

artistic intent & common color appearance

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working definitions

artistic intent

color appearance selected by the content creator
by viewing on a selected medium

common color appearance

substantially similar in color appearance when
viewed successively

artistic intent creation

- Content creator chooses the desired color appearance on the medium used for viewing the content
 - Colors outside the gamut of the medium used for viewing cannot be produced and therefore cannot be chosen
 - If the dynamic range or color gamut of the viewing medium were larger (or smaller), it is likely that some different colors would be chosen
 - Typically, artists will make choices that depend on the available dynamic range and color gamut
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artistic intents on multiple media

- When the same content is to be reproduced on multiple media, ideally the content creator will choose the desired color appearance on each medium
 - The fundamental question:
“What color appearance would the content creator choose for each medium?”
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when is maintaining color appearance enough?

- When the media and/or viewing conditions are similar enough so the artistic intent chosen for each reproduction medium has approximately the same color appearance
 - similar media white color
 - similar above diffuse white headroom
 - similarly shaped and sized color gamuts
 - black points within a factor of 2
 - with black point compensation
 - similar viewing conditions
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cross-media color re-rendering

starting with a desired color appearance on a first medium and creating a second desired color appearance on a second medium

- If the media have significantly different capabilities the second color appearance is likely to be different from the first
 - Color re-rendering is fundamentally an artistic choice
 - In some cases color re-rendering can be programmed
 - color re-rendering instructions are provided as metadata
 - typical artistic preferences are programmed using simple algorithms like white and black point scaling, or simple gamut mapping
 - viewing condition differences may be addressable using color appearance models (e.g. chromatic adaptation)
 - in some use cases it may not be necessary to exactly predict what the content creator would have chosen on the second medium
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conclusions

- Content creators do not always understand the degree to which their creative choices are affected by the viewing medium
 - they can't see the colors they can't choose
 - Content creators may ask for a “common color appearance” across media when in fact they want their desired artistic intent on each medium
 - Only “relatively small” differences in media capabilities can be addressed algorithmically
 - “relatively small” depends on the creator and recipient
 - Metadata can be used to communicate larger desired cross-media color appearance differences
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