TAGA 2004 San Antonio
EXPANDING HORIZONS OF GRAPHIC TECHNOLOGY

HYATT REGENCY RIVERWALK, SAN ANTONIO, TX, APRIL 18-21, 2004

Program Highlights

The Annual Technical Conference (ATC) is shaping up to be an excellent opportunity to hear a diverse group of technical papers addressing all aspects of the Graphic Communications Industries. It will also provide an unparalleled opportunity to network with researchers and technical personnel from around the globe. The networking opportunities will be especially good this year since the ATC is co-located with the Imaging Science & Technology (IS&T) Archiving Conference.

The Sunday seminars will set the pace with in-depth reports on four topics of particular interest in today’s graphic milieu. The topics include: Lithographic Press Optimization, Soft Proofing, Package Printing, and Security Printing. These 90-minute sessions, taught by leading industry professionals, offer an opportunity to get up-to-speed in areas of rapid growth and opportunity.

The Monday and Tuesday technical sessions will contain current research findings on topics familiar to TAGA members and some new topics as well. In the traditional vein, there will be sessions on Measurement and Process Control, Inks and Paper, Printing Technology, Print and Material Analysis, Screening Technologies, Color Management, and Digital Workflow. Some topics that will be new to the ATC include Radiation Curable Processes & Materials, Non-Impact Printing, and Microelectronic Printing.

Of particular interest in 2004 will be the Wednesday “bridge day” with the IS&T Archiving Conference. Papers will be presented by members of both organizations on topics related to the archival properties of inks, paper, and data.

To view the 35+ abstracts, go to www.taga.org.

Conference Location

The backdrop for the TAGA’s 56th Annual Technical Conference is the colorful city of San Antonio, Texas. American humorist and homespun philosopher Will Rogers once described San Antonio as “one of America’s four unique cities.” From its founding in 1691 by Spanish missionaries, San Antonio has grown from a sleepy little Texas pueblo to the 9th largest city in the USA. San Antonio was the birthplace of the Texas revolution with the Battle of the Alamo in 1836, an important hub of the cattle industry in the late 1800s, the temporary home of Teddy Roosevelt and his Rough Riders, and the site of the 1968 World’s Fair (HemisFair).

Downtown, amid soaring modern office buildings, the old Spanish Governor’s Palace has been preserved as well as La Villita, the site of San Antonio’s original settlement which is now a collection of artisans’ workshops, restaurants, and historic houses. And in the heart of the city, 20 feet below street level, lies San Antonio’s most popular attraction, the Riverwalk. Stretching for approximately two and a half miles along the tree-shaded banks of the San Antonio River, the Riverwalk offers a sampling of San Antonio’s many cultures with a diversity of cafes, shops, galleries, restaurants, and floating dining barges.

Our conference hotel, the San Antonio Hyatt Regency, located on the Riverwalk and across the street from the Alamo, offers stunning views of old San Antonio and features a 16-story garden atrium built over an extension of the San Antonio River, which flows through the lobby.

As an added bonus, we have planned the conference to coincide with Fiesta San Antonio, a 10-day citywide celebration, which includes exciting carnivals, spectacular sporting events, fantastic fireworks, lively entertainment, ethnic feasts, art exhibits, colorful street parades, and sparkling boat parades that glide down the San Antonio River past the Riverwalk.

So … mark your calendars now and plan to join us in San Antonio for what is sure to be a fun, rewarding and educational conference!
TAGA Bylaws, Article III, Section I states, “Nominations for each regular elective office shall be made by a Nominating committee consisting of five voting members appointed annually by the President and chaired by the Immediate Past President or by petitions each signed by twenty voting members.” Section 2 states, “On or before November 1st of each year, the Nominating Committee shall have made its nominations and secured the written consent of each nominee. The proposed nominees shall then be reported to the membership in a regular newsletter publication to permit the addition of nominees by member petition prior to the preparation of a final ballot.”

The TAGA Nominating Committee chaired by TAGA Immediate Past President Bruce Blom has submitted nominations for the open positions on the TAGA Board for terms beginning June 1, 2004.

**THE CANDIDATES ARE:**

**For Vice President Technical Papers (2 years)**
Dr. Anthony Stanton, Carnegie Mellon University

**For Vice President Membership/Publicity (2 years)**
Charles Gehman, EFI

**For Secretary/Treasurer (2 years)**
Dr. Timothy Claypole, University of Wales-Swansea

**For 4 Directors’ Positions (3 years)**
Leigh Kimmelman, Group InfoTech
Dr. Sam Ingram, Clemson University
Bernard Pineaux, EFPG (France)
Bjorn Kruse, Linkoping University (Sweden)
Graham Battersby, Flint Ink
Vincent Pinzone, Sandy Alexander

Election packets containing biographies of the candidates and their statements will be mailed to all members in February 2004.

**NOTE FROM EXECUTIVE VICE PRESIDENT**

“As in most organizations the number two guy (For TAGA, the Executive VP) is often the invisible man. It may be especially so where the new President is as dynamic as Bill Ray and the successor as VP, Technical Papers, is as competent as Tony Stanton. Nevertheless, your Executive VP is involved in one major key area for the future of TAGA. Most particularly, we are following up on the initiative highlighted by Bill in the last TAGA Newsletter: TAGA is actively seeking new "partner" organizations with whom we can run combined programs which will attract new members while still serving well our traditional and loyal current members. One of these initiatives is already scheduled: coordinating with IS&T’s archival conference in San Antonio next spring as part of TAGA 2004 ATC. We are also working on a joint program with another “partner” targeted for the Fall 2004. Stay tuned. There’s lots of excitement in TAGA’s future.”

Richard M. Goodman
(RMG Consulting)
ELECTRONIC IMAGING
Dr. Rudolf Hell’s 1957 Vario-Klischograph was the first commercially successful electronic direct-to-plate method of color separation. This was followed next by the Helio-Klischograph for the gravure process, and later by the direct-to-plate litho systems. These devices were the logical outgrowth of the next major technology to influence color reproduction: electronic imaging.

The experimental electronic scanner developments of the late 1930s led to the introduction of the first commercial scanners during the early 1950s. Improved electronic components, more-powerful computers, color monitors, simple-to-use software, lasers, and several related developments subsequently flowed from numerous post-war industrial research and development programs into the printing industry. Electronic imaging ultimately became the most important influence on the color reproduction process since the invention of photography.

The electronic imaging revolution brought speed, repeatability, flexibility of control, and (eventually) lower costs to the color reproduction process. In theory, quality has not improved as a result of electronic imaging; in fact, some would argue that digital images are of lower quality than analog photographic images. Analog images do retain more tonal step information than digital images, but the difference is probably not significant for most applications. In practice, however, today’s average image quality is better than that of the past because the speed, cheapness, and simplicity of electronic refinements (by contrast to laborious photographic or hand correction methods) made it so much more likely that these quality improvements will actually be implemented.

PRINTING QUALITY ADVANCES
The stage-and-etch color adjustment of photoengravings was largely eliminated when the Vario-Klischograph was introduced. The quality advances that flowed from this technology, however, were too late to reverse the shift away from the dominant letterpress color printing process. The excellence of such 1960s magazines as International Photo Technik is difficult to equal, but the cost advantages of litho were too great to ignore.

Tom Morgan’s Litho-Krome company demonstrated, during the late 1940s and early 1950s, that the lithographic process could equal and sometimes surpass the quality levels of the letterpress process. Other lithographic printers proceeded to adopt the improved methods, materials, and equipment that helped combine quality with these processes’ strengths in speed and low cost. Today’s high-fidelity color techniques, in particular, have made the lithographic process nearly equal to yesteryear’s colotype process as the color reproduction quality benchmark.

The direct-to-cylinder Helio-Klischograph did for gravure quality what the Vario-Klischograph did for letterpress. Image ‘naturalness’ was greatly improved without the ‘stage-and-etch’ manual process that was common during the chemical etching era. Today, such gravure-printed magazines as National Geographic are rightly identified as examples of color reproduction excellence.

Significant advances in flexography, screen printing, ink jet and electrophotographic technologies also have raised quality levels of these processes. The vast bulk of printed color reproductions, however, are still produced by lithography and gravure.

PHOTOGRAPHY AND TELEVISION DEVELOPMENTS
Those other two color reproduction processes, photography and television, continue to produce developments that are of importance to the printing industry.

The yellow, magenta, and cyan transfer processes of the 1930s and 1940s, Carbro and Dye Transfer, produced unrivalled color print excellence, but were expensive and somewhat temperamental. This kind of technology was ideal for the quantity production and high quality needs of the Technicolor motion picture system, but a more convenient method was needed before a consumer color print industry would be possible. The subsequent multi-emulsion color coupler Kodacolor system that was introduced in early 1942 addressed this niche market. The colorant-transfer processes continued to serve professional markets until the early 1990s, when the Dye Transfer process was discontinued by Eastman Kodak.

The tri-pack color coupler systems produced high quality color transparency products and good quality reflection prints. The prints displaced black & white prints at the consumer level during the 1965-1975 period.
These developments in color photography led to the almost complete replacement of artists’ originals by photographs as starting points in the photomechanical color reproduction process. This meant that the instruction “match the original” became somewhat irrelevant when 35mm transparencies were supplied as “originals”. The size, saturation, and density differences between small format transparency originals and the printed image, made the reproduction process much less objective than was the case in the days of same size, within gamut, reflective artwork.

The experimental successive red, green and blue images that formed the basis of color television systems in the early 1950s was quickly displaced by the RGB mosaic structure that is today’s standard. In 1970 Hazeltine Corporation, a television technology pioneer, teamed with duPont to adapt color television technology to the color previewer needs of the printing industry. Today’s color quality is subsequently refined and often approved on the basis of color monitor displays that evolved from these early efforts.

HOME-MEDE COLOR REPRODUCTIONS

In the past, keen amateurs made color separations, dye- or pigment-transfer prints, and other kinds of photographic images in home darkrooms. These efforts required considerable knowledge and skill, elaborate facilities, and substantial expense. For the dedicated few, the pleasures of homemade color reproductions outweighed these drawbacks.

Nowadays, chemical-free, monitor-guided, room light-working color separation and reproduction systems are within the reach of nearly everyone. Ordinary bookstores carry many titles that cover aspects of color imaging. Color scanners and increasingly high-resolution digital cameras are sold in inexpensive consumer versions. Imaging software is available in simple-to-use applications, and high-fidelity six-color desktop printers are modestly priced.

Typesetting and color separation were once tasks that required five-year apprenticeships and much practice in order to produce skilled practitioners of those crafts. The 1985-1995 computer-based revolution changed the nature of those activities forever.

Typesetting and color separation production shifted from high-end proprietary systems and skilled operators, towards desktop systems and software packages that brought these exacting tasks within the reach of the “keen amateur”. Of course, the demands of the high quality end of the market still required the expert judgment of the skilled practitioner, but much routine work can be well-handled by those who would be classed as relative novices by yesteryear’s standards.

We have come the full circle. Color reproduction has changed from a small-scale photographic- or manual-craft operation practiced by individuals, through to the expensive-equipment and large-industrial enterprise stages, and now back to being a small scale electronic-craft operation that may be once again practiced by individuals.

The technology of successive colorant transfer to a substrate has also come the full circle. The tri-pack chemistry-based color photography systems are in decline as ink jet and thermal dye transfer methods of making color prints grow in popularity. Little distinction was made between photographic and printing processes during the early days of color reproduction, and little separates today’s ink jet and electrophotographic printing and photography systems.

COLOR REPRODUCTION PRODUCTION ECONOMICS AND SKILLS

 Millions of home-based or “on demand” color reproduction services can satisfy short-run needs, but when millions of a given color reproduction are required the services of a large-scale industrial plant are essential. The run length dividing lines between these extremes (and the intermediate stages) are based largely upon economic factors. Production time and quality factors also will influence the choice of one method or service over another.

Three hundred years ago, J.C. Le Blon had to master the hand-engraved mezzotint image creation process, select a suitable set of pigments, superimpose inked images in register and, most important of all, know how to combine primary color values to achieve the desired technical fidelity and aesthetic values in the reproduction. Today’s practitioners of the color reproduction craft still need judgment skills, but the technology provides much of the predictability, repeatability, and flexibility that has now finally made it possible to produce high quality color reproductions of any quantity at low cost.

FOR FURTHER INFORMATION


ABOUT THE AUTHOR

Gary G. Field is an Imaging Scientist and Professor at the California Polytechnic State University.
Amplitude modulated (AM), or halftone, screens place varying sized dots in a random pattern to simulate a continuous tone image. This paper compares AM and FM screens on the same press sheets from the same set of plates. The AM screens were produced using standard RIP settings on an AGFA ProSet 9550 Imagesetter, while the FM screens were produced using the “diffusion dither” option in Photoshop prior to sending to the RIP. In order to achieve a meaningful comparison of images printed by the different screening methods, we developed a set of cutback curves for the black ink to obtain “zero” Tone Value Increase (dot gain) on press for each screening method. These curves were then applied to all four colors in the 4-color press run. Colorimetric measurements showed good agreement between the two screening methods. Dot fidelity analysis showed that viable dots were obtained with either screening method, but that significant Tone Value Increase occurred from film to plate and from plate to press with either screening method.

THE LEVERAGE OF GRAY BALANCE IN CONTROLLING PERCEPTUAL AND QUANTITATIVE COLORIMETRY

Paul D. Fleming – Western Michigan University; Holly Jewell – Ronningen-Petter; Aniruddha D. Khandekar – Omnova Solutions

The importance of monitoring and controlling the grayscale component of an image is demonstrated with two examples. One involves closed loop empirical color management, using a standard IT8.7/2 scanner target scanned and printed on a desktop ink jet printer. We show that a good color match can be obtained by working solely with the grayscale component of the image. The other example involves using a scanner profile to scan an IT8.7/2 target directly into CIELab. We show that the agreement between the measured original and the values in the scanned file is significantly improved by adjusting only the grayscale component of the target. These two examples, one without formal ICC color management and one with an ICC input profile for the scanner, show why controlling gray balance should be centermost in profiling any device, input, display or output.

THE CHARACTERIZATION OF WATER-BASED GRAVURE INK ON COATED PAPER-RELATIONSHIP BETWEEN THE DISTRIBUTION OF INK AND PRINTABILITY

Yasushi Ozaki and Michiharu Uchida – Research Institute, National Printing Bureau, Japan

The characterization of water-based gravure ink on coated paper was studied. The gravure prints on some kinds of coated paper were estimated using EPMA (electron-probe micro analysis), ESCA (electron spectroscopy for chemical analysis) and TOF-SIMS (time of flight type secondary ion mass spectrometry). In the EPMA experiments, the copper element of ink pigment was mapped with CuKα X-ray. It was found that the pigment contents in pore parts on the coated paper were high. This shows that gravure ink was pushed in the large pores by printing pressure. The amount of the exposed pigments on the printing surface was obtained with the relative intensity (Cu/Co) by ESCA. The print gloss was not affected by exposure of pigments, although the roughness on the printing surface was correlated to print gloss. In TOF-SIMS experiments, the distribution of ink vehicle on an extremely thin layer (<1nm) was monitored with the fragment ion (135amu:C9H11O+) originating from the ink vehicle. It was found that the distribution of the vehicle was different from that of pigment and the vehicle spread wider than the pigment.
CLEMSON/TAGA STUDENT CHAPTER

Another year is well underway for Clemson TAGA. We are busy with the early stages of our 2004 journal and the planning of our fall fundraiser, TAGApalooza. TAGApalooza is an outdoor gathering open to all who want to come. Dr. Ingram will be fixing his famous bar-b-que while bands from the Clemson area play live. TAGApalooza takes place on the shores of Lake Hartwell near Seneca, SC. It has been a success in the past, and we look forward to showing everyone a good time again this year.

In the meantime Clemson TAGA is growing. Our PR director, Beth Hedrick, and other TAGA student members spent a week extolling the benefits of TAGA membership to their fellow graphics students. Thanks to the membership drive, Clemson TAGA is bigger than ever.

Last year’s journal continues to gather acclaim from the corrugated packaging industry. The box from our 2003 chapter publication, TAGA Cityscapes, won 2nd place in the ICPF’s Student Winners Run-Off. Eric Stone and Kevin Bourquin presented the box to a panel of judges at the annual ICPF event. The competition was part of a teleconference, beamed live via satellite. Many schools participated in the teleconference. In addition to Clemson University and California Polytechnic State University, Indiana State University, University of Wisconsin Stout, Michigan State University, Mohawk College Canada and University of Florida Gainesville all took part in the teleconference.

The TAGA Cityscapes box lost to the Clemson Basketball Trash Can, which was presented by Jordan Weinbrenner, Ryan Denman, and Clemson TAGA member Kris Breedlove. The TAGA Cityscapes box did place ahead of the Fund-Raiser Carrier/Display/Shipper design that took first place in the AICC Design to a Problem category. The Fund-Raiser design was presented by Alejandro Coatu of California Polytechnic State University.

Many TAGA members attended the recent dedication of the Clemson University Printing and Converting Research Center’s new Martin NT Flexo Rotary Die Cutter. The donation of the new Martin sheet-fed corrugated press was thanks to the work of the ICPF, Bobst Group, Georgia Pacific, Pamarco Global Graphics, J.B. Machinery, Oxy-Dry Corporation, Geo. Martin Company, BCM Inks, Systec Corporation, Sun Automation, Peripheral Advanced Design Inc, and Nassau Printing Machinery. The Martin NT means more opportunities and capabilities for Clemson TAGA members and graphics students alike.

The Martin NT dedication capped off the week long Color and Color Measurement Symposium that featured TAGA members in a Q&A with a panel of industry representatives. Issues like how to keep color management affective, extended gamuts, cost of color management, and remote proofing were brought up by the Clemson TAGA members.

Past and present Clemson TAGA members attended the Clemson University Intern Employer Day on October 7. This semianual event gave TAGA members a chance to catch up with TAGA graduates and former employers. It also gave companies throughout the graphics industry access to Clemson TAGA members for internships or jobs.

Work continues on our new website. We have taken photos and need to collect information on all our new members so we can finalize our membership page. Pictures and movies will document the printing of our fundraiser shirts so the media section of the website has some content. The site should be up in early November.

I hope everyone else is keeping busy and having fun. We will see you in San Antonio next spring.

Submitted by Nathan Krieg, President, TAGA/Clemson University Student Chapter. (kriegn@clemson.edu).

UNIVERSITY OF WISCONSIN-STOUT/TAGA STUDENT CHAPTER

The UW-Stout /TAGA chapter has been fully underway with getting things in order for our publication as well as planning for the conference. To this year’s delight we welcome a few new faces but still have a strong force with our returning members. As of the moment our group is focusing on our research papers and indulging in some lucrative studies. In our efforts to write, we are simultaneously creating and finalizing the design of our publication, so we can get off to a smooth run this year. All in all, we have a strong base for an excellent year and are looking forward to the conference.

Submitted by Meg Hart, Secretary UW-Stout TAGA Student Chapter
RIT/TAGA STUDENT CHAPTER

Here we are, at the beginning of another year. I am sitting here trying to think of what to say. There is so much that is going through my head. I am so excited about this year, I just do not know where to start. Last year was my first year in TAGA and it was a quite a memorable one. I can only hope that this year will at least equal last year’s excitement. We have probably one of the largest groups of returning contributors in recent RIT chapter history, at 6 strong. Their experience along with the new ideas of the other 15+ members has been a great advantage.

We have had a few meeting to discuss the aspects of the student chapter and of the project. The e-board and committees will be filled in the coming weeks. We have already begun throwing ideas around to see what sticks to the wall. As the brainstorming of a theme of the publication begins, so does the all important fundraising for travel and production.

As a means of fundraising, we decided to finish our “Little Black Book” project from last year. The pocket graphic arts glossary will be used by students in the School of Print Media for supplementary information for their classes. Another idea we have is to create portfolio postcards for photo and design students. Some of the initial feedback about the idea has been very positive.

I am very excited about this year’s journal and conference. We all had such a good time in Montreal in meeting people and presenting our journal. I personally cannot wait for San Antonio. When else will most of us have a chance to go to Texas and present a publication that we put so much time and effort into? See everyone in April.

Submitted by Kevin Fay, President, RIT/TAGA Chapter (Kmf2731@rit.edu).

TAGA-STUDENTS E-FORUM

Recently a new TAGA E-Forum was established to facilitate more efficient communications among the TAGA Student Chapters. The forum is open to all student chapter members and to all studying in the Graphic Arts. This e-forum can be particularly useful to those working on the new joint chapter projects.

To join, go to www.davesforums.com, which is a PrintPlanet site for E-Community forum incubation, and follow the directions.

STUDENT COMPETITIONS ANNOUNCED FOR TAGA 2004 SAN ANTONIO

For the latest fliers containing the details on the competitions recently announced for the 2004 ATC, go to www.taga.org/education/complete.html.

SAVE THE DATES

TAGA ’05 TORONTO
MARRIOTT EATON CENTRE HOTEL
APRIL 17-20, 2005
2003 TAGA TECHNOLOGY PATRONS

Membership Level Criteria:
Contributions with total value
of $5,000 or more in
goods/services/cash
to TAGA in 2002–03
BF&D/Favat & Associates
Group InfoTech
Printable Technologies Inc.
Quebec Institute of Graphic Communications (QIGC)

2003 TAGA CORPORATE SPONSORS

Membership Level Criteria:
Annual member dues of $1,000
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Baldwin Technology Co., Inc.
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Enovation, A Fujifilm Company
Group InfoTech, Inc.
Hallmark Cards, Inc.
Heidelberg Web Systems
INX International Ink Co., Inc.
Kodak Polychrome Graphics
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Sun Chemical Corp.
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To sign up, send an e-mail to TAGAOfc@aol.com.

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