Conclusions

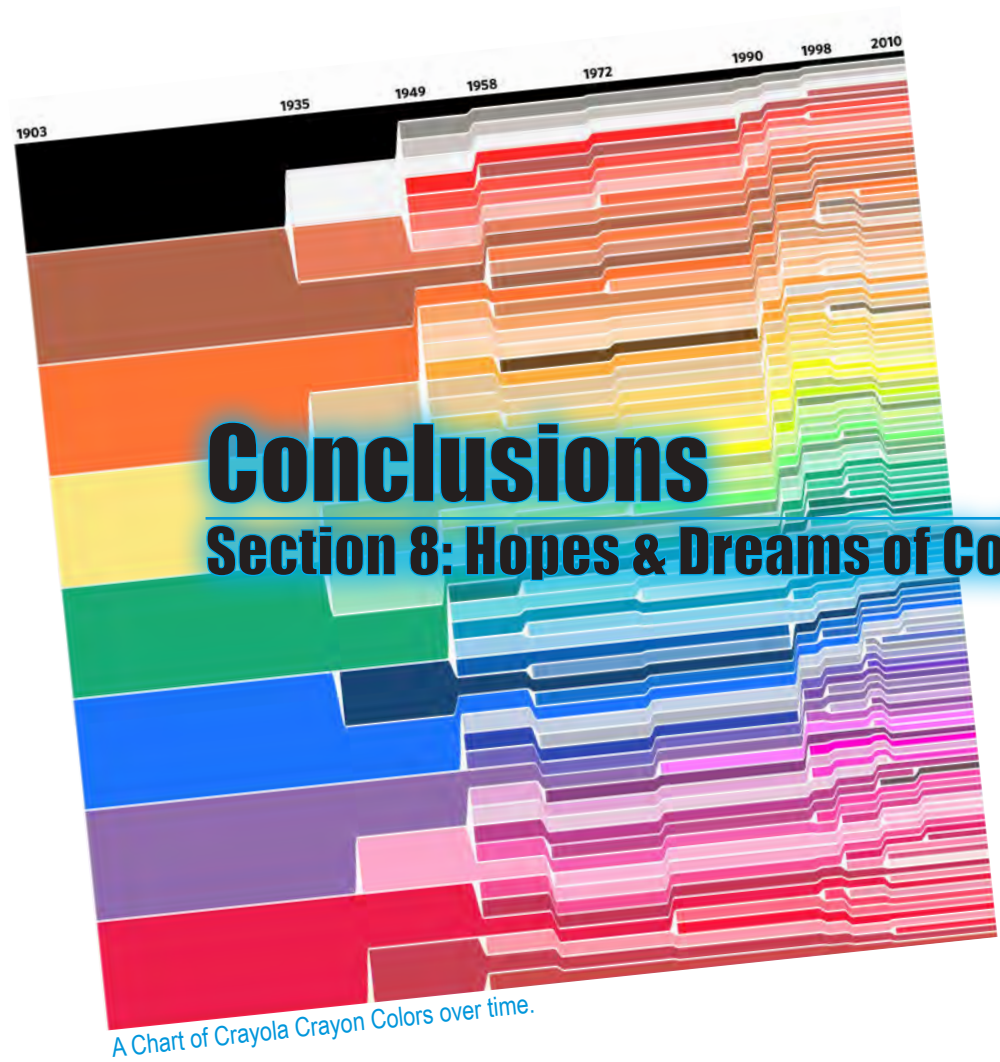**Section 8: Hopes & Dreams of Color Management**

A Chart of Crayola Crayon Colors over time.

Color Management Concepts

Color Management Dreams:

Conclusions: The Hopes and Realization of What Color Science will Bring in the Near Future…

Better consensus on how the handle color across multiple devices and processes

The Color workflows of many companies are limited to certain departments or processes. Many industries and advertising agencies still do not understand that color can be easily quantified and communicated to their vendors and ICC profiles in digital workflows are still often ignored or not implemented correctly. Color Profiling needs to be easily moved from file formats to physical viewing without having to jump through so many hoops to get there. Device link profiles should be more easily implemented across the color chain and viewing hardware should be held to stricter compliance for sRGB or Broadcast Viewing standards. Printing standards are well documented with their viewing standards, but most graphics programs do a poor job of helping set this up.

Color Standards that are actually implemented

Color Standards exist in many industries, but I would like to see better standardization in communicating color. Every paint manufacturer, cosmetics manufacturer, paper manufacture and textiles manufacturer has their own way of describing, naming and communicating color to the public. We can agree that in the textile industry, some work has been done to label colors like Navy Blue, Red, Orange and White, and the public generally understands the tolerances of these names, but more needs to be done to have better consistency and communication throughout those industries. I would also like to see ICC profiles and color management built into all programs so that color data can be more consistent no matter what program your working in. CMM's at the OS level could be implemented in a standardized way.

Devices that use more colors that the human eye can see

Digital Cameras and Color Spectrometers can see colors beyond human perception. Parts of the infrared and ultraviolet spectrum are captured by many types of photometers and this information is often selectively lost or utilized in ways that are not well understood to the end users. Options should exist to possibly map the spectral data into the visible range. Much the same idea as in the Predator movies, spectral information beyond our normal perception should be readily available if called on.

Better, more efficient lighting, and color displays

LED technology has replaced CRTs in todays world. However, the older CRT technology had a larger color gamut and could display many color more vividly than consumer brand LED Televisions. With the continued research and improvements in LEDs, I would expect to see greater color ability in monitors and cheaper price points. OLEDs promise to have a better viewing experience, and they seem to be right around the corner. What the future will bring is hard to know, but holographic and 3D displays are already in development for consumer markets. New Laser lighting and new plasma based lighting systems could increase the color gamuts of computers and other viewing displays as well. In all lighting and display industries, sustainability and energy compliance will be big factors in where the next technologies go. Also, there is the concept of direct computerized data to the human mind. I wonder how, and if, color science will aid in the realism of these type of visual input or if the mind will simply fill in the experience.

Easier ways to communicate color needs that translate into Pigments and Dyes

The ISO has developed standards for communicating color, but they are not easily communicated in a human way. Mathematical documentation exists to convert between the color gamut models and it has been optimized over several revisions. In the United States, Delta E* Standards have helped to communicated color and the tolerances across devices, but the rest of the world is not always communicating color in this way. It has been 90 years since the "Standard Observer" definition was created by the CIE, and perhaps it is time to add to these experiments on a global reach. I would like to see a set of stable, safe and sustainable pigments that have been developed for the many manufacturing industries be standardized as well, but this would be very difficult to do with patents and intellectual property rights.

Movement into cloud-based solutions…

More Color Systems are moving to cloud based databases so that color-metric data can be shared across companies and the global reach help to ensure color consistency in textiles, building materials and cosmetics already. A truly global brand has to standardize it product line not only in a regional area, but at a global scale as well. With color data available to all the stakeholders, color can be communicated quickly. These color profiles and viewing conditions should be easily implemented into the digital files so that the device viewing color characteristics can be adjusted and verified. Cheaper and easily implement color-photometer hardware exists and this could bridge the gap between software and hardware color workflows at the consumer level.

Color Management Concepts

Executive Actions:

Recommendations Based on Implementing Color Management within your Company:

Its one thing to go and learn from the industry leaders on the latest potentials of Colorimetry technology, but to apply it to in-house processes is the most important step to get the greatest ROI from Color Management Workflows.

- **Ask Question and look at your Final Products:**
  Use your internal employees to mine for color issues and workflow challenges that could be addressed by implementing color standards. Actively review your finished products on retail markets to check for consistency and color management issues.

- **Ask for More Demonstrations:**
  Ask the Departmental Managers if Color Management is an issue and empower them to solve these issues. Have them invite vendors to come in to show how they can solve your companies color management challenges.

- **Integrate Internal Color Workflow Processes:**
  Based on the lessons of the Real Story Consultant Group, integrate your DAM practices out to the CMS, Video and Documentation teams. Implement process governance to streamline the transfer of metadata and IP management across your departments and companies. Leverage the "Single Source of Truth".

- **Staff for Success:**
  You may want to consider hiring a CM Professional or a Color Management Consultant to come in and calibrate the equipment you need for communication color consistently across your organization. Ask them to provide their own recommendations on how to improve and monitor color workflows.

- **Keep New Developments Within Sight:**
  Keep practical and progressive thinking in place by following color management best practices within the proper departments. Delegate internal staff to work together to keep you at the forefront of developing software, hardware and cloud based technologies. Always have a pool of internal knowledge at hand, to handle new business and organic growth opportunities that exist today, and in the near future. Push your current vendors to implement feature requests that fit your business goals and your client needs or invest in new hardware/software to be prepared for the latests color standards.

Thank You

I hope that you found this useful and can apply some of its ideas to your core responsibilities or at least have something completely different to talk about at your next cocktail party.

"The ability to see is unmatched by the other senses"