A metric to evaluate the closeness of the two colours (Research Plan)

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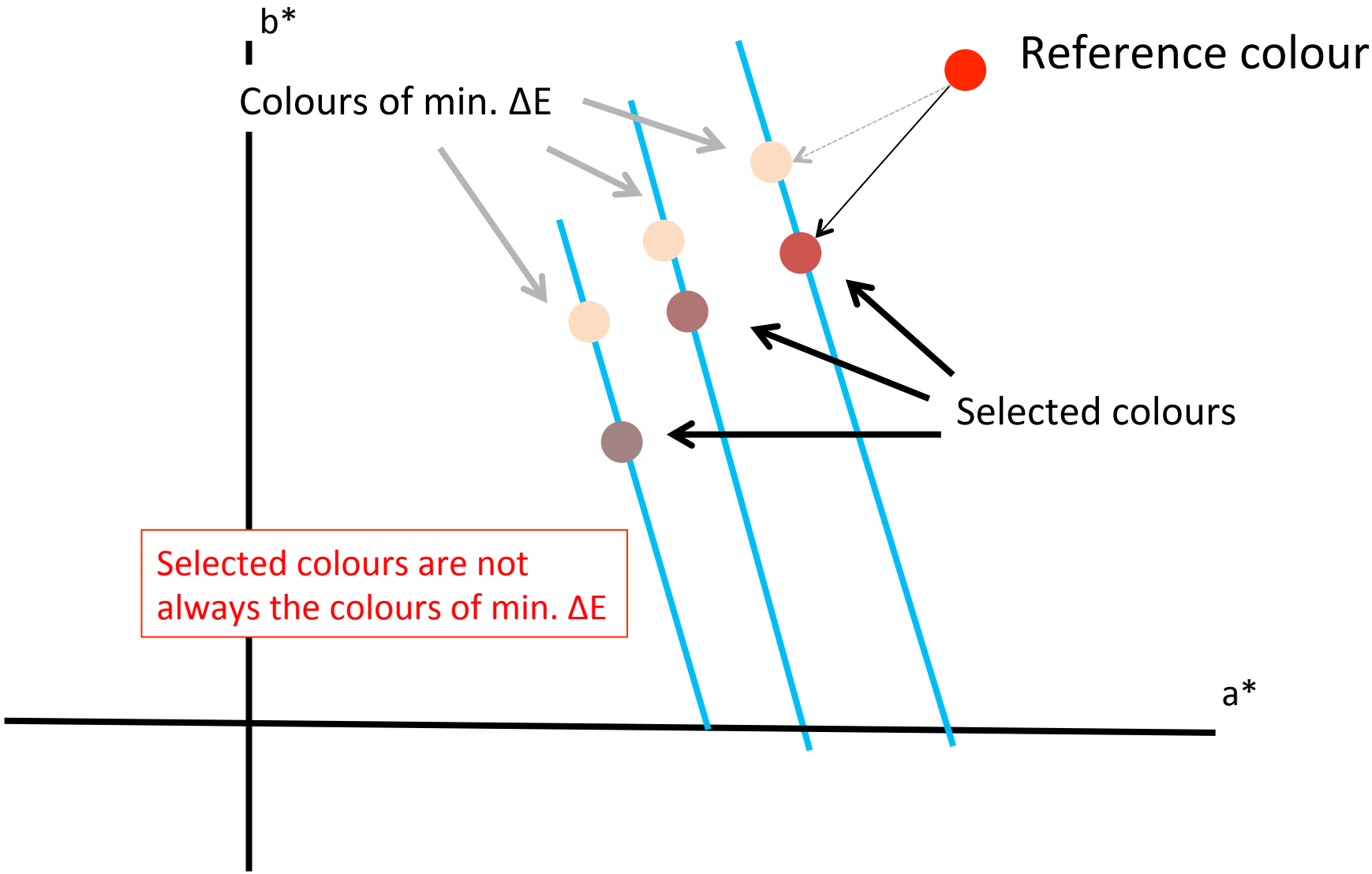
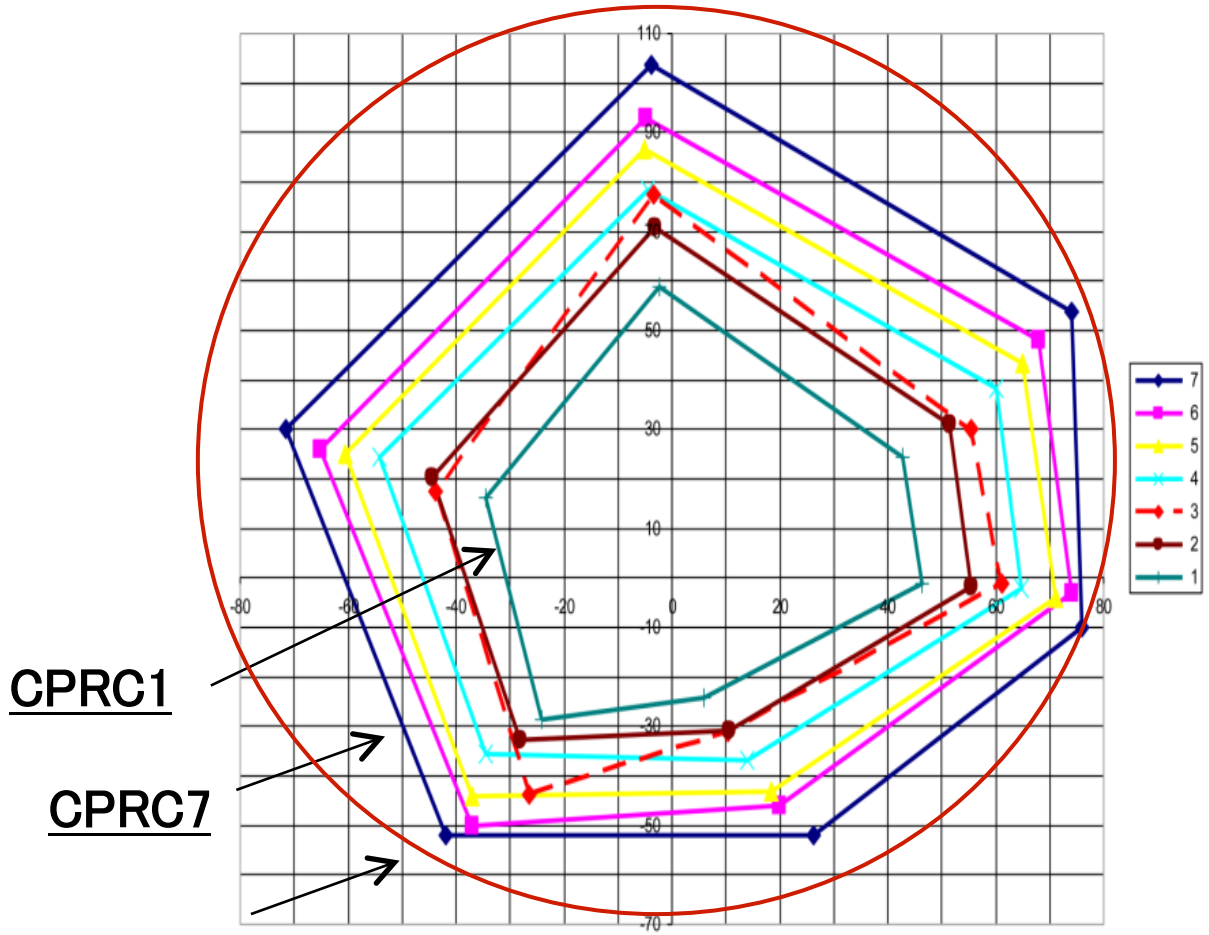
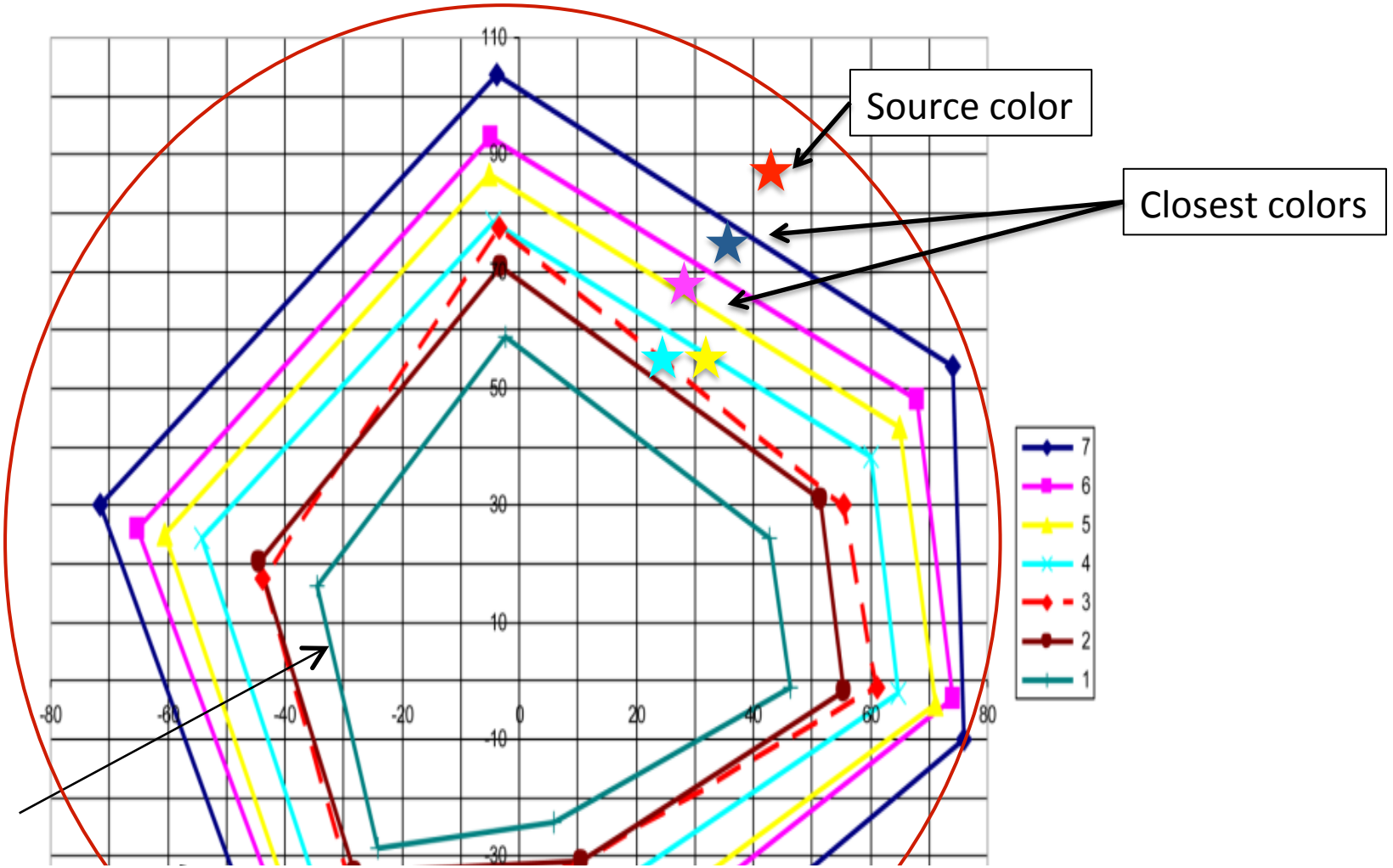
Task: "Find the closest colour on a line (e.g. equal saturation)"



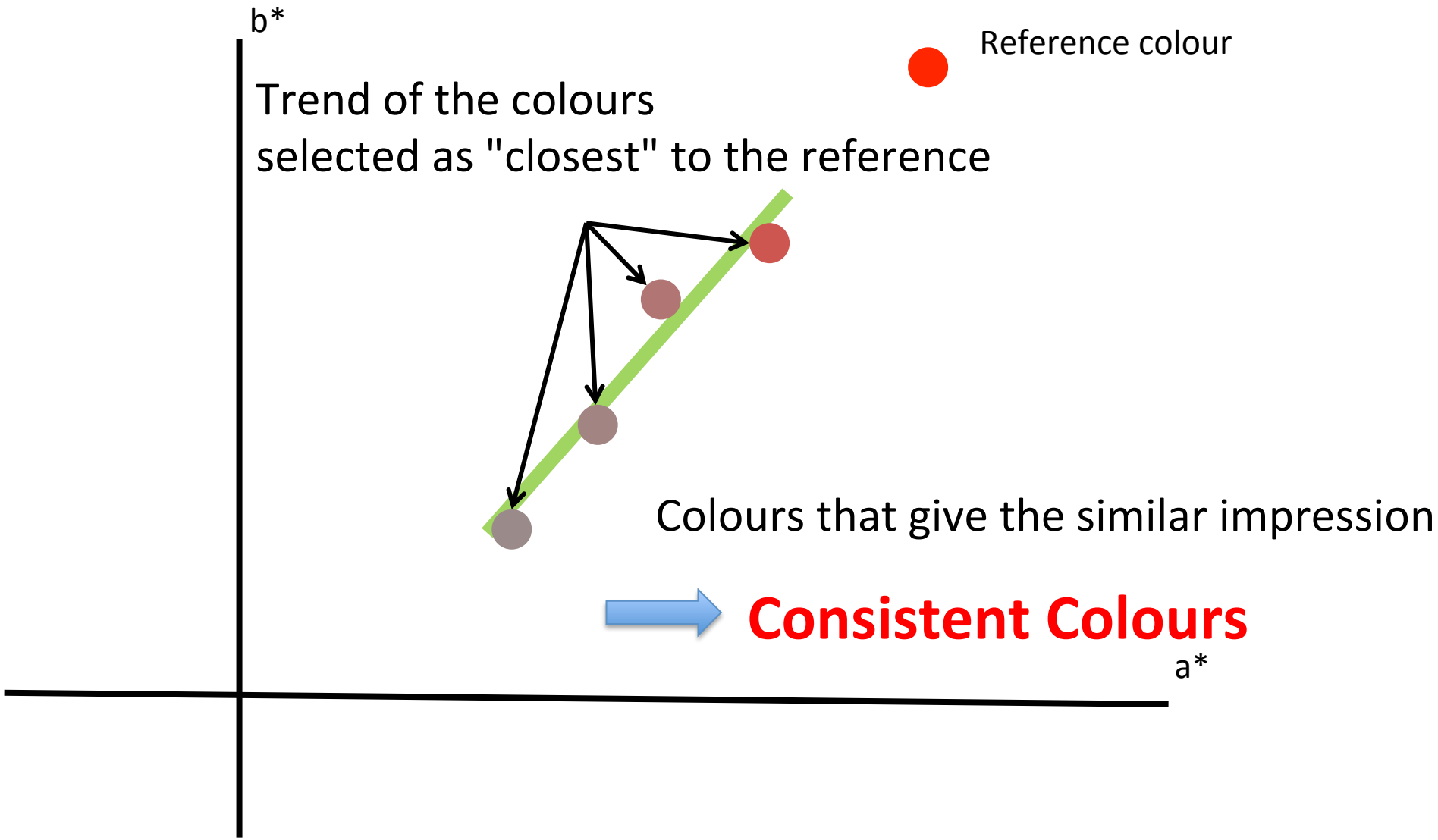
The size of the Color Gamuts are different



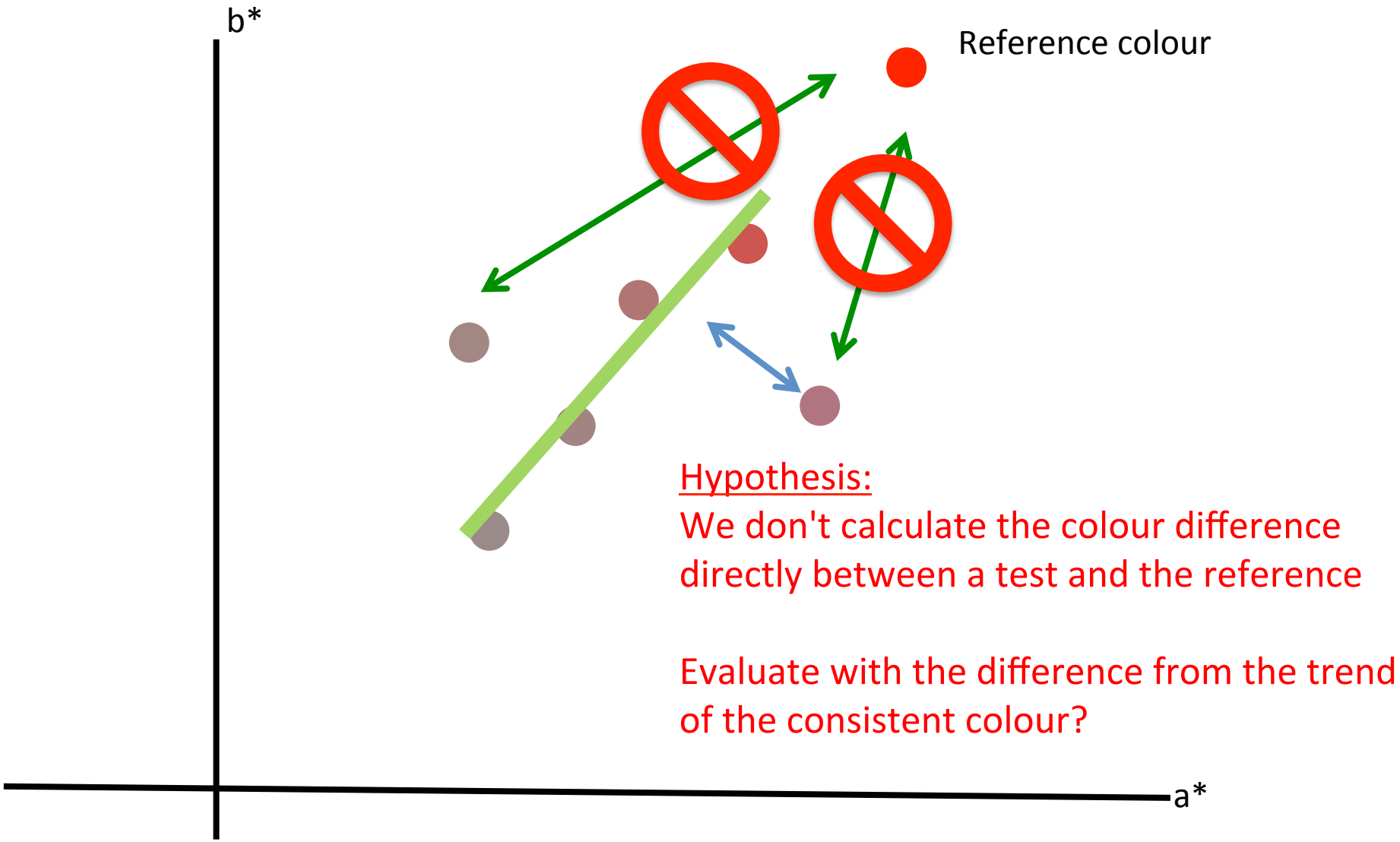
When we would like to map a source color to a color in a given gamut, we need to find the "corresponding" color (= perceptually equal).



After collecting several closest colours of different gamuts:



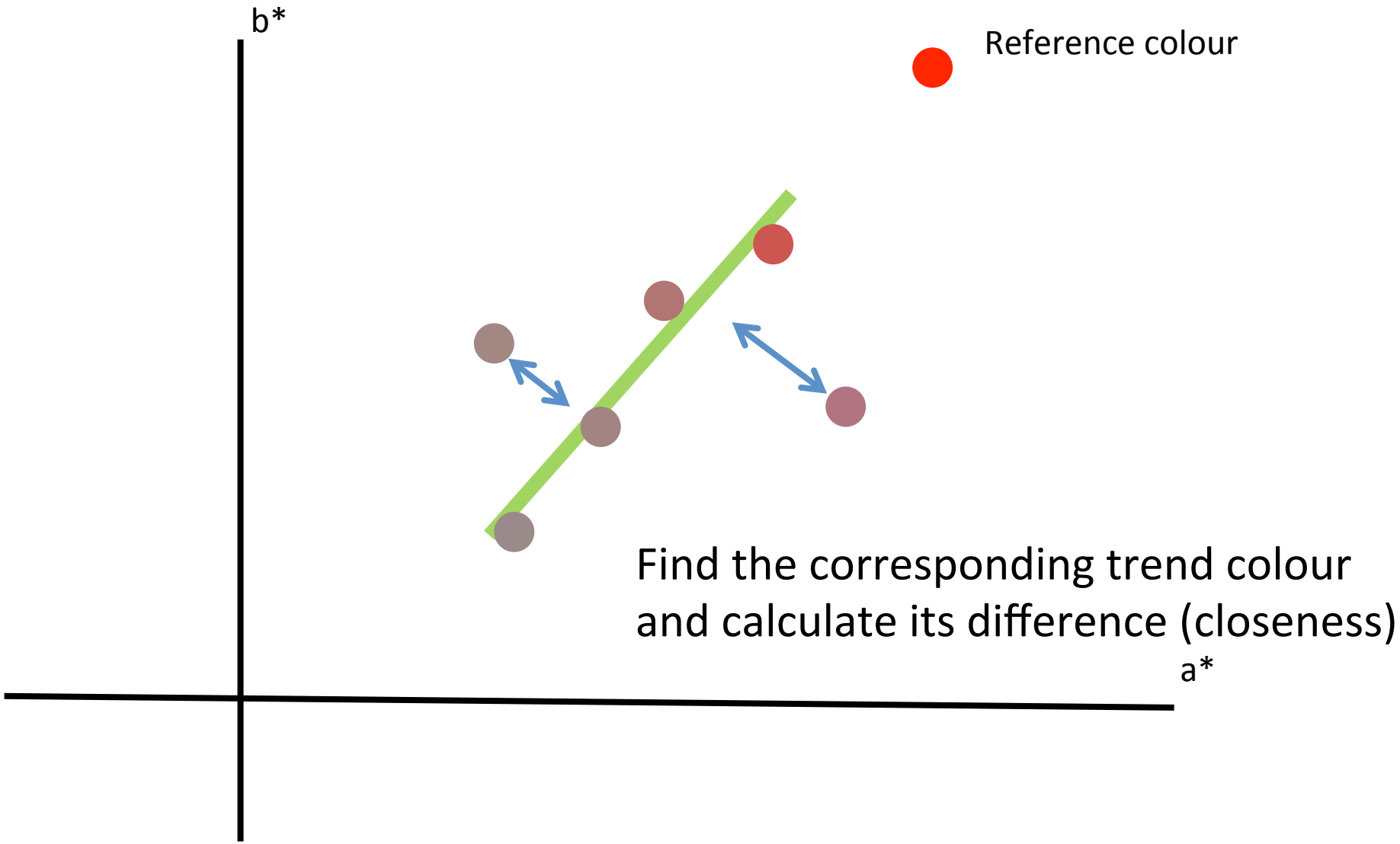
Evaluation of a test colour: "how close to the reference colour"



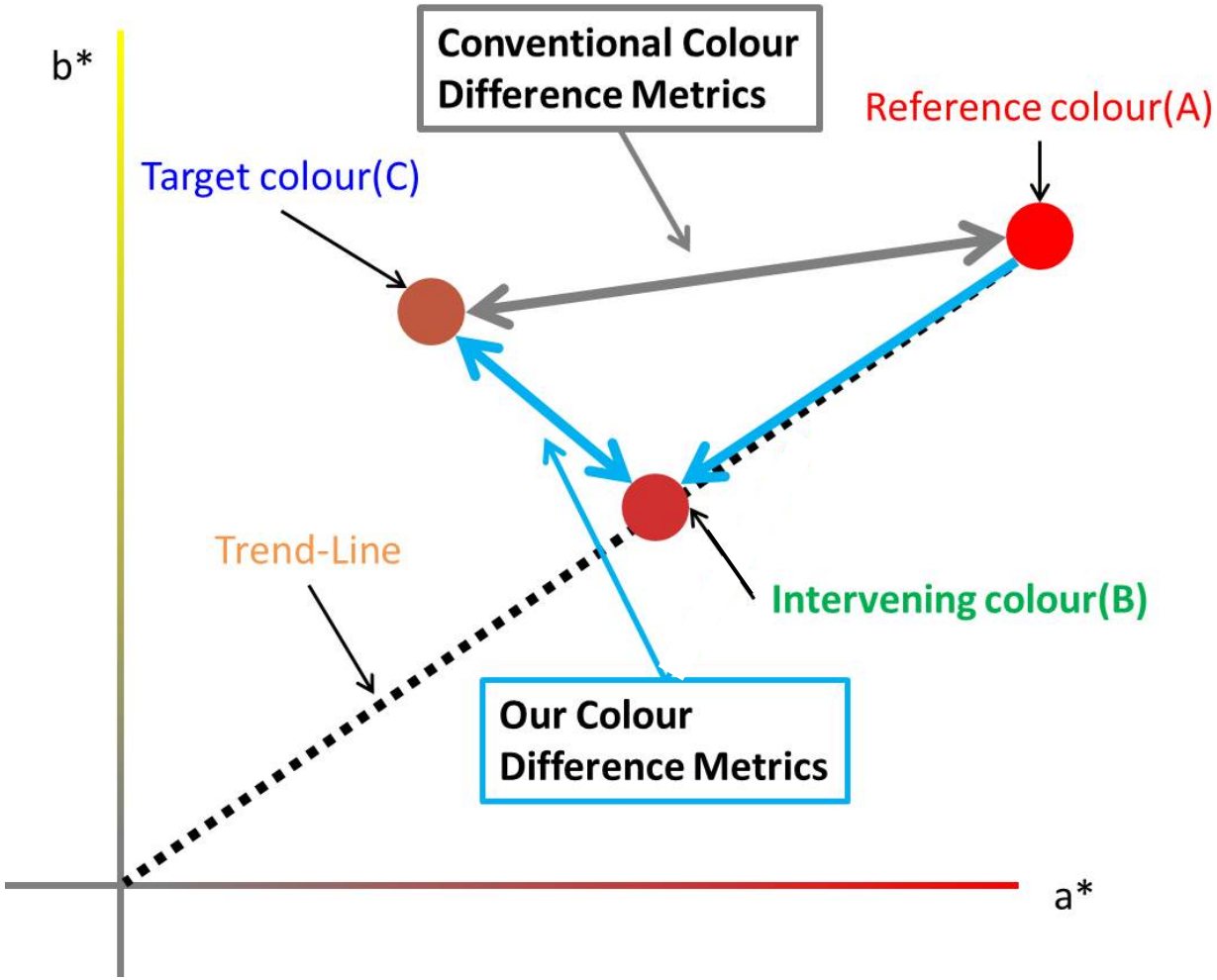
Hypothesis:
We don't calculate the colour difference directly between a test and the reference

Evaluate with the difference from the trend of the consistent colour?

A metric to evaluate how close a given colour to the reference colour



Concept of the colour difference based on consistent colour locus (trend-line)



Research Plan

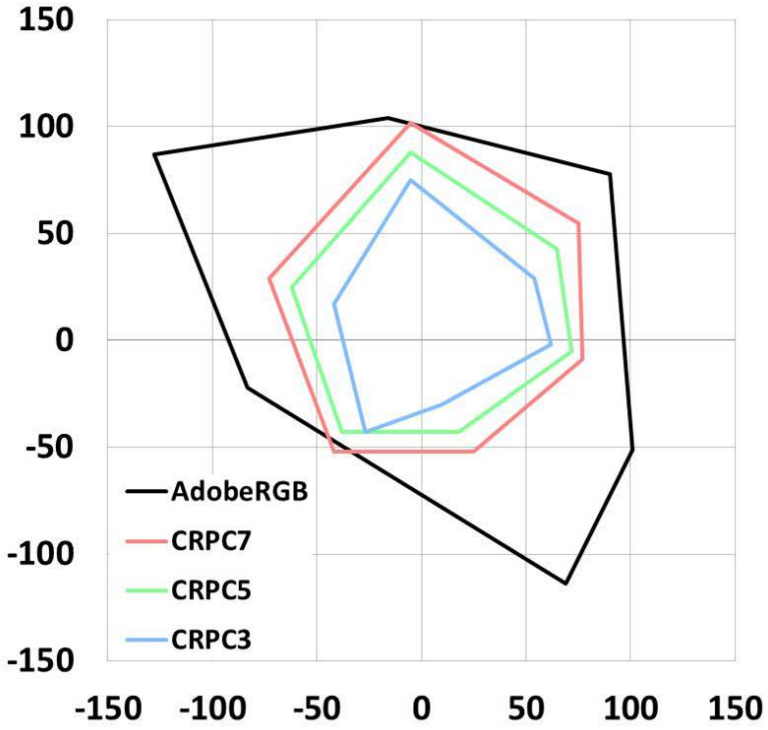
Step 1: Find the trend lines
(consistent colour loci)

Step 2: Find the "distance" of a test colour from a trend line
Step 2-1: Find the intervening colour
Step 2-2: Evaluate the colour difference

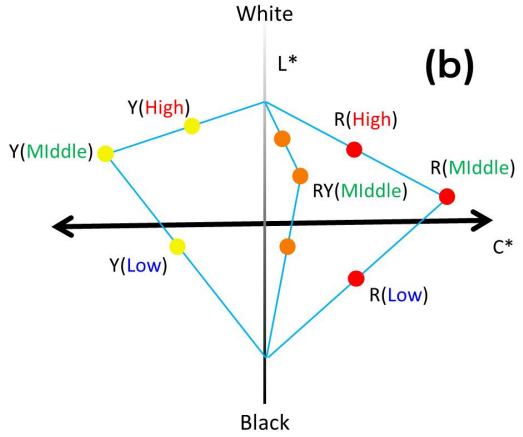
Step 3: Compare the colour difference among different hues,
to find some compensation factor to handle all the hues
in the same metric

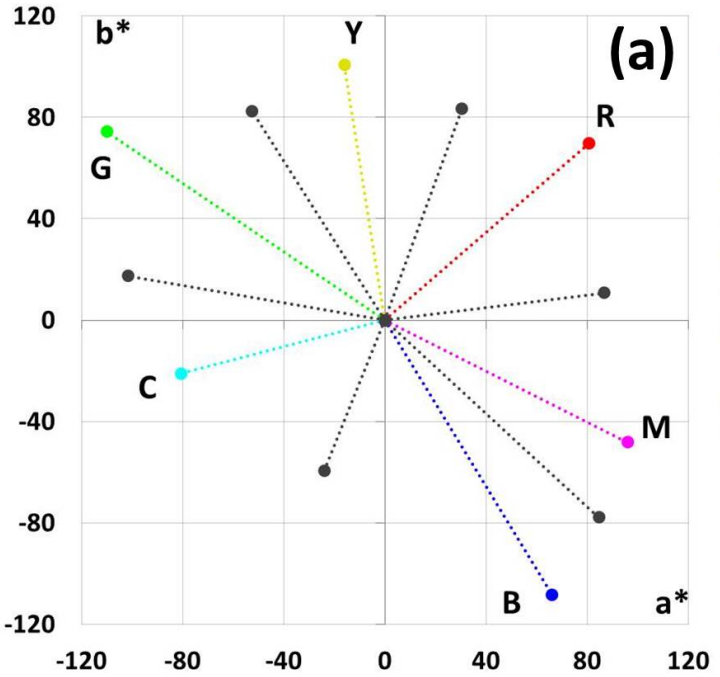
We've collected some data in Japan. (Step 1, 2)
We would like to find some volunteers abroad
to replicate the same experiments to get the data
more reliable.

Experiment

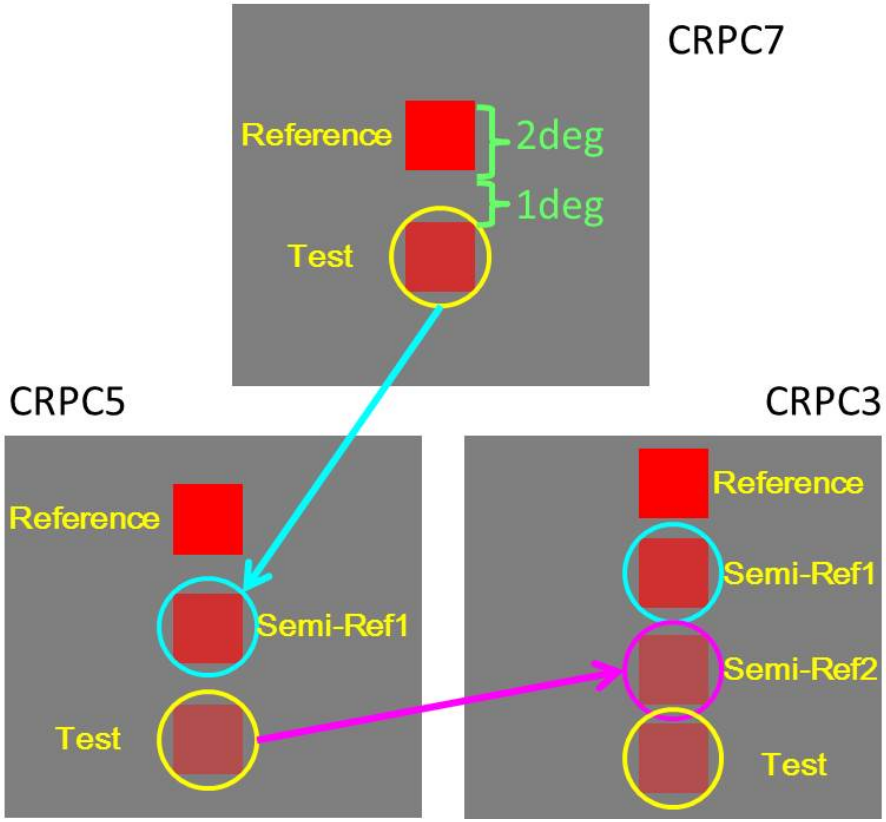


Gamuts used in the experiment

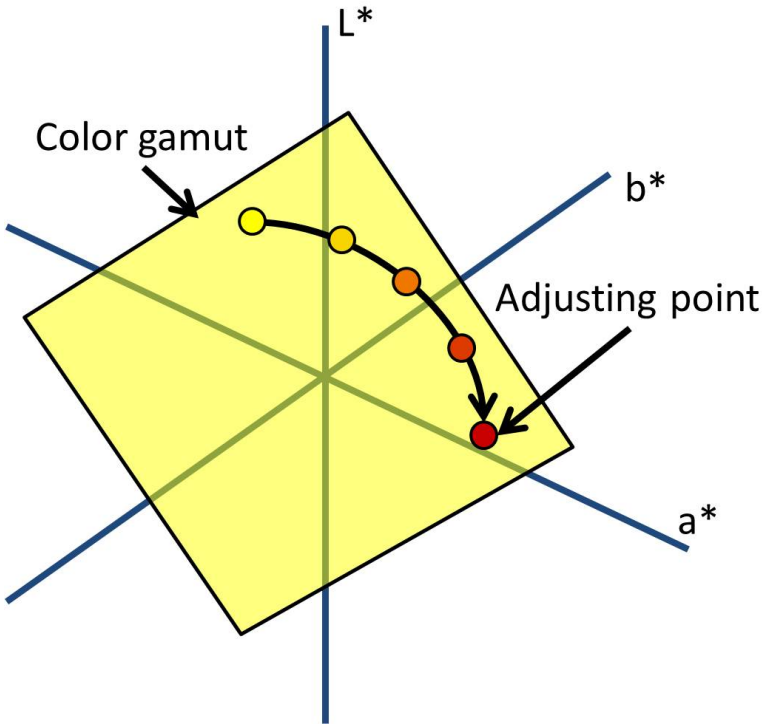




12 target colours (references)

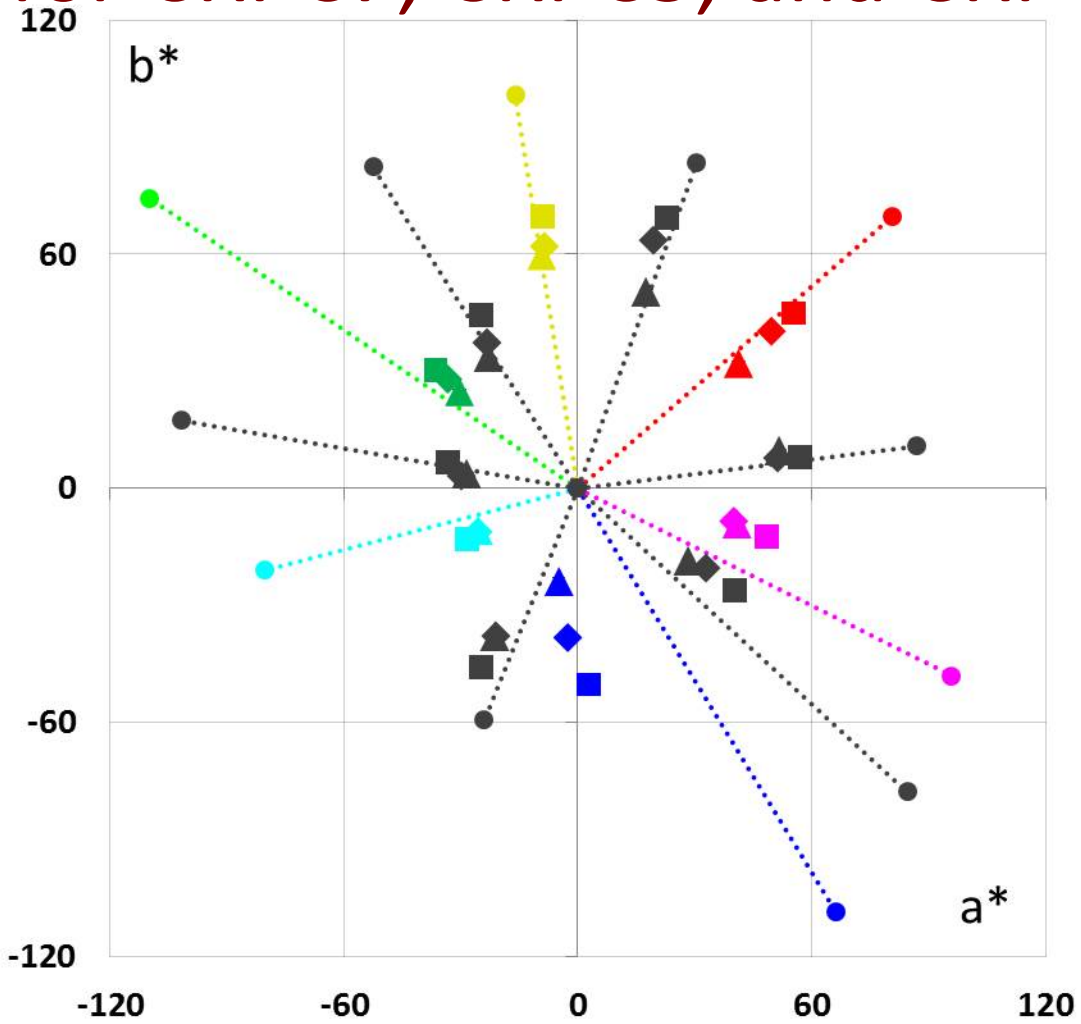


Configuration of the stimulus

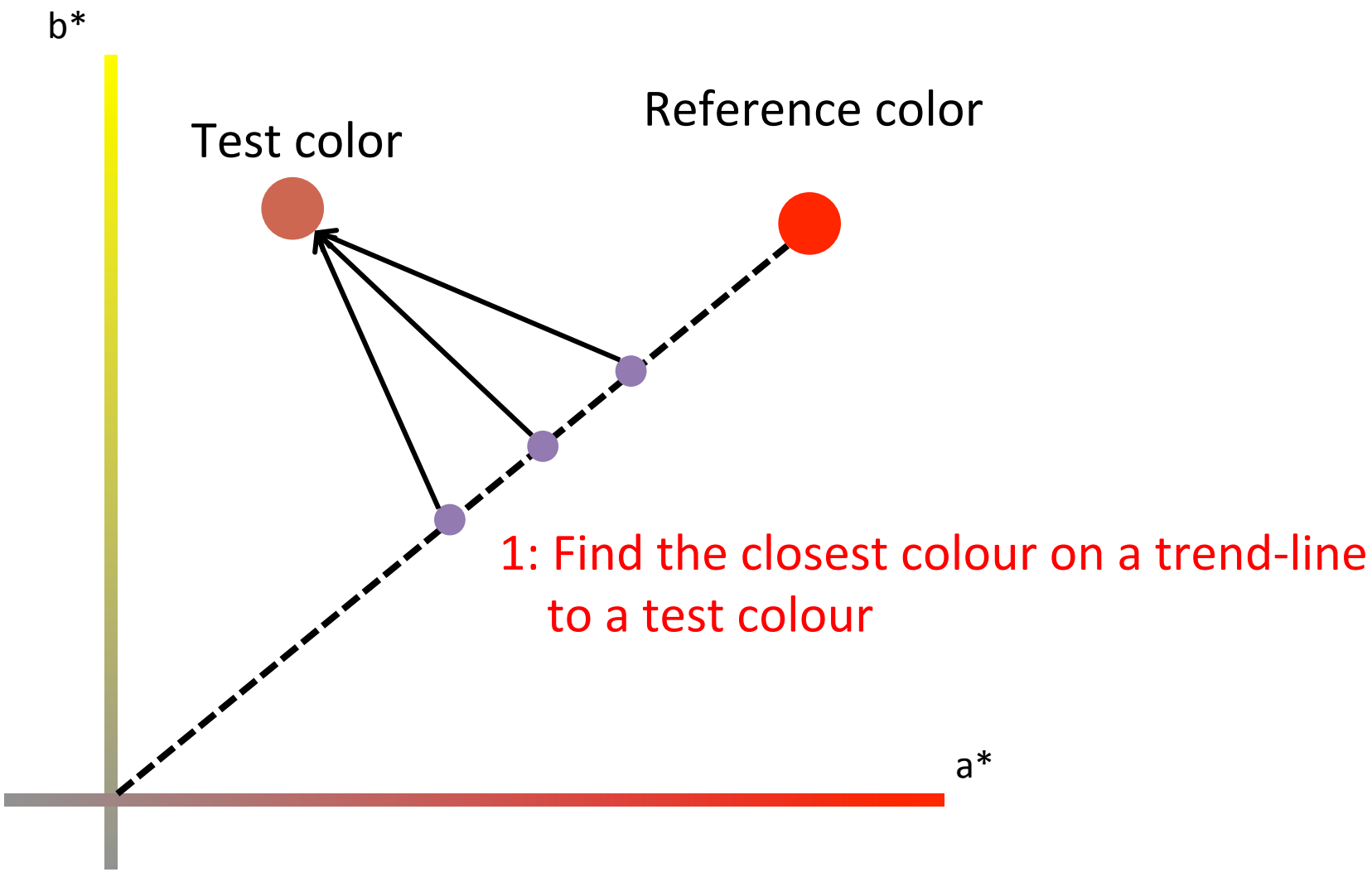


Test coluor changed along
the surface of a given gamut

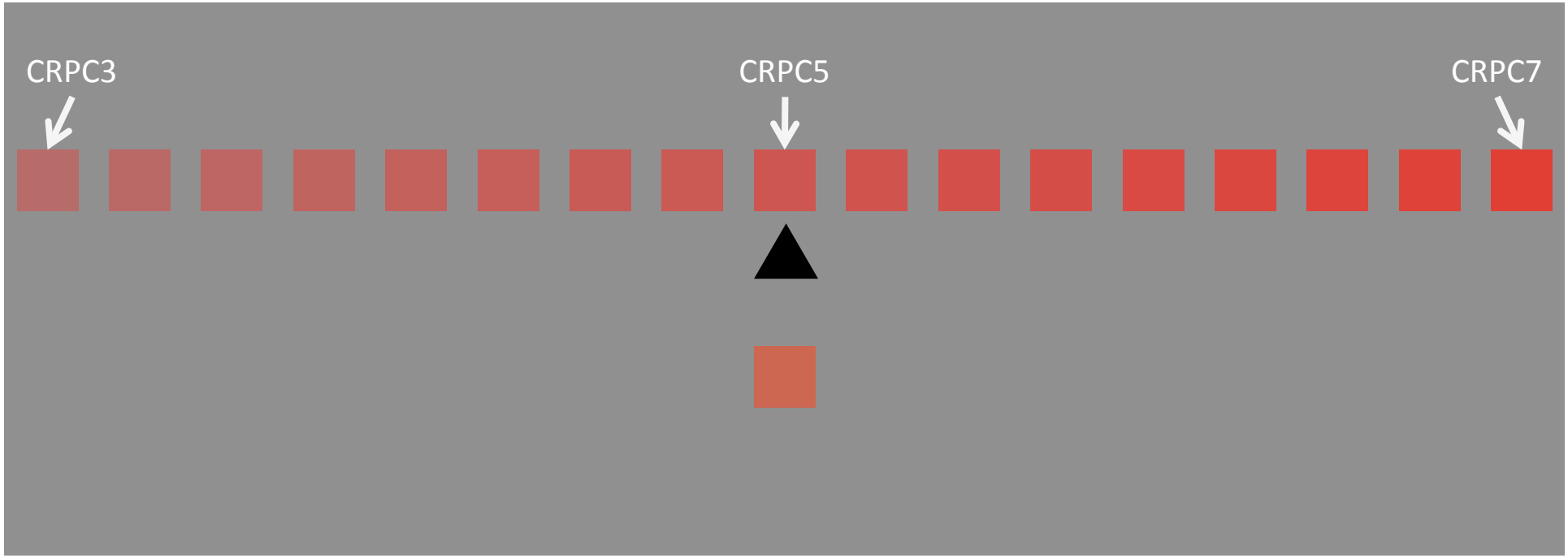
Consistent colour loci
(for CRPC7, CRPC5, and CRPC3)



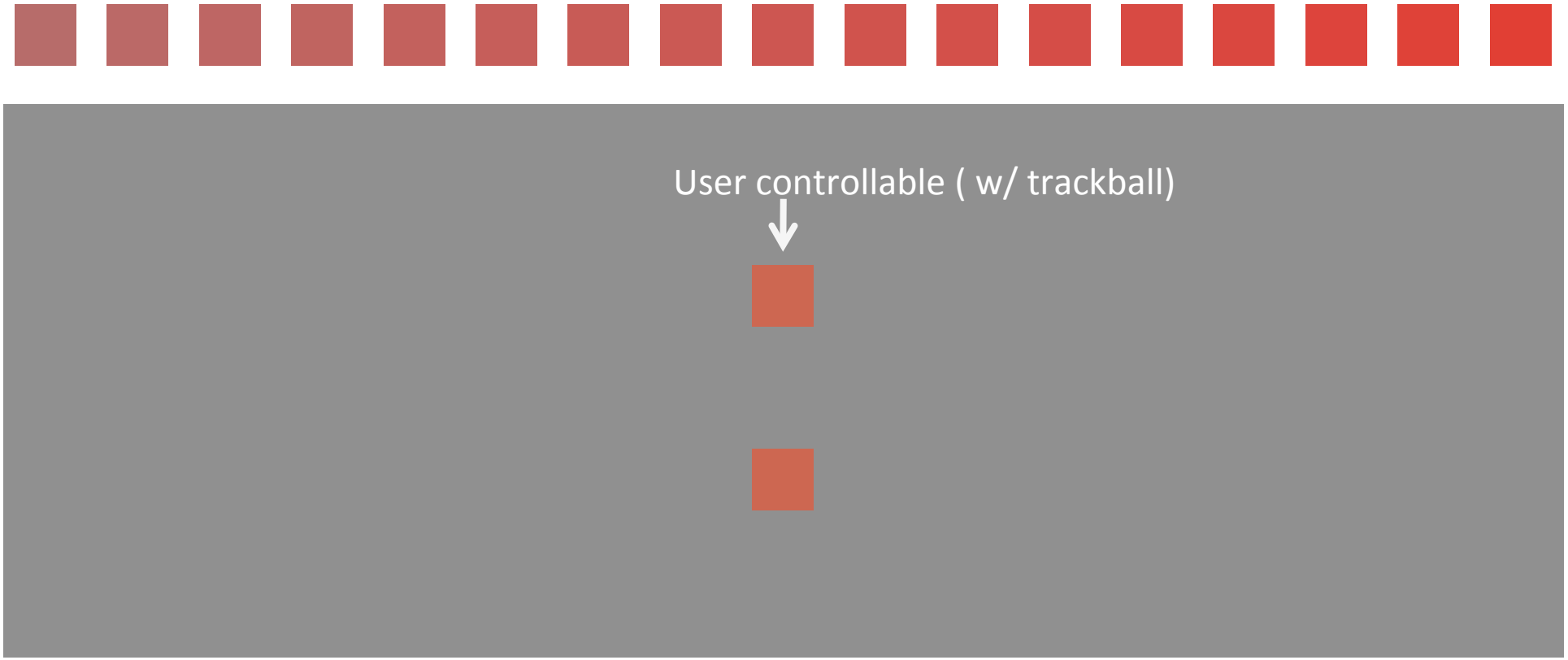
Step 2-1: Intervening colour



Stimulus configuration(1)



Stimulus configuration (2)



Evaluation of the color (2)

How far is the test colors from a trend-line