellen Carter on the occasion of the 75th Anniversary of ISCC, Color in Science, Art, and Industry, in which his bio appears on page 245. Here is an excerpt:

> Ralph Evans was a man of ideas in color, a pioneer in opening up new fields for color study. Fortunately this was recognized by early research heads at Kodak, and for a period in the 1940s and 50s the psychologists began to have their day in laboratories directed by Evans. There the work of many – among them Newhall, Burnham, the Hurviches – was either started, or encouraged to develop further. The 1948 Evans book, Introduction to Color, was one of the first and best of modern books on color.

Richard S. Hunter Receives 1975 Macbeth Award

The 1975 Macbeth award was bestowed upon Richard S. Hunter. In 1942, Mr. Hunter published an article titled *Photoelectric Tristimulus Colorimetry with Three Filters*. This provided the theoretical underpinning to his filter colorimeter, which was still widely in use in 1975. He was a strong supporter of ISCC with numerous contributions, including serving as president in 1972.

Color in Artwork

A lengthy article follows, titled “Where Has All The Color Gone?” The premise was that color had become decidedly less important in the artwork and furnishings of buildings in Washington D.C. The author of A Blast From The Past is certainly not qualified to adequately answer the complaints of the article, except to remind us that there is nothing new under the sun. In this case, refer to the 2021 ISCC webinar by Ms. Kine Angelo titled “The Greying of Norway.”

Meeting News

Meeting announcements and reports were provided from: Gravure Technical Association; Society of Photographic Scientists and Engineers; Canadian Society for Color in Art, Industry and Science; The Colour Group; and Hungarian National Colour Committee.

Index to all 1975 Issues

As the final issue of 1975, Issue No. 239 closes with a master index of all six issues from that year. It is simply a reprinting of the table of contents, including page numbers, of each of the 1975 issues. This practice continued until 1982. After that, the master index appeared just once more in 1984.

Links to materials related to these columns. All are active as of this writing.

- Color in Our Daily Lives: https://nvlpubs.nist.gov/nistpubs/Legacy/CIS/nbscis6.pdf
- Color in Science, Art, and Industry: https://iscc.org/resources/Documents/ColorInScienceArtAndIndustry.pdf
- Federation of Societies for Coatings Technology, now the American Coatings Association: https://www.paint.org/
- Society of Motion Picture & Television Engineers: https://www.smpte.org/
- Society of Plastics Engineers Color and Appearance Division: https://specad.org/
- US National Committee of CIE: http://www.cie-usnc.org/
- Photoelectric Tristimulus Colorimetry with Three Filters, by Richard S. Hunter: https://nvlpubs.nist.gov/nistpubs/Legacy/circ/nbscircular429.pdf
- ISCC Members can view “The Greying of Norway” and all webinar recordings linked from https://iscc.org/Members-only-content (you must be logged in for this page to be available).
- The Gravure Technical Association merged with the Gravure Research Institute to form the Gravure Association of America, not renamed The Printing Committee: https://www.rolltoroll.org/printing-committee

- In 1992, the Society of Photographic Scientists and Engineers changed its name to the Society for Imaging Science and Technology: https://www.imaging.org

- The Canadian Society for Color in Art, Industry and Science was dissolved in 2015, but we are glad that our Canadian colleagues have The Colour Research Society of Canada. https://www.colourresearch.org

- The Colour Group (Great Britain) https://www.colour.org.uk/

- The Hungarian National Colour Committee does not appear to have an active web presence.

To review Issues No. 238 and 239 in their entirety, see:

- http://www.iscc-archive.org/Newsletters/ISCCNews238.pdf

- http://www.iscc-archive.org/Newsletters/ISCCNews239.pdf

The Glamorous World of ASTM E12

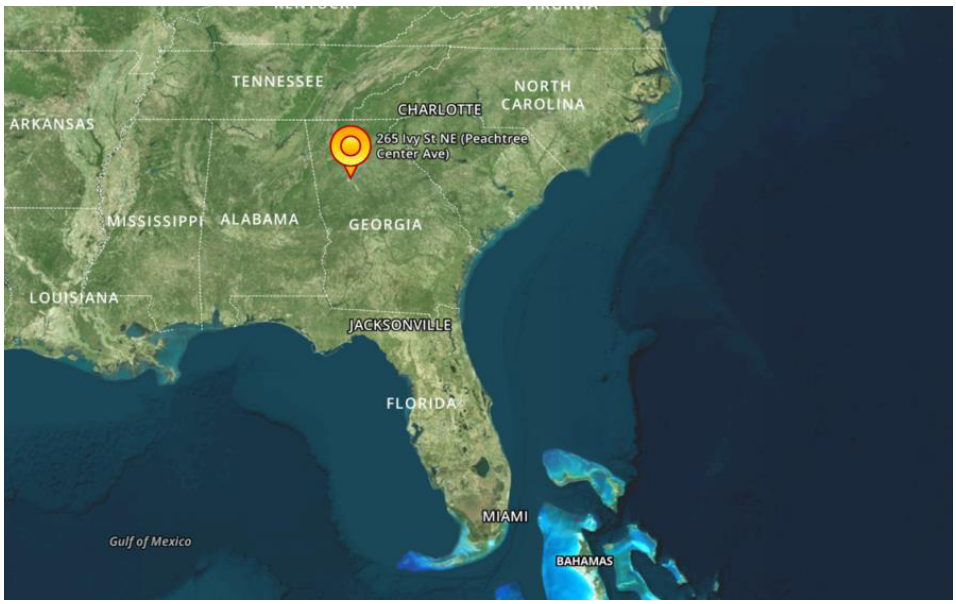
Stephen Dolph

This article provides insight into some of the happenings and upcoming events of ASTM E12. More information can be found on the E12 page of the ASTM website at: https://www.astm.org/membership-participation/technical-committees/committee-e12

You can also direct questions to **Jamie Huffnagle** at jhuffnagle@astm.org.

ASTM E12 Main Committee Meetings

ASTM Committee E12 on Color and Appearance met virtually June 2-3 via WebEx. Our winter main committee meeting has changed from Feb. 2-3 to Feb. 3-4 at the Atlanta Marriott Marquis in Atlanta, Georgia. This winter meeting will be hybrid to accommodate participation from members who are reluctant or unable to travel.



Meeting Location for upcoming ASTM E12 Main Committee Meeting 2026 Feb. 3-4.

Excellence Through Continuous Improvement

Recently, I had a discussion with my friend and colleague about wabi-sabi (侘寂, sometimes written 侘び寂び) — not to be confused with Japanese horseradish, wasabi (山葵) commonly served with sushi, sashimi, and beef in Japanese cuisine.



***Sashimi Moriawase* (刺身盛合せ) *that was served with wasabi* (山葵)**

My colleague explained that her daughter enjoyed a television show (Disney's Kickin' It) about karate, where the phrase wabi-sabi was used frequently. As typical of Western film production, the phrase was used excessively with little to no context for its originally meaning or etymology; it was probably adopted because it sounded "cool" and unique. The fact that it also sounds very similar to everyone's favorite Japanese condiment may have contributed to its lavish use.

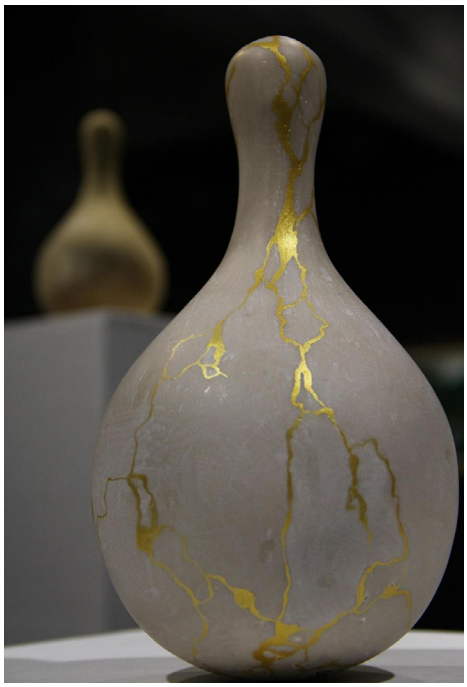
My friend went on to explain how she discovered that wabi-sabi is a Japanese concept that embodies the idea of finding beauty in the old, the simplistic, and the imperfect. As this topic piqued my interest, I found a BBC article from 2020, "Japan's unusual way to view the world" by Lily Crossley-Baxter. See: https://www.bbc.com/travel/article/20181021-japans-unusual-way-to-view-the-world

In this article Crossley-Baxter provides a nice explanation of wabi-sabi, starting with rough explanations of the constituent words. Wabi (侘) "roughly means 'the elegant beauty of humble simplicity'" and sabi (寂) "the passing of time and subsequent deterioration."

The complex philosophy and art aesthetics of wabi-sabi are not readily distilled into a single paragraph or an entire article, let alone two succinct definitions, but they give a flavor of the concept. If you are intrigued I encourage you to read the BBC article and start your own research into wabi-sabi.

By now, you are probably wondering what bearing wabi-sabi has on a standards organization or color science. I would argue that, intentional or not, some of the philosophy of wabi-sabi is practiced by ASTM E12 when developing standards. Let me explain.

Crossley-Baxter interviewed Professor Tanehisa Otabe of Tokyo University's Institute of Aesthetics, who explained "wabi-sabi leaves something unfinished or incomplete for the play of imagination." When standards are written, they are not flawless or complete. Authors of a standard have room to develop it to meet the needs of the time.



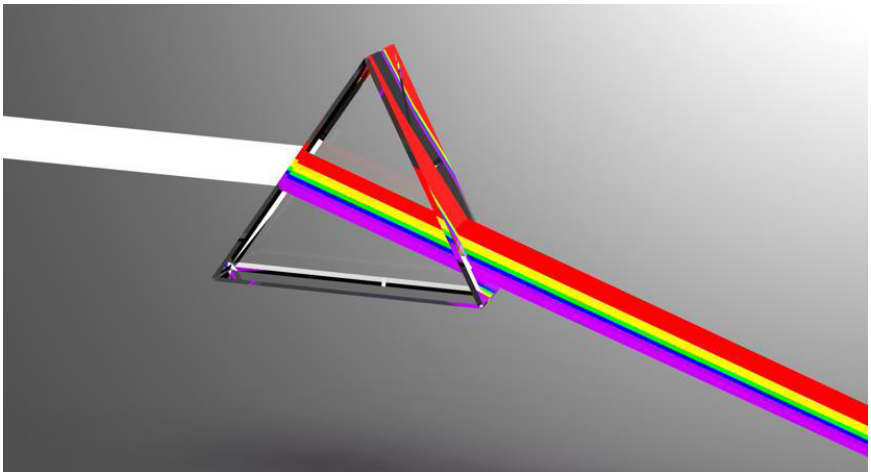
Example of Kintsugi (金継ぎ) pottery (broken pottery repaired with gold), often associated with the wabi-sabi aesthetic.

Simultaneously, the authors must balance the standard in such a way that allows precision when necessary while still offering flexibility in options of instrumentation and procedures when possible.

ASTM E12 also prioritizes excellence through continuous improvement, not excellence from perfection. As Crossly-Baxter puts it, "Prioritising flawlessness and infallibility, the ideal of perfection creates not only unachievable standards, but misguided ones."

To give you an example of wabi-sabi in practice at ASTM E12, Subcommittee E12.05 has the work item WK91911, Revision of E1341-16(2020) Standard Practice for Obtaining Spectroradiometric Data from Radiant Sources for Colorimetry. The goal of the working group is to clarify an apparent self-contradiction on the apparatus requirement. Specifically, one

subsection "implies that a monochromator is an integral part of a spectroradiometer," and a later subsection "describes an embodiment which does not use [a] monochromator" and instead uses the term polychromator*. The old, existing standard is respected, but it is being revisited to adjust to the current needs of the field.



Rendering of "white" light diffracted through a prism (this render was constructed with CADD software and not a physically accurate model).

If you would like to become involved with this work group or Subcommittee E12.05, please contact John Seymour at john@johnthemathguy.com.

Students and Standards: Your Vote Matters!

ASTM has added a new opportunity for students interested in standards development, Ballot Measure Voting! ASTM student members can now vote and comment on standards. While students cannot vote negative, they can comment. You might ask why bother voting if you can only comment and vote affirmative or abstain? Two key reasons stand out to me.

First, ASTM Committee E12 welcomes students and new points of view from all participants. As such, all comments will be considered and may be incorporated into standard revisions and new standards.
Secondly, exposure. Students have the opportunity to experience and engage in more parts of the committee process than previously permitted. Exposure alone can be beneficial to students and even current members. Participation can provide exposure to tools for collaborative work, such as Robert's Rules of Order and

*For those wondering, both a monochromator and polychromator use an optical element to disperse light, such as a prism or diffraction grating; however, a monochromator uses a single detector (usually a photodiode) to measure the power of one passband at a time, while a polychromator can measure multiple passbands simultaneously, usually through the use of a diode array.

collaborative software, e.g. WebEx and Teams. The process of working on standards has quite a few moving parts between rules or order, collaboration areas, ballot measures, subcommittees, etc. At first, exposure can be overwhelming, and the process might seem as clear as mud. But in the words of Lao Tzu,

"Let it be still, and it will gradually become clear."
– Lao Tzu, Tao Te Ching

Frequent participation as an observer will improve your understanding of the process.

More importantly, students gain access to thoughtful discussions and debate with scientific and industry experts, many with decades of experience in Color Science. I am grateful for how much I learn at each meeting with my fellow ASTM E12 members.

Have a difficult color science question? E12 members often have an answer or can point you in the right direction. Who knows, networking and mentor-mentee relationships might present themselves, too.

In addition to the opportunity to participate in ballot measures, ASTM provides additional resources for student members, such as ASTM 101: An Introduction to ASTM Standards Development and Utilization: https://astm101.training.astm.org/#/

You can find more resources at ASTM's Academic Outreach For Students webpage: https://www.astm.org/membership-participation/academic-outreach/for-students

You can also reach out to Jamie Huffnagle at jhuffnagle@astm.org.

We look forward to welcoming all new members, including students!

ISCC Color Impact 2025: Workshop Recap

Sandra Sampson

ISCC Color Impact 2025, Pre-Conference Workshops: A Foundation for Color Excellence

The opening day of ColorImpact 2025 at Rochester Institute of Technology (RIT) set an exceptional tone for the conference, offering our interdisciplinary community of color scientists, artists, and industry professionals a comprehensive foundation in both fundamental principles and cutting-edge developments in color science and education.

Building Color Literacy: Education Meets Practice

Sunday's workshop program prominently featured the Colour Literacy Project, reflecting ISCC's commitment to advancing color education across disciplines. The Colour Literacy Project represents a 21st century initiative that recognizes color as a meta-discipline, with a mission to provide state-of-the-art educational resources which feature hands-on explorations that strengthen the bridges between the sciences, arts, design and humanities.

The Eye Opener Series: An Intro to the Colour Literacy Project was led by Maggie Maggio, Immediate Past-President of the Inter-Society Color Council and co-chair of the joint ISCC/AIC Colour Literacy Project. Maggio, a designer, artist, and art educator with over 40 years of experience studying, teaching, and working with color, has dedicated her career to advancing color literacy for the 21st century.

The Eye Opener workshop introduced attendees to the project's foundational approach, which "recognizes that fluency with the language of color sharpens our visual intelligence, expands our perceptions, and enhances our ability to communicate." The session emphasized that color literacy is not just for artists and scientists — it's for everyone, reflecting the project's commitment to making color education accessible across disciplines.

Central to the workshop was an exploration of the Colour Literacy Cornerstones: Experiencing Colours (from unaware to engaged), Describing Colours (from hues to 3D models), Perceiving Colours (from light to context), and Working with Colours (from mixing to storytelling). These cornerstones form the foundation of a new curriculum designed to move beyond traditional color education approaches and embrace contemporary understanding of color science and perception.

This workshop established the pedagogical framework that would resonate throughout the conference proceedings, demonstrating how systematic color education can enhance professional practice across the diverse disciplines represented within ISCC's membership.

Building on this foundation, *Multidisciplinary Explorations of Color Concepts*: *A Color Literacy Project Workshop* brought together Robin Kingsburgh, President of the Colour Research Society of Canada and Board member of the Inter-Society Colour Council, and Maggio to demonstrate practical applications of interdisciplinary color education. Kingsburgh, a trained astronomer with a Ph.D. from University College London and trained painter, currently teaches Understanding Colour and other Natural Science courses at York University, Toronto, exemplifying the interdisciplinary approach central to color education. The session included a number of hands-on exercises that showcased how color knowledge transcends traditional academic boundaries, addressing the needs of our diverse membership spanning science, industry, and the creative arts.

Technical Foundations and Practical Applications

A Beginner's Guide to Color Measurement, presented by David R. Wyble, President and Founder of Avian Rochester, LLC and Director of Color Science at Avian Technologies, provided essential technical grounding for professionals new to quantitative color analysis. Wyble, who has worked in various capacities within the color field for over 35 years, served as a research scientist in the Munsell Color Science Laboratory at RIT from 1997 to 2012 and continues part-time as of 2025, bringing deep expertise in color measurement and imaging science.

This workshop addressed the growing need for standardized color measurement practices across industries, reflecting RIT's four-decade legacy in color science research through the Munsell Color Science Laboratory.

The communication challenges inherent in our interdisciplinary field were tackled in *What Did You Say? Exploring the Challenges of Communicating Color Science* by Kimberly Mercier, an award-winning lighting designer, Professional Engineer, and Chair of the IES Light and Human Health Committee. Mercier, who has mastered the ability to translate the science of light into language understood by designers, artists and construction professionals, served as international President of the IES and currently serves as Vice President of Membership on the Executive Committee of the CIE U.S. National Committee. This session addressed bridging the language barriers between scientific rigor and practical application, and between technical precision and creative expression.

Bridging Historical Legacy and Contemporary Practice

Interacting with Color: A Practical Guide to Josef Albers's Color Experiments, facilitated by Fritz Horstman, Education Director at the Josef and Anni Albers Foundation in Bethany, Connecticut, exemplified ISCC's commitment to honoring color theory's foundational figures while making their insights accessible to contemporary practitioners. Horstman, a curator, educator, and artist who has curated exhibitions across Europe and the United States and authored *Interacting with Color: A Practical Guide to Josef Albers's Color Experiments*, has lectured and given workshops at prestigious institutions including Yale, Harvard, Princeton and the Bauhaus. This hands-on workshop demonstrated how Albers's systematic approach to color interaction continues to inform both scientific research and artistic practice.

Setting the Stage for Innovation

These Sunday pre-conference workshops established a comprehensive foundation that would carry through into the multi-disciplinary presentations and specialized short courses throughout the remainder of ColorImpact 2025. By addressing fundamental concepts, measurement techniques, communication strategies, and historical perspectives, the opening day prepared attendees to engage fully with the conference's broader exploration of color across technology, design, culture and nature.

The integration of educational theory through the Color Literacy Project sessions with practical measurement techniques and historical perspectives reflected ISCC's unique position as the principal interdisciplinary color society in the United States. Rochester's rich heritage in color innovation, from Eastman Kodak to contemporary research institutions, provided an appropriate backdrop for this synthesis of traditional knowledge and forward-looking applications.

The success of these workshops, organized through the dedicated efforts of our all-volunteer team led by program co-chairs Maggie Maggio and Dave Wyble, and Sandra Sampson, color and design professional from Simple Modern Style, Vital Color™, ISCC Board Member and Pre-conference Workshop Chair, demonstrates the continuing vitality of ISCC's mission to advance color research and best practices across all domains of color professional practice.

Additional Info

Colour Literacy Project's Exercises



Albers Foundation workshops

New Book: Interacting with Color: A Practical Guide to Josef Albers's Color Experiments

Josef and Anni Albers Foundation

Avian Rochester, LLC

Munsell Color Science Laboratory

Simple Modern Style, Vital Color™

Lighting Design Innovations

Colour Research Society of Canada

Smashing Color

ColorImpact 2025

COLOUR LITERACY FORUM
CONNECT - INNOVATE - EDUCATE

Luanne Stovall

Upcoming Forums

Colour Literacy Forum #14 - December Date TBA

Facts and Myths About Color Series - Part 4

Forum 14, the fourth and final event in the series, will challenge the perception of colour as merely an aesthetic addition, instead highlighting its deeper communicative, functional, and psychological roles.

Summary of Past Events

Forum 13 focused on the myth of color mixing—why the idea that colors can be "mixed" in a straightforward way is misleading and how comparative mixing provides a more accurate perspective.

Forum #13: Facts and Myths about Color Series, Part 3

Colour MIXconceptions: Comparative Mixing Processes
Friday October 10, 2025, 11:00 am - 12:30 pm, EST (via Zoom)

Forum #13 will be available on YouTube at:
https://youtu.be/ALfZDCQH7GI?si=QvXev33SjrC8W0Ip

Talk 1. Colors and Mixing

Paul Green-Armytage has contributed papers at many national and international conferences, served as a member of the executive committee of the International Colour Association, and as president of the Colour Society of Australia. He is active as a researcher, writer and educator and has been a member of the Colour Literacy Project team from its launch in 2020.

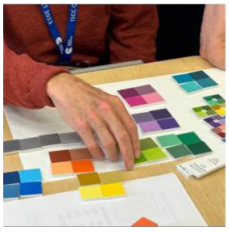
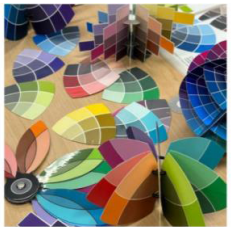
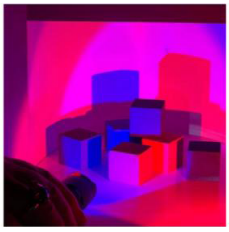
Talk 2. Colors in Motion, Designing with Change

Marjan Kooroshnia is a pioneering researcher and Associate Professor at The Swedish School of Textiles, University of Borås, Sweden. She explores the intersection of color, light, and materiality in textile and fashion design. Her research pushes the boundaries of traditional design through innovative uses of smart colors—such as thermochromic, photochromic, electroluminescent and photoluminescent pigments—that create dynamic patterns.

Color Literacy Projects / News

The Color Literacy Project's new approach to teaching color

We are in the process of developing a resource site for anyone who teaches about color. Our meta-disciplinary colour curriculum combines core colour concepts from the sciences, the arts, and the humanities.


The Colour Literacy Project (CLP) was launched in 2020 as a joint project of the ISCC and the AIC. Please visit our website to learn more about who we are, what we do, and how you can be involved: https://colourliteracy.org/

The CLP team has expanded to 28 team members and consultants. We come from all over the globe and have diverse disciplinary backgrounds, but we are all united in our passion for color.

The CLP team has expanded to 28 team members and consultants. We come from all over the globe and have diverse disciplinary backgrounds, but we are all united in our passion for color.

CLP 2.0 – This year, we are in the second level of development, with a focus on beta-testing Key Exercises, based on our 4 Cornerstones and Core Concepts.

We also restructured the organization into 4 teams, led by the CLP Core Team. Robin Kingsburgh leads Team 1, with a focus on website content development. Maggie Maggio leads Team 2, focused on curriculum development of the Key Exercises. Team 3 concentrates on the development of the CLP Partners Network and is led by Luanne Stovall. Team 4 is led by Ingrid Calvo-Ivanovic. Team 4 organizes the CLP Forums and focuses on outreach, visual communication, research, and dissemination strategy.

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*The **Colour Literacy Forum** is a virtual platform featuring presentations and interactive conversations focused on updating and expanding 21st century colour education at the university level. This series delves into widespread misconceptions about colour found in textbooks—including those from prestigious publishers—as well as in scientific and popular articles, magazines, and the Internet.*

Color Research & Application

Michael J. Murdoch

Fall 2025 issue: covering CR&A 50(5) Sep/Oct 2025

In this month's column, I have chosen three recent CR&A articles to highlight: one is a historical investigation of light sources in early 20th century film projection, and the other two are recent attempts at "aftermarket" adjustments to CIECAM16 to account for visual phenomena the H-K effect and simultaneous contrast. The authors of the final paper, Pei, Farnand and Fairchild, are colleagues of mine at RIT's Munsell Color Science Laboratory. However, I was not involved in any aspects of this body of work.

"Dazzling" and "Snow White": Light Sources for Film Projection in Germany, 1909–1929

Isabel Krek
https://doi.org/10.1002/col.22973

How did anyone watch movies before the days of IMAX laser projectors?! This article provides a fascinating historical deep dive into early projection technology, focusing on the evolution of light sources used to illuminate motion picture films. The author acknowledges that there was a lot of variety in the films themselves, mostly black-and-white in terms of the silver-halide process, but often augmented in color via hand tinting and eventually utilizing multiple color separations with filters.

The article primarily discusses light sources, which ideally would be small, white, bright, and constant – even better, cool, safe, and not too energy-hungry. In actuality, the earliest light sources were none of these. Early carbon arc lamps, while dazzlingly bright, were dangerously hot, literally burning at a temperature of up to 6,000K (and thereby incandescing according to Planck's law!). Improvements in electrical current standardization and eventually parabolic mirrors improved arc lamps over the years. Incandescent lights offered another improvement, at least in safety, with their hot filament relatively safely encased in a glass bulb. Where electricity

was not available, projectionists used acetylene flames or limelight (typically, a gas flame burning a cone of lime (calcium hydroxide)). This makes me think that similar technologies were probably used contemporaneously for spotlights and theatre lighting in live-action venues.

In several passages, Krek distinguishes the requirements of expert practitioners with those of typical film viewers, pointing out that many of the nuances that concerned industry experts were missed entirely by the audiences transfixed by visual storytelling. Examples of this are both the color of the light itself, described variously as white, or yellow, and the uniformity of the illuminated field, which could include artifacts like the shadows of carbon rods. These defects were apparently unimportant to movie audiences. I might guess that things are not so different today; my colleagues in the digital cinema industry walk disgustedly out of commercial theaters with too-dim projectors or juddering motion, while most viewers sit contentedly eating their popcorn!

The CIECAM16-Based Lightness Model Incorporating the Helmholtz–Kohlrausch (H–K) Effect Using Heterochromatic Brightness Matching Data

Garam Seong, Youngshin Kwak, Hyosun Kim
https://doi.org/10.1002/col.22984

Why is the H-K Effect so elusive? The authors of this paper present new psychophysical results and a new lightness model that includes an adjustment based on chroma. Interestingly, this is "yet another" paper addressing this topic, which seems remarkably difficult to pin down definitively.

The Helmholtz-Kohlrausch (H-K) Effect is an oddity in color perception that seems to fascinate everyone who learns about it. In short, luminance underestimates the perceived brightness of highly saturated colors. Luminance was defined in the early 20th century via the CIE photopic luminance efficiency, or V(λ), function, which was based on flicker photometry data. The choice to use flicker data, rather than side-by-side matching, has the desirable property of additivity: the luminance of a spectral power distribution is equal to the sum of the luminances of each contributing wavelength. However, the downside of this choice (which was known and accepted at the time) is that it tends to under-predict brightness, or "perceived luminance" of chromatic colors, depending on saturation and hue.

The authors of this paper created a side-by-side matching task at a variety of luminance levels, with different surrounding field luminances. Observers were presented a series of pairs in a split-field circle arrangement, each pair comprising an achromatic (gray) on one side and a chromatic color on the other, and they were asked to adjust the luminance of the achromatic side to match the perceived brightness of the chromatic side. The results of the experiment are much as expected, that people require higher-luminance gray to match more-chromatic colors. However, it also includes a lot of noise and large inter-observer differences. This kind of experiment, matching brightness between color patches with very different appearances (chromatic vs. achromatic) is a very difficult task for people to do reliably and consistently.

Most interestingly, and why I continue to think of H-K as an elusive effect, the paper includes comparisons of the new brightness matching data with a variety of earlier published models – and none of them predicts their results especially well. As many preceding authors have done, they present yet a new model that suits their results. Surely, other experiments and models will follow!

Extending CIECAM16 to Account for Simultaneous Contrast

Eddie Pei, Susan Farnand, Mark D. Fairchild
https://doi.org/10.1002/col.22980

Guess what, here's another appearance effect that is not sufficiently modeled by CAMs! Simultaneous contrast is the tendency of a color's surrounding background to influence its appearance. The classic demo is of two identical gray squares surrounded by a lighter gray and a darker gray, respectively, in which the two squares appear to differ in lightness. Background color characteristics tend to push the appearance of a surrounded square in an opposing color direction – so a darker surround makes a gray look lighter, and a lighter surround makes it look darker. Similarly, a redder surround can make a surrounded orange look greener. This is a well-known effect, yet it is not directly addressed with common color appearance models such as CIECAM16.

In this paper, Pei et al. describe a series of experiments, each addressing the effect of one of the basic color dimensions: lightness, chroma, and hue. For the experiments, a set of 158 colors selected in a systematic grid of those dimensions were used, combined in foreground-background arrangements that tested

each specific dimension. For example, in the chroma experiment, all possible chroma variations for each specific lightness/hue combination were tested in both orientations (higher- and lower-chroma background). The results of all three experiments showed robust effects in the expected directions.

The results are shown in a set of elegant plots, using bicolor center-surround dots that visually show the combinations of color and surround corresponding to each data point. Focusing for example on the lightness results, all of the darker surrounds make the color appearance higher in lightness, while lighter surrounds have a somewhat stronger effect making the apparent lightness darker. All hue/chroma combinations are provided in the plot, and there is no obvious effect of those dimensions except for perhaps a stronger positive effect on apparent lightness for saturated red surrounds.

As is typical with recent papers investigating appearance effects, the success of the base model, CIECAM16, as well as several preceding authors' proposed models of similar effects are evaluated with plots and statistics. The authors present separate models to predict apparent chroma, hue, and lightness, and show that their models fit the new results better than previous models. As with the above paper, we can expect more experiments and models on this and related topics, and the hope is that eventually the collective progress will lead to an improved CAM for general use.



Luanne Stovall

Upcoming Event

The Oregon Palette

Friday, November 14, 1:00 pm EST via Zoom (stay tuned – the registration link will be posted on the ISCC website)

Speakers:

Esther Hagenlocher, Associate Professor, Department of Interior Architecture, School of Architecture and Environment, University of Oregon

Blaine Brennan, Bachelor of Interior Architecture, University of Oregon (2026)

Hannah Petkau, Master of Interior Architecture (2026), Master of Fine Arts, University of Oregon (2022)

Emma Ball, Bachelor of Architecture, University of Oregon (2026)

Color is a language that links the natural and built environments. Through projects that examine color in artifacts, restaurant design, and daily light transitions, this study uncovers how color theory informs emotional, spatial and temporal experiences. By exploring these varied contexts, we begin to see how interior architects and architects translate Oregon's changing palette into spaces that feel alive, responsive and deeply rooted in place.

Student Ambassador

Nader Sadoughi

Hi! My name is Nader Sadoughi, the ISCC's first Student Ambassador! I graduated this summer from the University of Texas at Austin with my Bachelor of Fine Arts in Design. From June of 2024 through 2025, I was a member of the steering committee planning Color Impact 2025. I designed the identity system, social media marketing, and merchandise for the conference. I am now helping on the ISCC's Visual Identity Project (VIP).

As a student assigned to read Albers's Interaction of Color, but without color-aid papers, I grew frustrated trying to reconcile Albers's instructions with modern color picking tools. By accident, I encountered CIELab and subsequently learned about more advanced color appearance models (such as CIECAM02 and CAM16).

Last September, I presented my paper exploring this, *Translating Albers to CAM16: A Case for Next Generation Color Pickers* at AIC2024 in São Paulo, Brazil.



Nader Sadoughi

I am currently working on developing next generation color pickers and simplifying design workflows with advanced color tools. This summer, I was a design intern at the GSD&M advertising agency in Austin. I am now open to full-time work as a designer and colorist. You can view my body of work in my portfolio at: https://nadersadoughi.me

About the ISCC Student Ambassador

The ISCC Student Ambassador is a student member who holds a non-voting position on the ISCC Board of Directors for six months. The Ambassador is nominated by a current ISCC Board member, and can possibly assist with social media, the Quarterly Newsletter, or event planning during their six-month term.



John Seymour

Rehashing an argument from 1898

The year was 1898. Seven papers were published in the journal Science with the title Color Vision. Bear in mind that during the entire decade (the 1890s), this journal published only five other papers on the broad topic of color. What happened in 1898? Why this sudden interest in color? The short answer is that there was a heated debate about two (or more) competing ideas about the mechanism by which we perceive color. Looking at these "letters to the editor" gives us insight into the confusion about "what is this thing called color?" and shows us that acrimonious debate has always been part of human interactions, scientific or otherwise.

Some background – the physicists

The Young-Helmholtz theory was first posited in 1777 by George Palmer.[1]

> The surface of the retina is compounded of three different kinds, analogous to the three rays of light; and each of these particles is moved by his own ray…
>
> Each ray of light is compounded of three rays only: one of these rays is analogous to the yellow, one to the red, and the other to the blue.[2]

Palmer projected a rainbow onto a white card close to the prism, and he saw the colors red, yellow and blue. These were his primaries. When he moved the card further away, he saw other colors, like orange and green, which he took to be simply combinations of his three primaries.

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[1] This is an example of Stigler's Law of Eponymy that says that no laws of science are attributed to the original discoverer.

[2] The loyal reader of this column will realize that these are the inappropriately named "artist's primaries," which, according to a previous pebble (Where did the artist's primaries come from?) were first recommended for three-color printing but not recommend for artists.

In 1802, Thomas Young independently suggested this idea of trichromacy. Since Young was well-versed in physics, he fully appreciated the fact that visible light is comprised of zillions of wavelengths, not just three. Initially, Young had the same primaries as Palmer, but later revised the list to red, green, and violet.

In the 1850s, Herman von Helmholtz put some legs on the trichromacy hypothesis by speculating about the spectral response of the three color sensors in the eye.

Some background – the physiologist

Evald Hering provided the major competitive hypothesis about color vision. Hering was a physiologist, so rather than being concerned with the underlying physics of how light is sensed, he sought to explain color vision in terms of what is happening inside a person's head.

Hering reasoned that there are six primary colors. These are the colors that are not perceived as containing other colors. For example, red is a primary color, since when we see pure red, we don't think of it as containing either orange or purple. Instead, we perceive orange as a mixture of red and yellow, and purple as a mixture of red and blue.[3] Hering paired these primary colors into opponents: red versus green, yellow versus blue, and white versus black. He conceived of a substance someplace in the human visual system which he called Seh Stoff (literally "see stuff") that would break down when exposed to (for example) red light and would be reassembled when exposed to green light. There would be one chemical for each of the three color opponents (see Hurst and Parsons). These hypothesized chemicals were never identified.

Tinder for the kerfuffle

The tinder for the firestorm of papers about color vision in 1898 was provided by Professor W. Patten who spoke at the American Physiological Society late in 1897. He gave a talk about his findings when dissecting the retinas of some invertebrates. He focused on the rods and cones and pondered about whether the size and shape of these structures might make them responsive to specific wavelengths of light, much in the way that a tuning fork vibrates in sympathy to various frequencies of sound. Might this explain how the eye captures color?

[3] This observation was not Hering's alone. He was anticipated on this in 1865 by Hermann Aubert and by Ernst Mach. Leonardo da Vinci also referred to these six as the simple colors. In an apparent counterexample to Stigler's law, Hering seems to be the first to suggest a possible molecular explanation for the color opponents.

Unbeknownst to Patten, the idea of rods and cones as tuning forks for visible light had been first suggested by Newton. Young considered this idea and rejected it almost a century prior to Patten's talk (Young).

> As it is almost impossible to conceive each sensitive point of the retina to contain an infinite number of particles, each capable of vibrating in perfect unison with every possible undulation, it becomes necessary to suppose the number limited, for instance to three principal colors, red, yellow, and blue…

I could not find Patten's paper. Perhaps it was a talk that was not published? But a summary of his talk was published in the Feb. 18, 1898 issue of Science (Lee), exposing this idea to a much wider audience. This review of Patten's talk started with a surprisingly contentious phrase:

> Professor W. Patten (Dartmouth) outlined a **new theory** of color vision…

The bolding of that phrase is my own. These are the two words that started the kerfuffle!

Tinder takes a spark

The short summary was read by Walter Le Conte Stevens, who was a professor of physics at Rensselaer Polytechnic Institute with wide interests (Wooten). Stevens took exception to the use of the word *theory*. In Stevens' letter to the editor of April 15, he played grammar police, explaining that a *theory* is an explanation of a set of facts which has been demonstrated to be true (Stevens, April 1898). The proper word in the article would have been hypothesis, which is an educated guess at a possible explanation. Even today, this conflation of the two terms can be found on the lips of creationists who downplay evolution as being "just a theory."

Stevens goes on to make an interesting comment: "No existing theory of color vision has been established upon evidence comparable with that on which the wave theory of light rests." The fact that a professor of physiology (Patten) was proposing a hypothesis about how vision works, and a professor of physics (Stevens) says that we just don't know for sure (how vision works) indicates to me that the matter was still up in the air.

Stevens provides a further explanation:

> Without attempting to refute any one hypothesis of color vision, it may be sufficient to say that **there are now at least seven** of these presented as competitors for favor, four out of the seven having been announced during the last half dozen years.

Once again, the bolding within this quote is my own. Those are the words that helped continue the kerfuffling.

Steven's letter was written almost entirely in strictly logical terms. There are, however, a few passages that betray a sense of his frustration. The quote above is one example. Here is another quote which is more telling.

> The bewildered physicist is already a fit subject for commiseration, and apprehension about the future tends to make him yet more unhappy. He despairingly beseeches the psychologists to agree among themselves.

Needless to say, them's fightin' words! He has drawn a line in the sand separating psychologists from physicists.

Stevens gets corrected

That single emotive sentence triggered a response from a Cornell professor of psychology, Edward Titchener (Titchener, April 29, 1898). Titchener provides some reassurance to Stevens:

> In the present article I hope to be able to show that the psychology of Color Vision is not quite so chaotic as to Professor Stevens it seems to be… It may be said, without any hesitation, that there are now only two discussable theories of Color Vision, those of Helmholtz and of Hering.

The astute reader will notice that Titchener seems to have skipped over Steven's didactic explanation of the distinction between hypothesis and theory. But that aside, Titchener explains how all seven of the theories – oh wait, hypotheses – are further developments of the two basic hypotheses.

Titchener's reassurances were readily accepted by Stevens (Stevens, May 13, 1898), who replied:

> When a psychologist of recognized authority informs me that there are now only two discussable theories of color vision, those of Helmholtz and of Hering, I am willing and glad to accept his judgment, and to let the rest go with but little attention.

But Titchener left behind a spark that ruffled some other feathers. He provided his list of the seven current explanations of how color works, including one from Christine Ladd-Franklin. In his description, he referred to "Mrs. Ladd Franklin's hypothetical **molecule of suicidal tendency**."

This odd phrase probably deserves a bit of explanation! According to the hypothesis, light-sensitive molecules in the eye are changed when they are exposed to certain wavelength ranges of light and change back when exposed to other ranges of wavelengths. Titchener considered this suicidal.

Every diatribe deserves an equal and opposite re-diatribe

Christine Ladd Franklin penned the next letter to the editor (Ladd-Franklin, June 3, 1898). She comes out of the gates with guns blazing. She starts by accusing Titchener of ignorance.

> It is not often that a letter appears in SCIENCE that presents the particular combination of characteristics of one of the recent communications on Color Vision… That his [Titchener's] reading has been cursory, and has been apparently to a certain extent forgotten, is evident from his making in a few lines such mistakes as…

She goes on to berate Stevens' original letter for berating Patten.

> The present discussion of color-vision in SCIENCE has been occasioned by Professor Patten's having had the temerity to bring out an entirely new theory…

Finally, she gets back to Titchener and the meat of her letter to the editor.

> Professor Titchener disposes of my hypothesis in summary fashion by saying, first, that my assumed molecules have a suicidal tendency, and second, that there is experimental evidence against the theory.

She explains why each of those are incorrect. She takes exception to the use of the word suicidal, since the molecule merely changes its form, and could live to respond to light again in the future. Her comment about the assertion of experimental evidence was basically "no there isn't".

She ends with this backhanded compliment. This paragraph triggered my sarcasmometer.

> Meantime I rejoice in the fact that Professor Titchener has renewed his study of the subject of color. It is to be hoped that this will lead him to remodel the brief statements regarding color which are found in his book on Psychology; what he says there (while it is not incomprehensible to one who has the clue to his secret meaning) must seem contradictory and confusing in the extreme to the ordinary reader, and certainly constitutes a serious blemish in a book which is otherwise not simply a good text-book, but a valuable contribution to the science of psychology.

Final salvos

Titchener responded to Ladd-Franklin's letter to the editor on June 17, 1898, defending himself against a variety of allegations. He ends with this:

> I fear that the above remarks contribute nothing at all, directly, to science. … Indirectly they may be of service, if they show Mrs. Ladd Franklin that it is necessary to read before you criticise, and that there are amenities to be observed even in scientific controversy.

Ladd-Franklin provided a short response in the July 1, 1898 issue; she leaves it up to the reader to decide whether she was in the wrong.

> …it is so easy for the reader of SCIENCE to form his own opinion.

She ends her short letter to the editor, however, accepting some blame:

> I have certainly hit it off very badly in accusing him of ignorance.

So, both combatants have had their last word. I get the feeling, though, that the two would not wind up laughing and toasting each other in some pub on the corner of Color Street and Theory Boulevard, but it's tricky to try to discern feelings from the written word.

One more entry

That accounts for six of the seven 1898 papers/letters with the title Color Vision. One thing is clear – if the individuals who wrote in to the journal Science are to be taken as experts in their respective fields, there was no consensus at the time about how this darn old eyeball and the brain it is plugged into turns light into color.

There was one more paper in 1898 (Whitman). It was not a response to the previous series of papers. This final paper was a transcript of an address that Frank Whitman made to the American Association for the Advancement of Science. Whitman was, at the time, the vice president of the association's physics division.

His address is long – 10 pages. He starts with the acknowledgement that physicists initiated the investigation of understanding how color is perceived, but that psychologists had recently taken over this pursuit. He goes on for 10 pages, summarizing the relevant experiments, the proposed explanations, and the limitations to each explanation. Near the end, he sums it up:

> These phenomena are not satisfactorily handled by any of the principal theories… Farther than these at present we can hardly go.

He ends with a suggestion that it is time to hand the torch to another group, the chemists.

> Since so many phenomena point to photo-chemical changes in the eye, it would not be surprising if the next advance should come from the chemical side, rather than from the physiological, physical or psychological, which have held the field so long.

True to Whitman's prophecy, the first person to reconcile the two key theories into one comprehensive explanation was Elliot Q. Adams, who was indeed a chemist. But that's a pebble on the beach to be discussed in a later column.

Bibliography

Hurst, George H. (1916), *Colour A Handbook of the Theory of Colour*, 2nd revision, Scott, Greenwood and Son, 120-121

Ladd-Franklin, Christine (June 3, 1898). *Color-Vision*, *Science*

Ladd-Franklin, Christine, (July 1, 1898), *Color-Vision*, *Science*

Lee, Frederic S. (Feb. 18, 1898). *The Ithaca Meeting of the American Physiological Society*, *Science*

Palmer, George (1777). *Theory of Colors and Vision*, London: Leacroft (from Sources of Color Science, editor David MacAdam, MIT Press, 1970)

Parsons, J. Herbert (1915). *An Introduction to the Study of Colour Vision*, Cambridge, 200-201

Seymour, John, (Fall, 2024). *Where did the artist's primaries come from?*, *Pebbles on the Beach*, ISCC Newsletter, Issue 508,

Stevens, W. Le Conte, (April 15, 1898). *Color Vision*, *Science*

Stevens, W. Le Conte (May 13, 1898). *Color Vision*, *Science*

Titchener, E.B. (April 29, 1898). *Color Vision*, *Science*

Titchener, E.B. (June 17, 1898). Color Vision, Science

Whitman, Frank P. (Sept. 9, 1898). *Color-Vision*, *Science*

Wooten, Benjamin Allen (April 20, 1928). [Memorial for] *Walter Le Conte Stevens*, *Science*

Young, Thomas (1802). *On the Theory of Light and Colors*, *Philosophical Transactions of the Royal Society of London*, 92, 20-71 (from Sources of Color Science, editor David MacAdam, MIT

Calendar 2025

Nov. 3	ICC Color Symposium || Hopewell Hotel, Wan Chai, Hong Kong https://form.jotform.com/whattheythink/hong-kong-colour-symposium
Nov. 4 - 5	IES Light for Life Symposium Special Healthcare Environments Lighting & Controls Virtual Live Event 11-5 PM ET https://ies.org/events/light-for-life/healthcare-environments-lighting-and-controls/
Nov. 5 - 6	Inkspired: Innovations in Textile Printing Conference || StateView Hotel, Raleigh, NC https://www.aatcc.org/aatcc-events/printing25/
Nov. 7 - 8	IS&T Advances in Printing Technology 2025 Tokyo || Tokyo, Japan https://www.imaging.org/IST/Conferences/AdvPrintTech/AdvancesPrintTech_2025/PrintTech2025.aspx
Nov. 14	ColorChat Networking Event 10:30 – 11:30 a.m. || Virtual https://www.colormarketing.org/events-all/colorchatmay2025-z24fe-sacm9
Nov. 18	CMG Business Meeting & Town Hall 12-1 ET || Virtual meeting https://www.colormarketing.org/events-all/36bpwjej3uldnf4nvrdfqqw4m1sltm-nke28
Nov. 19	CMG Future Thinking Virtual Workshop || Virtual Event https://www.colormarketing.org/events-all/event-one-5wg3b-4yc4l
Nov. 18 – 20	CIE – USNC & CORM Conference https://cormusa.org/news-events-3-2/
Dec. 1	Display Week Abstracts / Technical Summaries Deadline https://www.displayweek.org/program/authors-presenters/?_gl=1*3r8p3g*_ga*NjA4MjYzN-jY0LjE3NjAzNzM4MDc.*_ga_ZPZ4CJ8VHE*czE3NjAzNzM4MDckbzEkZzAkdDE3NjAzNzM-4MDckajYwJGwwJGgw
Dec. 5	CMG ColorSpeak™ Webinar Decades of Color: The Industrial Evolution from Pigment to Pixel by Renee Hytry Derrington, 12 ET https://www.colormarketing.org/events-all/colorspeakaugust-2025-ad68m-2sa3m
Dec. 11	ASTM E12.10 Retroreflection registration is for in-person attendance only Hilton Atlanta, 255 Courtland St. NE, Atlanta, Georgia https://na.eventscloud.com/website/81168/E12-10/
Dec. 15	AATCC Chemical Application Interest Croup: Innovation in Textile Biomaterials https://www.aatcc.org/aatcc-events/chemical-applications-interest-group-innovations-in-textile-biomaterials/

Calendar 2026

Jan. 5	ASPRS Annual Geo Challenge Deadline for Submission https://my.asprs.org/ASPRSMember/Events/Event_Display.aspx?EventKey=GEOC2025
Jan. 26 - 28	IS&T Advanced InkJet Technology 2026 || Fribourg, Switzerland https://www.imaging.org/IST/IST/Conferences/AdvInkjetTech/Advanced_Inkjet_Tech_2026/AdvIJTech_Home.aspx?hkey=f3b1045b-ab3c-4116-8473-6df9c05dccbf
Feb. 3 - 4	ASTM January 2026 Committee Week Atlanta Marriott Marquis, 265 Peachtree Center Avenue, Atlanta, Georgia
Feb. 16 - 18	IASPRS Annual Conference at Geo Week Denver, Colorado https://my.asprs.org/2026conference
Feb. 24 - 25	IAATCC Coloration conference || Stateview Hotel, 2451 Alumni Dr., Raleigh, NC 27606 https://www.aatcc.org/aatcc-events/coloration/
March 1 - 5	IS&T Electronic Imaging 2026 || Burlingame, CA https://www.imaging.org/IST/IST/Conferences/EI/EI2026/EI2026.aspx?hkey=98ddea62-ed6e-4cf2-bc9e-a313f42a41ab
March 15 - 19	OFC Conference and Exhibition Connecting the World, Los Angeles Convention Center https://www.ofcconference.org/
May 3 - 8	Display Week 2026 Los Angeles, CA www.displayweek.org
June 3 - 4	ATSM June 2026 Committee Week Hyatt Regency Dallas, 300 Reunion Blvd E, Dallas, Texas https://member.astm.org/meeting/search-keyword?keyword=e12
Aug. 13-15	IES26: The Lighting Conference, Denver Grand Hyatt https://ies.org/events/ies26/
Sept. 3 - 5	AIC 2026 Florence in person only (limited to 150 people) || Florence, Italy www.aic2026.org
Nov. 8 - 11	IES Street & Area Lighting Conference 2026 || Sheraton Phoenix Downtown
Dec. 9 - 10	ASTM December E12 Color and Appearance Retroreflection 2026 Committee Week Hyatt Regency || Jacksonville Riverfront, 225 East Coastline Drive, Jacksonville, Florida https://member.astm.org/meeting/search-keyword?keyword=e12

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.

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