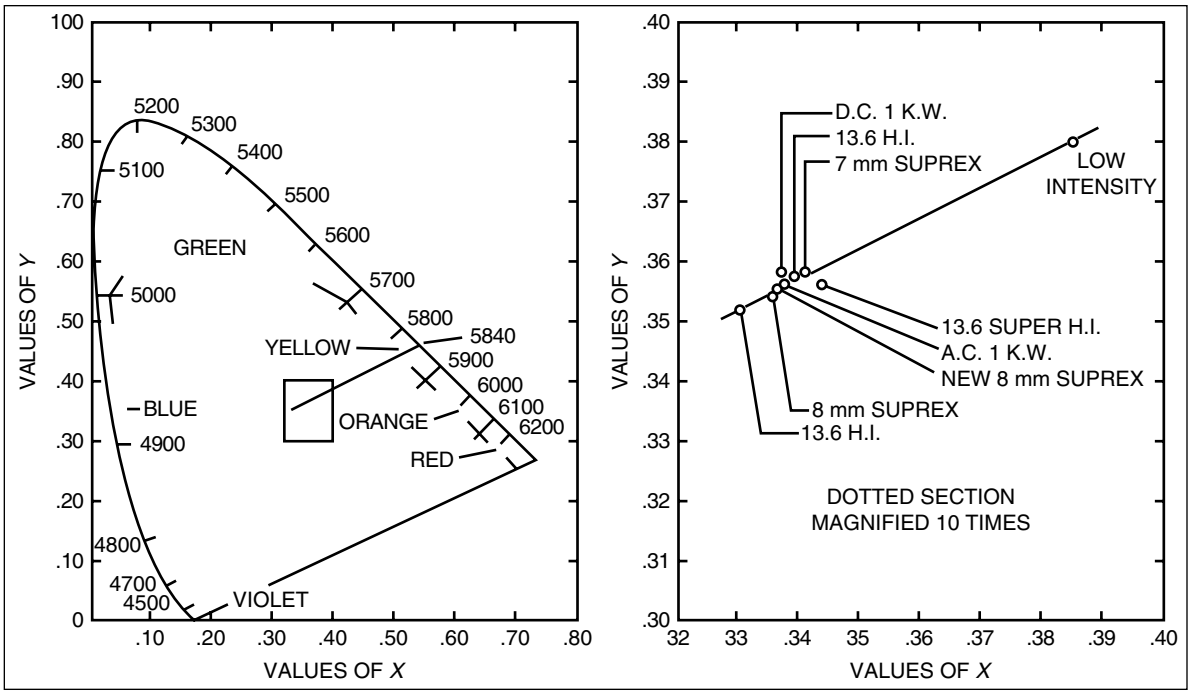

Chromaticity diagram shows ICI color coordinates of various lamp and carbon combinations. The right-hand figure shows a tenfold enlargement of the indicated portion of the left-hand figure. (**Fig. 2** from *JSMPE*, March 1942, p. 222.)

many respects those of the automobile industry, but have by no means kept pace with them. It was only with the standardization of parts, and with the adoption of a standard method of measurements and specifications, that the automobile industry was able to reach the development that it has today…One of the first things to put in order out of the chaos of filmdom is a comprehensive and comprehensible list of specifications by which a camera may be described. No manufacturer of automobiles would think of issuing a catalog describing his car without including a full and detailed list of specifications. Yet none of the camera manufacturers have seemed to think this necessary." For the full article, see: http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=7308225.

EXCLUSIVE ARTICLE ONLINE: ABSTRACT

For expanded coverage of this month's topic on "Perception," the following article is available only in the Digital Edition of this issue. Visit the SMPTE digital library at http://journal.smpte.org to access the issue and to read this paper.

The Resolution Revolution: How Many Bits Do We Really Need?

By William Cooper and Sue Farrell

As technology develops, the resolution of audiovisual reproduction is rising rapidly in every dimension in the quest for increasing quality and fidelity. Technical standards previously considered sufficient to reproduce sounds and images in the digital domain may no longer be adequate. Image resolution is increasing, but even 4K frames are only eight megapixels, which is relatively low in photographic terms. Higher resolutions and bit depths may be required. Video frame rates have been sufficient to provide the illusion of continuous movement, but higher frame rates may be beneficial. This paper challenges conventional wisdom on the resolutions required to reproduce convincing audiovisual representations. It proposes that digital compression may be used to allow increased sampling resolution and precision while maintaining practical data rates.