

until September 1:  
52 School Street  
Chatham, Mass. 02633  
August 12, 1976

Mr. Rolf Kuehni  
Verona Dyestuff Division  
Mobay Chemical Corporation  
Union, New Jersey 07083

Dear Rolf:

I would be pleased to receive from you a proposal along the lines you outlined in your letter of August 6, for transmittal to the US Committee on Colorimetry. If you can let me have this by, say September 10, I will send it to the committee and hope to receive comments from the most-concerned members sufficiently soon so that those who attend the meetings of the Optical Society in Tucson, October 18-22, can discuss the matter.

I enclose a copy of my reply to Mr. Barbrow's letter of August 4. This is for your information. I am sure that your opinion is different and urge you to be frank with Barbrow concerning your own view. Mine is largely conditioned by the desire to accomplish something immediately. I think  $L^* a^* b^*$  formula is the best we can hope to get agreement on at present. Its deficiencies will stimulate further work and early reconsideration. But inclusion of the second formula will discredit the CIE in the field of color-difference specification and will probably result in an indefinite hiatus of interest in the subject.

Sincerely,



David L. MacAdam

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encl.

summer address (until Sept. 1)

52 School Street  
Chatham, MA 02633  
August 12, 1976

Mr. L. E. Barbrow  
National Bureau of Standards  
Washington, D. C. 20234

Dear Lou:

I have your letter of August 4 and the enclosures.

This is to record my opinion that it would be unwise for the CIE to approve the "Recommendations on Uniform Color Spaces, Color-Difference Equations, Metric Color Terms".

I do not agree that the recommendations "represent the best that can be done at the present time". No effort was made to reach agreement on Recommendation 2, alone. I tried to get the committee to consider that possibility. I think that fewer of the Experts would have voted against that than voted against the present proposal. The 1964  $U^* V^* W^*$  formula, of which Recommendation 1 is a revision is not, so far as I can learn, used regularly to compute small color differences in any of the industries listed by Dr. Wyszecki. Small color differences are rarely, if ever, evaluated in the color-television industry, which is the only industry in which Recommendation 1 might be preferred. I believe that Recommendation 2, by itself, would be accepted in all industries much concerned with small color differences.

Dr. Wyszecki seems to be emotionally attached to the  $U^* V^* W^*$  formula, which he devised. Dr. Hunt seems similarly attached to it. His suggestion led to the 1960 adoption of the  $u, v$  diagram, on which  $U^* V^* W^*$  was based; work done under Dr. Hunt's supervision resulted in the revision that characterizes the proposed Recommendation 1. Dr. Hunt used the formula in Recommendation 1 throughout the 1975 edition of his book. Naturally, therefore, he hopes that it will be adopted.

Although the 1960  $u, v$  diagram was taken from my 1937 publication, in 1942 I urged that it not be standardized. I voted against it (as did Miss Nickerson and Dean Farnsworth) when the US Technical Committee was polled on the 1960 recommendation. After a great deal of work getting new experimental data and trying to fit the data with formulas suggested by workers from several countries, I recommended the Friele-based formula mentioned at the end of the first paragraph on p. 4 of the proposed recommendations.

In 1973, in an effort to check the proliferation of formulas, I abandoned the Friele-based formula (although I still consider it the best of any yet proposed). I suggested that the committee agree on a simplified form of the Adams-Nickerson formula, which had gained considerable support in England and Europe. That became the present proposed Recommendation 2. The basis of my suggestion was undermined, however, when a trivial revision of the 1964  $U^* V^* W^*$  formula was slipped into the 1973 recommendation for study. I agreed to that recommendation for study only because I thought the avowed aim "to unify practice" meant that a choice would be made between the two

L. E. Barbrow

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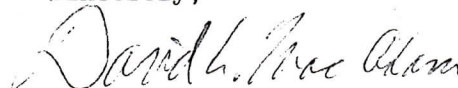
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formulas. In the event, there was no convincing comparison of the two formulas and no choice was made. The failure to choose defeated the avowed aim of the committee.

I do not agree that it is necessary to wait ten years or more to get a single formula for color difference. We can have it now, if Drs. Wyszecki and Hunt will yield as much as I have in the interest of unification of practice".

If the US National Committee approves the proposed recommendation, colorimetry will be saddled with the two discordant formulas for color difference, possibly for decades. Whether a negative vote by the USNC can save the situation may be doubtful. The outcome depends on the votes of other countries, e.g., France, Germany, Belgium and Holland. Serious questions have been raised in all. Together with negative votes by some or all of those, a negative vote by the USNC might force prompt and fundamental reconsideration, and possibly agreement on Recommendation 2 alone (or with Recommendation 3). But if the USNC votes in favor of the recommendation, negative votes by other countries will have little effect.

Sincerely,



David L. MacAdam, Chairman  
CIE, US Technical Committee 1.3

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cc: Committee