

Colorimetric Tone Value (CTV)

A Proposed Single-Value Measure for Presswork

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CGATS
July 26, 2005
Grandville, MI

Main Topics

- The **Problem**
- Our **Solution**
- Some **Applications**

The Problem

- New **print standards** use **colorimetry** (e.g. ISO 12647-2)
- **Pressroom** measurements are in **density**



The Problem

- Colorimetric measures such as **Lab** are a **three-value** target.
- Ink levels on the press are only plus/minus adjustments.
 - ◆ No independent hue control
 - ◆ All three values change with an ink level adjustment.
 - ◆ Press operator has no control.

Solution

- **Single-Value** colorimetric measure
 - ◆ Brings colorimetry into the pressroom
 - ◆ **Colorimetrically-based** process control

Potential Measures

■ L Value

- ◆ Could be used for **Black measure**
- ◆ Typical 95 paper-white
15 solid ink
- ◆ **Poor** for **color measure** -
95 paper- white
90 solid yellow



Potential Measures

◆ Chroma

- Useless for black ink
- Anomalies of measure
 - Chroma of a “pure” **magenta** greater than a “dirty” **magenta**



Potential Measures

■ ΔE

◆ Measure ΔE between Paper and the color

- Derived from L^* a^* b^* differences - anomalies of Chroma still present

Colorimetric Tone Value - CTV

- Adapted from $L^* a^* b^*$
- Similar to ΔE but avoids Chroma anomalies
- Visually uniform function

Colorimetric Tone Value - CTV

- CTV is **relative** to **paper white**
- CTV **Measures**
 - ◆ Paper **White** = **CTV 0**
 - ◆ Perfect **Black** = **CTV 100**
 - ◆ **Neutrals** - **CTV = ΔE**
 - ◆ **Magenta SID** = **CTV 40**

CTV In The Pressroom

- Setup **solid ink** levels to **colorimetric** specifications
 - ◆ Single-Value measure derived from colorimetry
- Process control
- Measures **spot or process** color (no filter selection)

Our Proposal

- Investigate options for a single-valued colorimetric measure
- Agree on a good solution
- Add to CGATS.5 as an Annex

Thank You!

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