

The ChromaZone

Munsell Color Science Laboratory's Newsletter

Fall 1999

New CIE Division 8: Image Technology

The CIE recently formed Division 8: Image Technology. The terms of reference of this division are to study procedures and prepare guides and standards for the optical, visual and metrological aspects of the communication, processing, and reproduction of images, using all types of analog and digital devices, storage media and imaging media.

As MCSL has a long history of color imaging research, we are very excited about this new CIE division and have already taken an active role in several of its technical committees. The newly formed committees are:
TC8-01: Colour Appearance Modeling for Colour Management Applications
TC8-02: Colour Difference Evaluation in Images

TC8-03: Gamut Mapping
TC8-04: Adaptation Under Mixed Illumination Conditions
TC8-05: Communication of Colour Information

Be on the lookout for forthcoming results from CIE Division 8. More information can be obtained from <www.colour.org>.

A Cool But Sunny Day at Our Fall Picnic



Mark Fairchild, Nick and Dave Wyble coming back from a walk.



Visiting Scientist from Epson, Hiro Kasahara and wife, Kaori.



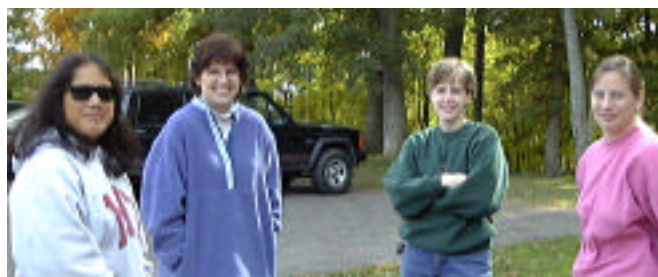
Arturo Aguirre talks with Sharron Henley and Mitch Rosen.



Gus Braun and Alexei Krasnoselski examine beer label.



Colleen Desimone with her 9mth. old daughter, Nicole.



Alma Rosen, Patty Wyble, Karen Braun and Lisa Reniff.

Summer at Xerox Color Products Support Area

Having completed my first year of the MS color science program, I decided to spend a relaxing three months back home (England) taking things easy while earning a bit of money, well that's what I thought. My short break at Spanish Island of Grand Canary was full of sun, sea and sangria, and it gave me the time I needed to unwind before embarking on my three-month stretch at Xerox. Arriving back home, with my mind focused on a working life, I was starting to have second thoughts, and yes, it was raining.

My role at Xerox was color products support analyst in the customer support centre in Welwyn Garden City, 20 miles north of London. It was a role that I knew well after having completed a year at Xerox doing the same job before coming to the States. The centre handles between six and seven thousand calls from UK customers alone but also handles technical support for European and Australasian countries. The goal is for first level support to offer immediate

assistance over the phone with the aim of immediately resolving 20% of customer problems. Where telephone assistance is not successful, the customer receives a visit from a field analyst, at this stage it is expected that 95% of all problems will be resolved. The remaining 5% of the problems are then passed on to the likes of me to what is known as second level support. Within a lab, it is then up to me to try and mirror the exact working environment of the customer and try to replicate the problem; once found, it is of course necessary to try and provide a solution. The problems can be anything and everything ranging from errors with custom paper sizes or problems with Pantone colors not printing correctly to network problems or inconsistent color output. In general, it is found that most of the problems reaching the lab tend to be bugs in the systems that need a software fix be it a firmware patch, a new driver or PPD but in a few instances it is a simple case of user error which can be rectified quite easily.

Although working for Xerox for the summer was fun and the experience has been good, I could not say that this was a type of job that I would wish to do on a full time basis. With customer support when it comes to dealing with problems day in day out, there tends to always be a negative focus on the job, which can sometimes get you down. Additionally, I would prefer to put into practice more of the ideas and concepts that I have learned in my color science courses, an opportunity I felt I did not have with this particular position. But on a positive note, I have further broadened my insight into the whole of a prepress environment and have learned more about color related problems real customer are facing.

My final week in England was spent lazing around in my home city of Canterbury with just enough time to relax before the hard work starts all over again.

Sharron Henley, MS Color Candidate

Roy's on Sabbatical at National Gallery of Art

Beginning September, I will be an Andrew W. Mellon Visiting Fellow in Art Conservation at the National Gallery, Washington, DC. I will be located in the conservation department, hopefully, close to the painting conservation laboratory. I have two main goals. The first is to learn about conservation science and look for new research opportunities for our graduate students. The second is to return to the laboratory and perform some research.

There are two research projects I will be working on. The first originates at the National Gallery. Apparently, synthetic varnishes used for painting restoration have different optical properties than natural varnishes. Specifically, because of differences such as molecular weight and surface tension, they have different leveling capabilities. A smooth surface directs the first surface reflection into specular gloss. With a decrease in leveling, the specular reflection becomes more diffuse. I will develop experimental tech-

niques to quantify these effects. I will use conventional spectrophotometry, glossimetry, and goniospectrophotometry. I will also use image analysis techniques such as used to evaluate image quality like those visual parameters of sharpness and graininess and physical metrics based on modulation transfer function measurements. I will use a digital camera and image processing software. The experiments will be performed on test targets I will design and on paintings. The paintings will be treated by conservators and I will perform the physical testing.

The second research project is a statistical analysis of painting spectral reflectance spectra as a non-destructive analytical technique to estimate the colorants used in a painting. This estimation will predict the current spectral properties of the painting. I will be implementing the techniques developed by Di-Yuan Tzeng, my recent doctoral graduate in imaging science. For example, Monet used five chromatic pigments: cadmium yellow,

vermilion, red lake, cobalt blue, and emerald green. It would be interesting to see whether our techniques predict five colorants and how similar are their spectra to modern pigments. One application of this technique is for restorative inpainting. If the goal was to inpaint such that observers were unaware of the restoration, the pigments used by the conservator should be nonmetameric. The statistical estimation can be used to select colorants that lead to minimal metamerism. The second application is as input for our spectral image acquisition techniques. Dr. Francisco Imai, my postdoctoral fellow, has been developing methods for spectral estimation of images that require a priori spectral analyses. I hope to test this on paintings from the National Gallery.

I plan to be away from RIT for about one year. I will still be using my RIT email address, the best way to contact me.