



Inter-Society Color Council News

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Fashion Institute of Technology New ISCC Student Chapter

In May, the Student Council of the Fashion Institute of Technology voted their approval of a new student chapter of the ISCC. Last fall, Dr. Geoffrey Rogers of the Science and Math Department, who is also the chair of the ISCC's Education Committee enlisted the aid of some of his colleagues in polling student interest in having a professional color-related organization on campus. Some fifty students enthusiastically responded. Two members of the faculty, Professor Georgia Kalivas of the Textile Development and Marketing Department, and Professor Margaret Miele of the Social Sciences Department, agreed to become the advisors and jointly organized the first meeting. Tracie Susalis, an upper division student in the Advertising Design/Graphics program worked with the Department of Student Life to make the chapter a reality.



Meg Miele, Tracey Susalis, and Georgia Kalivas

Because color is the common denominator for many professions, our students represent majors as diverse as Package Design to Textile Development and Marketing to Cosmetics Marketing, just to name a few. It is our intention to build a lively student chapter wherein students have the opportunity to interact with and learn from professionals from a wide range of backgrounds and industries and where professionals in color-related industries have the opportunity to take an active role in preparing the next generation. With this in mind, we look forward to participating in the joint conference with the AIC in 2001.



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Welcome FIT Student Chapter

It is with great excitement that I welcome the Student Chapter of the Fashion Institute of Technology (FIT) in New York City to the ISCC. Congratulations!

The ISCC is experiencing rapid growth thanks to many members who have a vision. Today, I want to acknowledge and recognize the educators who spend their lives preparing the students of today to become the shining stars of tomorrow. These educators, who dedicate their energies and lives to a labor of love, deserve our highest regards and applause. We are thankful to; Dr. Geoffrey Rogers, Dr. Meg Miele, Dr. Georgia Kalivas, and upper division student Tracie Susalis, and all the students that expressed an interest and persevered to make this dream a reality. On behalf of the ISCC, the Executive Board and the Board of Directors we applaud and congratulate you. We are excited for you and look forward to your contributions. I am looking forward to the entire ISCC becoming acquainted with our new Student Chapter. I know that we can and will mesh our skills together to become a better team. We look forward to the chapter's contributions at the AIC Conference in 2001.

It is a banner day for the ISCC. Thanks to each one of you who carry the vision. Remember my challenge to each one of you.

Become involved, make a difference, and have the time of your life.

Jack Ladson
ISCC President



Preliminary Announcement ISCC Conference on Industrial Color Solutions Tentative, Feb. 23-25, 2002

The organizers of the 2002 ISCC conference would like to announce tentative dates and themes for the Conference. The theme for this year's meeting is Industrial Color Solutions.

Papers will be solicited from all major industrial segments such as Coatings, Textiles, Plastics, Paper, and Printing. Topics of interest will include Tolerancing, Formulation Practices, Process and Product Control Issues, Color Communication and Specification. Final dates and location details will be announced shortly; a call for papers will appear in early 2001.

We hope to provide a valuable forum for in depth discussion of the challenges and issues that you face linking the fundamentals of colorimetry and color science to the realities and pressures of the production environment.

If you have specific topics or needs that you would like to have considered, please send your input to the email addresses below.

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23rd European Conference On Visual Perception

A preliminary program and abstract book for the 23rd European Conference on Visual Perception (ECVP2000) can be downloaded from the ECVP website <http://ecvp.org/>.

ECVP2000 will take place in Groningen, The Netherlands, from August 27-31st 2000 and is a forum for the presentation of original and high quality research on all aspects of visual perception and the visual system. In addition to the regular poster and oral presentations, ECVP2000 hosts a number of special symposia and invited lectures.

Topics of the special symposia are:

Eye Movements and Attention Combining Cues
Noise & Efficiency
Models of Early Vision: Mechanisms Challenged by
the Visual Environment
Computational Neuro-Imaging of the Human
Visual System

Invited lectures will be given by:

Wim van de Grind, Utrecht Univ., The Netherlands.
Let There be Motion.....
Cynthia Owsley, Univ. of Alabama at Birmingham,
Aging and Scotopic Dysfunction
Austin Roorda, University of Houston, USA.
*The Eye's Optics, the Trichromatic Cone
Mosaic, and Human Vision*
Eric Vandenbussche, K.U Leuven, Belgium.
*Deficits of Visual Perception in Children
with Cerebral Visual Impairment due to
Early Brain Damage*
Eli Peli, Schepens Eye Research Institute, Boston,
*Vision Multiplexing for Vision
Rehabilitation: From Basic Research to
Applications and Back.*

Further details can be found on the ECVP website
<http://ecvp.org/>

**American Association
of
Textile Chemists and Colorists
Color Measurement Committee**

On May 3, 2000 AATCC Committee, RA36 Color Measurement reported the following activities for the last 6 months:

- 1) Data for establishing a revised precision and bias statement for Test Method 173, CMC: Calculation of Small Color Differences for Acceptability is being gathered.
- 2) A discussion was had regarding the specification of different lx ranges for a number of visual evaluation procedures (e.g., EP1, EP2, and EP9) and it was agreed that the lx ranges for evaluation procedures must be consistent.
- 3) David Hinks of N. C. State University reported that work is being done measuring the variability in SPD of light booths presently in use.
- 4) Hinks also reported that the Color Symposium (Color as a Catalyst: From Design Through Production) held in March in Greenville, SC was very successful.
- 5) Amy Hammonds, AATCC staff, will look for sales potential on a replacement for the D&H Color Rule.
- 6) Dr. Hinks was nominated as the new chair of RA36 effective immediately. Dr. Hinks will replace Charles Bino of Fruit of the Loom.



**R.I.T Announces
Distance Learning Courses**

As you may know, RIT is ranked as the third independent distance learning provider in the United States. In keeping with RIT's "anywhere/anytime learning" initiative, the Center for Imaging Science will offer a distance learning curriculum to begin in the fall 2000 quarter. The Center will begin offering the Master of Science degree in Imaging Science, with the Color Imaging Track, in this new on-line format. New tracks will be introduced each year. The most exciting feature of the program is its convenience. Students who are unable to enroll in traditional, on-campus courses now have the opportunity to earn their Master of Science degree in Imaging Science. The program is designed to allow completion of the degree requirements in three years.

At the core of the distance learning program is interaction. Students will interact with the faculty, peers, and course materials by dealing with real-life applications and problems. Distance learning objectives are the same as the regular on-campus courses. Credits earned and tuition are also the same. Courses start September 6, 2000. First offerings in the distance learning arena will be Linear Image Math I (4 credits) and Vision and Psychophysics (4 credits).

The complete schedule of courses for the MS Imaging Science/Color Imaging Track may be found at: <http://www.cis.rit.edu/education/distance.shtml>.

For more information on how to apply for admission and register for courses, please contact:

Georgia Rothacker
Graduate Program Administrator
tel: 716-475-6785
rothacker@cis.rit.edu

Color Research and Application In This Issue, August 2000

Before I begin talking about the contents of this issue, I would like to take this opportunity to say publicly how pleased I am that the Comité Español del Color has decided to endorse this journal. In recent years we have had many contributions from Spain, so I am sure the readers are aware of the fine color work going on there. I am sure that we will all benefit from this new closer relationship. I also want to welcome Manuel Melgosa as the new Associate Editor from Spain. Following this column, Dr. Melgosa has written a brief introduction about the Comité Español del Color. I hope you all will enjoy getting to know about this part of our color community.

Our first article is a contribution to the growing body of literature, which can be used for developing and refining instrumental color-difference metrics that are used in industrial tolerances. Recently researchers have been comparing CIE94 and CMC to the earlier color difference metrics such as CIELAB. In some ways both CIE94 and CMC are similar, but one difference is the way the lightness component modifies the total equation. In "Lightness Dependencies and the Effect of Texture on Suprathreshold Lightness Tolerances," Ethan D. Montag and Roy S. Berns explore whether the differences in lightness dependency between CIE94 and CMC are a result of parametric differences in the textures of the samples used to measure the color tolerances. Later in the issue we'll come back to evaluating color-difference metrics, but first we move to color modeling for the next three articles.

In the realm of color printing, I think all our readers are aware that the production of color in the printing process is based on a completely different principle than the formulation of colored paints. Unlike paints, where pigments are mixed in different concentrations to produce a desired hue level, printed colors are bi-level, i.e.; there is ink there or not. The visual impression of the graded ink levels is usually obtained by means of the halftoning technique. This is the breaking of the original continu-

ous tone image into small dots whose size varies depending on the tone level. The basic mathematical tool for modeling such bi-level color printing systems are the Neugebauer equations, and by substituting the Demichel equations in the Neugebauer equations one can predict the colorimetric tristimulus values of a printed color patch. However, these equations assume that the distributions of the inks, usually cyan, magenta, and yellow, are independent. In "Neugebauer and Demichel: Dependence and Independence in n-screen Superpositions for Colour Printing," Isaac Amidror and Roger D. Hersch review the basic tools for modeling color printing systems that use the halftoning technique and test the assumptions upon which they are based.

In any colorimetric calculation one of the basic set of data is the spectral power distribution of the illuminant. Balázs Kránicz and János Schanda undertake the "Re-Evaluation of Daylight Spectral Distributions." Roughly 40 years ago the spectral power distributions of the colorimetric daylight illuminants were determined from data that was averaged and standardized at 10-nanometer intervals. In later years the calculations are often performed at smaller intervals. Therefore, the data were interpolated to 5 nm intervals linearly. The authors compare the results of different interpolation methods and suggest that a nonlinear interpolation be used.

Just as the last article suggested a revision to the table of spectral power distributions of daylight illuminants, the final modeling article involves a revision of the newer color-appearance model. "A Revision of the CIECAM97s" is suggested by C. J. Li, M. Ronnier Luo, and R. W. G. Hunt to make the lightness zero when the Y tristimulus value is zero under all surround conditions and to modify the chromatic induction factor for the dim surround condition. The article also describes an alternative form to approach a more nearly exact reversibility between the forward and reverse calculation modes. Finally to avoid confusion between earlier calculations, the authors suggest the new model be designated CAM97s2.

For our next two articles, we move from the theoretical calculations into the application of colorimetry in the practical fields of restorations. Let's go to the evaluation of color difference metrics in the field of dentistry. The first article in this issue by Montag and Berns compared CIE94 and CMC in their theoretical design. Now James C. Ragain, Jr. and William M. Johnston evaluate CIELAB, CMC(2:1) and CMC(1:1) color-difference metrics in their practical use. These authors want to determine which metric provides the best indicator for acceptability of small color differences in the esthetic dental restorative materials, and to determine the tolerance that would indicate acceptability between the color of a restoration and an adjacent tooth. In "Color Acceptance of Direct Dental Restorative Materials by Human Observers," they report on the results of their research.

In the final article in this issue J. A. Durán-Suárez, A. García-Beltrán, M. P. Sáez-Pérez, and J. Rodríguez-Gordillo investigate the way in which cementing materials alter the quality of pigments used in coloring mortars. These coloring mortars are used in restoring stone construction of historic or artistic value, and therefore keeping the historically correct color is important. In "Evaluation of the Chromatic Effectiveness of Color Pigments in Restoration Materials (Lime and Portland Cement)," the authors note a loss of saturation and in some cases substantial shifts in hue. Their further study determines the cause to be the decomposition of the chromophore.

In the Communications and Comments section we have three items. First a communication from Rolf Kuehni entitled "An Opponent-Color Model for the Sanders-Wyszecki Helmholtz-Kohlrausch Effect Data Set." In this article Mr. Kuehni reports on fitting an opponent-color model to a set of data, the Sanders-Wyszecki data set, to determine to what extent a purely colorimetric model could describe Helmholtz-Kohlrausch experimental data. Next we have a letter to the editor from Danny C. Rich. Dr. Rich notes that there were "Euclidean Color Spaces with Logarithmic Compression" before that which was proposed by Knud Thomsen in his note entitled "A Euclidean Color Space in High Agreement with

the CIE94 Color Difference Formula". Finally, Dr. Yoshinobu Nayatani calls to our attention errata that occurred in two of his recent articles, "Proposal of an Abridged Color Appearance Model of CIECAT94LAB and Its Field Trials" and "Prediction of Experimental Results on Additivity-Law Failures."

We close this issue with two book reviews. Dr. Scott Steinman reviews *Vision Science* by Palmer in his report entitled "Cognitive Science Comes to the Forefront of Vision Science." And Rolf Kuehni gives us some insights in English about the book *Die Lehren von der Farbenharmonie* by Andreas Schwarz, which is written in German.

Ellen C. Carter, CR&A Editor

Annual Vision Meeting

The Colour Group of Great Britain

Initial Announcement/Call for Posters

Newcastle Upon Tyne, UK

28-29 September 2000

Colour Vision: Variance and Constancy

Speakers to include:

John Barbur (London, UK)
 Andrew Derrington (Nottingham, UK)
 David Foster (Manchester, UK)
 Herbert Jaegle (Tuebingen, Germany)
 Peter Lennie (NYU, USA)
 Ted Sharpe (Newcastle, UK)

The meeting will cover topics ranging from the genetics of colour vision to perceptual mechanisms of colour constancy, and will include informal discussions as well as scheduled talks. We welcome submissions for posters or short oral presentations. The meeting will be held at the International Centre for Life, Newcastle's millennium project celebrating the life sciences, and will conclude with an optional visit to its visitor centre, Life Interactive World. Meeting starts at lunchtime 28 September; meeting ends lunchtime 29 September; Life Interactive World visit, after lunch 29 September.

Registration details: <http://www.colour.org.uk>

Participation inquiries: anya.hurlbert@ncl.ac.uk
gabriele.jordan@ncl.ac.uk

William C. Segal CAUS Chairman and CEO

Obituary

On May 16th, William C. Segal, Chairman and CEO of the Color Association of the United States, died in his home in New York City. Bill Segal guided the Association for some twenty-five years. He stepped in initially, along Bill Lord of Gayley & Lord and other presidents of textile mills, to help it survive its financial difficulties of the mid 1970's. The textile trade organization was sixty years old at the time, publishing American color booklets and forecasts from Segal's Doric Publications office in New York City.

William Segal was born in Georgia in 1904. His interest in art began in his teenage years. Shortly after, his family moved to New York City. He attended NYU on an athletic scholarship, where he was a star running back on the football team. After his studies at NYU, he attended the Arts Students League. Later, he worked with the renown Mexican muralist Jose Clemente Orozco. He also studied in Paris.

His avant-garde magazine, American Fabrics and Fashions, was a mainstay of the burgeoning textile industry. Many American artists in fashion, textile and color were first recognized in his magazine. Jack Lenor Larsen, now chairman of the Association's Interior Committee, was one of the "new" textile designers highlighted on the pages of AFF.

At one point, Segal's offices occupied an entire floor of the Empire State Building and he was publishing 11 magazines.

The Color Association was a great concern for William Segal, who saw the importance and influence of color growing in modern life everywhere. He will be remembered in a special way.

Raymond R. Spilman Industrial Designer

Obituary

Raymond R. Spilman, 89 of South Yarmouth died June 15th in Cape Cod Hospital following a stroke. He was the husband of Mary Spilman for 63 years.

Mr. Spilman began his long, distinguished career as an industrial designer, first working for GM and then moving to New York where he worked for Henry Dryfus before opening his own office. He and his wife lived in Darien, CT for 43 years and summered on the Cape for 60 years before moving to Cape Cod. He was an avid watercolorist of the Rock Harbor and Wellfleet area.

During his long career, Mr. Spilman designed U.S. exhibits at International Trade Fairs in Peru, Yugoslavia, and Italy. He won many awards for his designs of home products such as cookware, baby furniture, and stereo equipment. Mr. Spilman's work was selected for inclusion in the Smithsonian Institute collection and the Syracuse University Special Collections.

He was a past president of the Industrial Designers Society of America and a lifetime member of the rotary Club of Stamford, CT. Mr. Spilman was also a member of the Inter-Society Color Council.

Surviving Mr. Spilman is his wife, a daughter, a son, two grand-daughters, two nephews and a niece.



News from CAUS.....

**Favorite Prints
Currently on the Market**

Prints are everywhere at the moment, from Pucci to printed scone shades, but I have selected three of my favorites. The first printmaker I chose is a Philadelphia-based company called Galbraith and Paul, a husband and wife team. They specialize in paper-making and hand-block printing of sconces, shades, and lamps. The second is a rug textile company based in Maine called Angela Adams (www.angelaadams.com). This business, named after the designer/owner, specializes in printing on rugs, bed linen, upholstery and, unusually enough, glassware designer. My third choice of printmaking is selected from the Fall 2000 fashion line of designer Michael Kors. This line features prints of symmetrical boxes of various shades on a fabric used in knee-length skirts.

Catherina Troy, CAUS Intern,
County Cork, Ireland



The Fabulous Fifties

The 1950's was an era of exceptional creativity. There was a sense of space, openness and airiness in the 50's interiors; houses and offices were open, floors were left bare and walls were painted white. This was the new style, the contemporary feel, the continuation of modernity in the new way, full of promises, of progress and of prosperity. Cadillacs were painted pink and the idea of pop culture was born. I have shown the importance of the aesthetic of the time in a display of textile designs, magazine covers, ceramics and chair designs. My palette includes pink geranium, flame flicker, sulfur spark, periwinkle and blue radiance.

Ann Marie Coddington, CAUS intern,
Scottish College of Textiles



**The 1980's: A Decade of Basic
Primary Colors**

The 1980's was a decade of clash, glitz and economic boom. Artists like Keith Haring, Julian Schnabel and Cindy Sherman were representative of this time, capturing the vibes of people through various media such as graffiti, painting and photography. Bold primary colors like red, blue, green and yellow were used almost exclusively by all three of the artists. Different shades of these four colors, as well as shadowing and lighting, played key roles in displaying the individual style of each artist. Although each artist perceived the mood of the decade differently, all three used the same colors to express themselves.

Ann Ginsburg
CAUS Summer Intern, F.I.T.

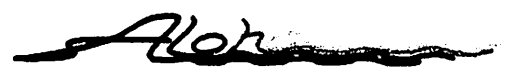


Hawaiian Prints Revisited

Recently I acquired a "vintage" Hawaiian shirt through eBay. On my computer screen the print looked like a white lei floral on a 50s pink ground. When a shirt arrived (in pristine condition) the pink was amazingly close to how it appeared on the computer monitor. I'm doubtful whether the shirt is in fact 1950s "vintage" — it has neither coconut buttons nor the rayon fabrication of my two other Hawaiian "treasures,"; nonetheless, the shirt makes me smile when I wear it, and that is magic and that of other Hawaiian prints, vintage or not.

Hawaiian prints offer colorfulness in the context of vacation time. Palm trees, surf-riders and hula girls are some of the reasons men were originally attracted to them. The prints for women are noticeably softer in coloration and bear Asian influences. Ginger blossoms, orchids, hibiscus, bamboo and pineapples transport one to another time and another place of sun, fun, and seemingly endless care-free days.

Margaret Walch,
CAUS Editor



e-Track Faculty Position in Imaging Science

Applications are invited for a tenure-track faculty position in the Chester F. Carlson Center for Imaging Science (CIS) at the Rochester Institute of Technology (RIT) with a focus on color imaging and color science. It is expected that the appointment will be made at the Assistant Professor level.

CIS is a cross-disciplinary academic unit in the College of Science offering B.S., and Ph.D. degrees in Imaging Science and M.S. degrees in both Imaging Science and Color Science. Ongoing research topics within CIS include remote sensing, astronomy data pipelining and instrumentation, color and visual science, chemical imaging, and medical ultrasound and magnetic resonance imaging. CIS houses the Munsell Color Science Laboratory (MCSL), considered one of the world's leading university-based laboratories dedicated to a broad range of color science research and education. More information on the academic and research activities of CIS and MCSL can be found at www.cis.rit.edu.

The successful candidate will have research interests and experience in psychophysics of imaging and color science. This position will enhance and complement activities of the current MCSL faculty who have expertise in the areas of colorimetry, color vision, color reproduction, image quality, and image rendering. Responsibilities of the position will include teaching at both the undergraduate and graduate level. Examples of courses that might be taught include Color Perception, Vision & Psychophysics, Color Science Seminar, and Color Measurement Laboratory. It is also expected that an active research program with significant extramural research funding will be developed.

Applicants should send a curriculum vita, a list of publications, a statement of research interests, and names and addresses of at least three references to: Mark D. Fairchild, Director, Munsell Color Science Laboratory, Rochester Institute of Technology, 54 Lomb Memorial Drive, Rochester NY 14623-5604. Review of applications will begin on July 1, 2000, with an appointment date as soon as possible there-

after. Applications will be accepted until the position is filled. RIT is an Equal Opportunity/Affirmative Action Employer and especially encourages applications from persons able to contribute to the Institute commitment to diversity and pluralism.



Ancient legends describe gold as the son of the sun. Early humans observed this glittering metal in the dirt or at the bottom of a stream, reflecting bright sunlight, and thought it was magical, even supernatural. They surmised that bits of the sun had broken off and had fallen to earth. These fragments were highly treasured and alchemists delighted in the way the polished metal mirrored a wide range of hues, and they dreamed of making fortunes by turning worthless lead into precious gold and so began experimenting. Even though they tried for hundreds of years and didn't find gold, the knowledge they gleaned from these early trials forms the basis of modern chemistry.

Psychology Joyful-Sunny-Rich-Lavish-Uncertain Gold is always a warm, lush color. It is buttercups and happy children's faces. Almost in contradiction, it is also a color associated with uncertainty. This comes from an instinctive fear, borne by our ancient forefathers, that the sun might drop over the horizon and never return., Like other sun colors, gold can make us anxious. However, its inherent richness makes it an acceptable risk.

Using Gold - though red attracts attention, humans, like plants, search for sunlight colors, even on a printed page or on a vehicle. A few years ago, this trait gave fire officials an idea., Realizing that red was difficult to see at dusk, they decided to paint all their fire engines yellow. Distinguishable? Easily seen? Not in New York City, where the engines were swallowed up in a sea of yellow cabs.

Excerpt from *Color Bytes*, Jean Bourges

Who First Said Color = Light + Object + Viewer?

Michael H. Brill

I recently received an email question from ISCC member Tom Greer: "I am currently researching a book I intend to write for children about colors in the Bible. I am including some current color information, and intend to use the concept that color requires light, observer, and colored object. To my knowledge the first written expression of this was Saltzman & Billmeyer. Can anyone give me an earlier reference? I see the first 30 verses of Genesis expressing the same concept."

Tom clarified that the first mention of color in Genesis (green) occurs after light, objects, and observer are introduced. Here is my answer to his question. The idea goes back at least to a 1912 article by Ives [1], whose first sentence was the following:

"The designer of an artificial daylight for purposes of color matching must have three things clearly in mind: the essential differences between the various illuminants, the character of the color composition of natural objects, and the nature of the possible distortions in appearance producible by the various combinations of these."

Ives was probably not the first to express the idea, but it will be hard to agree on the earliest version because human understanding of light has changed so much over the centuries. For background I recommend Lindberg's book [2].

The first prerequisite to identifying color with "light + object + viewer" was understanding that the visual impression comes *into* the eye (intromission theory), and does not arise as sensory emanations *from* the eye (extramission theory). Though extramission survived in some form throughout the middle ages, the atomists of ancient Greece (e.g., Democritus, 460 BC) were intromissionists, and knew there was a messenger that conveyed shape and color from objects to the eye. (Aristotle's 350 BC critique of Democritus is in [3].) The form the idea took in those days, however, would seem strange to us today. Lucretius (55 BC), a Roman atomist, thought that an object sends out expanding "simulacra", like discarded snake skins, that communicate to the eye the shape of the object. Alhazen (1000 AD) had a more mature and mathematical sense of the role of the light (as a sort of ray) that passed from object to eye. Newton (1704) characterized the light more fully as incident and reflected from an object. Finally modern physics refined further the particle and wave aspects of light.

I don't know who first said literally that color requires light, object, and observer. But if you consider the light just a messenger to the eye of what is in the object (e.g., color), then that concept was already described by Democritus (5th century BC).

1. Herbert Eugene Ives, "The relation between the color of the illuminant and the color of the illuminated object" (*Trans. Illum. Eng. Soc.* 7 [1912], 62-72; reprinted in *Color Res. Appl.* 20 [1995], 70-76).
2. David C. Lindberg, *Theories of Vision from Al-Kindi to Kepler* (U. Chicago Press, 1976).

CITDA Addresses Color Communication Standards

Katy Chapman, CITDA, Brooklyn, N.Y.

Without color, where would a product design be? Color has forever shaped the look of design in product, whether it be the pop of citrus brights, clear and gentle spa shades, classic navy, youthful primaries, or subtle tones of white. Thousands of those in the apparel and textile fields have spent countless amounts of time getting color right, so that the product on the selling floor projects the right message to boost consumer sales-fashion forward, flattering to wear, washes well, and coordinates with other products. Why does something so fundamentally basic in the product development process continue to be so challenging? In the world of design, one would like to say it is because color is color-it is not black and white. Every miniscule shade of color can mean something different to the eye of the creator and the beholder. While the industry continues to battle the complexities of manufacturing a product with color consistency, there are equal challenges facing the creation of a color. Gone are the days when designers solely depended on large tubs of paint to save a mixed color and distribute a "standard" to mills and dyehouses. Today, designers rely on the efficiencies of CAD/CAM systems to create and communicate their product ideas; however, working digitally can further complicate color issues.

CITDA - The topic of color communication is of particular interest to the Computer Integrated Textile Design Association (CITDA). CITDA was formed in 1992 to bring together designers, stylists, system operators, mill specialists, managers, executives, and vendors to share ideas and information on the emerging CAD/CAM industry. Members of the association represent a unique mix of people from industries as diverse as apparel, home fashions, automotive and transportation materials, wallcoverings, carpets, floorcoverings, software development, and hardware design. CITDA began by providing information to an industry desperate for knowledge about digital design/production processes and has grown to offer multiple conferences and events surrounding the evolution of this technology.

Move to Standardization - CITDA's first effort at standardization began in 1994, when the association adopted a common file format, TIFF 6.0, that would enable CAD systems to communicate images with each other, regardless of software or operating system. Before that time,

CAD systems were mostly closed systems, meaning they could only read and write their own proprietary file formats. A designer might work on a certain CAD system with specific design functionality and need to send files to a mill that uses a different, production-ready system. The lack of ability to share images was counter to the efficiencies of CAD/CAM, and the decision to make TIFF 6.0 a standard file format helped eliminate the problem and further promote use of the technology.

Color Communication Concerns - Users of CAD/CAM are faced with a closed system obstacle once more, yet this time it is with color. Many vendors have developed their own version of color management that enables reasonable color consistency from an initial color swatch to a monitor, a digital printer, and a mill or dyehouse, when maintained within a specific vendor's choice of devices, drivers, and profiles. Communication breaks down; however, when a color needs to be sent from one vendor's system to the system of another. Since two separate vendors may not be using the same color measurement devices, monitor types, color formats, printer profiles, printer drivers, or even printers, there is no way to predict what a color will look like when passed from one system to another. In the early days of CAD, design and technical departments were likely to use systems from only one vendor and color management was easier. Today, CAD studios utilize a mix of systems from different vendors in order to match the best technology to the right task. For instance, design for prints might be created on one system, wovens on another, storyboards and presentations on another system, and digital fabric preparation on yet another system. Often the same colors for a design or product grouping have to be utilized on all of these systems, causing colors to be re-matched over and over, and efficiency to be lost. If you add this to the already arduous task of keeping up with market demands for current colors, it is no wonder designers can get frustrated.

Color Committee Formed - So, how is CITDA hoping to help? In September 1999 CITDA formed a Color Committee to address the concerns of digital color communication by looking at all areas of the supply chain process and the technology that supports these areas. According to CITDA Chairperson Craig Crawford, "We are looking for a standard that does for color what TIFF 6.0 did for images. There is a strong need for standardization of how color is measured, communicated, manipulated, and executed in our industry, and we made every effort to recruit a cross-section of people from all

aspects of the industry for the color committee." The committee includes technology developers, educators, color consultants, manufacturers, designers, mill specialists, and managers

Subcommittees Established - The committee has found that a standard for color may not be as clean-cut as the TIFF 6.0 file standard, and may need to include a series of recommended protocols in order to achieve accurate color communication between systems. To address the many areas of concern for devices and processes related to color, CITDA has broken the larger committee into subcommittees. Areas of focus for the subcommittees include viewing standards, color measurement devices, color monitors and displays, digital printer profiling systems, and common substrates. The committees will look at color formats, such as RGB, CMYK, XYZ, and CIE L*a*b*, to determine a consistent and accurate standard for communicating color between different CAD systems.

Role Model - So as not to reinvent the wheel on specifications that have already been created, the committee will research copyrights and patents for existing color interchange formats. The group will seek to incorporate some of the work completed by the International Color Consortium (ICC). Consisting of over 75 companies from the desktop publishing industry and formed to address the issue of standardization, the group produced the ICC Profile Format Specification in 1994. This format helped establish predictable color calibration between monitors and printers, when profiles follow the recommended specification. The work of the ICC provides a great source of information for the CITDA Color Committee, and an excellent role model for standardization in the textile and apparel industries.

Partnerships - Testing will be a major focus in determining a standard. CITDA plans to partner with educational institutions, research facilities, and member corporations who have offered their facilities for testing suggested standards and processes. In addition, the group plans to involve its member CAD vendors in the testing process, so that a universal, device independent color communication format can be identified that suppliers may incorporate into their current color management systems.

Process Implementation - While the committee may establish a protocol that is acceptable to device and software manufacturers, it is important for a color communication standard to support everyday color workflow

procedures as well. The committee formed a process implementation subcommittee to play devil's advocate to recommended standards, to ensure that they are practical in both time and cost in a production and/or design setting. In addition, the subcommittee will address the viability of sending electronic color standards to mills and dyehouses, and whether or not this option can eventually replace physical standards.

Education - CITDA believes that color communication will not improve by standardization alone. The group has begun an initiative to educate the industry on issues related to color, so that knowledge and practice support digital communication. According to Victoria Revene, principal of Pie in the Sky Color Services and color committee member, "A critical and often overlooked aspect of achieving color consistency is understanding the demands, challenges, and practices of our business partners. Each participant in the color development and approval process, including design and manufacturing teams, can successfully attain this ambition through cross-departmental and industry education." During the search for a standard, CITDA will broaden its educational outreach through a series of seminars, workshops, and published articles to keep members up to date at all times.

CITDA and AATCC - In March 2000, CITDA gave a presentation at AATCC's Color Science Symposium and received excellent feedback from AATCC members about the need for color communication standards in the textile industry. Since CITDA and AATCC both have an overall goal to improve the process of delivering merchandise to the consumer, overlaps in color initiatives by each organization were identified. CITDA believes there are potential synergies in the two associations working together.

Summary - The search for color communication standardization is expected to take anywhere from three to five years and will involve many players from all aspects of the industry. The committee seeks to involve those with experience in color communication who can offer insight and research into the obstacles that make this issue so complex, and who will help identify a suitable common ground for standardization. CITDA hopes that its Color Committee, combined with the efforts of AATCC and others, will help overcome this issue so that all who participate in the supply chain process, from design to manufacturing, may benefit from improved efficiencies in color communication.

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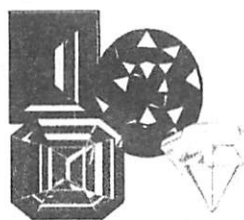
ISCC Editor

CORM Survey is on the Web

The CORM Seventh Report Survey is now available for your input on-line at <http://rodos.homestead.com>. The Seventh CORM Report like the previous six CORM Reports is produced to inform NIST and others of the critical national needs in optical radiation measurements. CORM solicits input from its members and other interested individuals to identify and clarify these needs. Your input is needed now.

The CORM Seventh Report Survey is an on-line, electronic survey. This format has made it possible to develop a more elaborate survey while the available tools in this format keep the survey manageable for those who respond. Please visit the website as soon as possible and complete the survey. The survey can be completed multiple times if you want to add responses or change previous responses. You can complete as much or as little of the survey as you like at anytime. You can always do more at another time. Finally, CORM would like this survey to be as widely distributed as possible. Please pass the link to any colleagues who have an interest in optical radiation measurements. Thank you for your participation in this important CORM action.

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Gemstone Day

At GIA

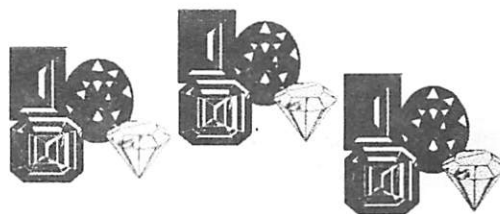
Elementary school students in the Carlsbad, CA area discovered a world of science and technology when they visited the Gemological Institute of America (GIA) on "Gemstone Day."

The GIA Director of Community Development, Gary Hill, reported that Gemstone Day is part of the Institute's effort to educate the public on the mission of the gem and jewelry industry, worldwide. Area students visited educational exhibits and participated in interactive sessions with some of the world's most-respected gemologists. Hill stated that GIA's gemologists observed that students virtually "light up" on their first exploration of gemstones when guided by professionals.

Students toured the institute in small groups. In a gemology classroom they were treated to hands-on microscope experience. They were also provided an opportunity to view the recently opened Museum Gallery. At the last stop on the tour the students observed rough and polished samples of birthstones and learned about the history associated with each month's stone.

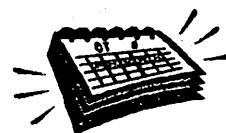
Additional information can be obtained by contacting the GIA Public Relations at 800-421-7250, ext. 4014, or by visiting GIA's website at www.gia.edu.

Harry K. Hammond III





CALENDAR



Please send any information on Member-Body and other organization meetings involving color and appearance functions to:

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2000

- Sept. 12-20** AATCC Intl Conference And Exhibition, Benton Conv. Ctr, Winston-Salem, SC, Hilda McQueen, Tel: 919-549-3549; Fax: 919-549-8141, mcqueenh@aatcc.org. Website: www.aatcc.org
- Sept 17-19** CAD/SPE RETEC 2000 "Your ticket to Great Colorants and Additives" Washington, D.C. Sandra Davis--DuPont 302-999-2540 sandra.p.davis@usa.dupont.com
- Oct. 1-4** CGIP 2000, Intl Conf. on Color in Graphics and Image Processing. St.Etienne, France. Info: Alain Tremeau tremeau@vision.univ-st-etienne.fr website: www.univ-st-etienne.fr/~iupvis
- Oct. 3** Detroit Colour Council, Automotive Color Harmony - A panel discussion on setting appropriate color tolerances. MSU Management Education Center, Troy, MI. Call James R. Keiser, 248-583-8345 or Bill Longley 734-420-4920
- Oct. 16-20** International Coatings Expo (ICE 2000); FSCT Annual Meeting Technical Program, Lakeside Ctr, McCormick Place, Chicago, IL, Info: FSCT, 492 Norristown Rd., Blue Bell, PA 19422; 610-940-0777; fax: 610-940-0292; rodm@coatingstech.org.
- Oct. 22-27** OSA Annual Meeting, Providence, RI; Info: Meeting, 202-416-1907, cust.serv@osa.org; Exhibits, 202-416-1950, exhibits@osa.org
- Oct. 29-31** Color Marketing Group Fall International Conference 2000, Boston, MA Tel: 703-329-8500
- Nov. 1-3** Human Factors and Ergonomics Society, Europe Chapter, Maastricht, The Netherlands. Further information: http://utopia.knoware.nl/users/hfsec/meeting/ec_meet.htm. (It is not necessary to be a member of the HFES to participate.)
- Nov. 6-7** 2000 AIC Meeting Seoul, Color and Environment. Seoul, Korea, 82-2-365-514 fax: 82-2-365-0014
- Nov. 7-10** IS&T/SID 8th Color Imaging Conference Color Science, Systems & Applications, SunBurst Resort Hotel, Scottsdale, AZ. 703-642-9090 Fax: 703-642-9094 info@imaging.org; www.imaging.org

2001

- Jan. 23-26** ASTM Committee D-1, Paint and Related Coatings, Materials and Applications, Info: T. Brooke, 610-832-9729; fax: 610-83-9666; tbrooke@astm.org
- Jan 23-26** ASTM Committee E-12, Color and Appearance, Embassy Suites, Ft. Lauderdale, FL. Info: Bode Buckley, 610-832-9740; fax: 610-832-1547; bbuckley@astm.org
- March 19-20** Williamsburg Conference, ISCC Color Course, Color Basics for Industry, Cleveland, OH, Airport Marriott. Info: Roland Connelly, SheLyn, Inc., roland@shelyn.com, Richard Harold, Color and Appearance Consulting, 703-709-5454 rwharold@worldnet.att.net

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|--------------------|---|
| April 1-3 | Color Marketing Group Spring International Conference , Orlando, FL 703-329-8500 <i>cmg@colormarketing.org</i> |
| May 6-9 | TAGA Annual Technical Conference , San Diego, CA. Info: 716- 475-7470; fax: 716- 475-2250, <i>TAGAOfc@aol.com</i> ; website: <i>http://www.taga.org</i> |
| April 23-27 | ASPRS Annual Conference , St. Louis, MO, 301-493-0290; Fax: 301-493-0208 <i>www.asprs.org</i> . |
| June 24-29 | ISCC/AIC Mtg , Rochester, NY; Paula J.Alessi, 716-477-7673; Fax: 716-722-1116 <i>paula.alessi@kodak.com</i> |
| Nov. 5-9 | IS&T/SID 8th Color Imaging Conf. , Color Science, Systems & Applications, Scottsdale, AZ. 2002 |
| February | ISCC Williamsburg Conference , Solutions for Industrial Color Problems, Chair: Ralph Stanziola <i>rascolor@juno.com</i> |
| June 9-13 | Fourth Oxford Conference on Spectrometry , Davidson College, Davidson, N.C. Info: Art Springsteen <i>avian@kear.tds.net</i> Teresa Goodman <i>tmg@npl.co.uk</i> |

Jobs Wanted!

This Section is intended to help ISCC members that are in need of, and are looking for employment. Here is an opportunity to use the resources at hand. There is no charge for this service, however, the restrictions are as follows:

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2. No more than 50 words may be used to describe yourself. (Not including name, address and/or telephone number, fax, email)
3. If you are using a P.O. Box, you must supply a complete address.
4. No Agency representing member(s) is allowed.
5. Neither the ISCC News nor the editor are responsible for any errors.
6. You must advise us in writing when you have obtained employment.

We hope this section will be of value to you, the ISCC member. If you have any suggestions/criticisms, please send them to the editor. Let's make this work!

"Demystifying Color" by Bob Chung

11 pages (color), \$5 each 20 copies \$50...

This technical report produced by Bob Chung of R.I.T. discusses and explains ten myths about color.

Either publication can be obtained by sending a check or money order (if pre-paid, s&h included) to:

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| \$ 500 | 1/2 page ad |
| \$1,000 | full page ad |

Artwork must be publisher ready and will be returned within 30 days after publication. The publishers reserve the right to determine the acceptability of the advertising. A 20% discount offered for a yearly contract. Contact: Tek Celikiz, ISCC News Editor or Cynthia Sturke, ISCC Office Mgr.

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Please note: Next issue deadline for material submission is August 1st. All submissions must be in English.

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