What problems can be solved with iccMAX?

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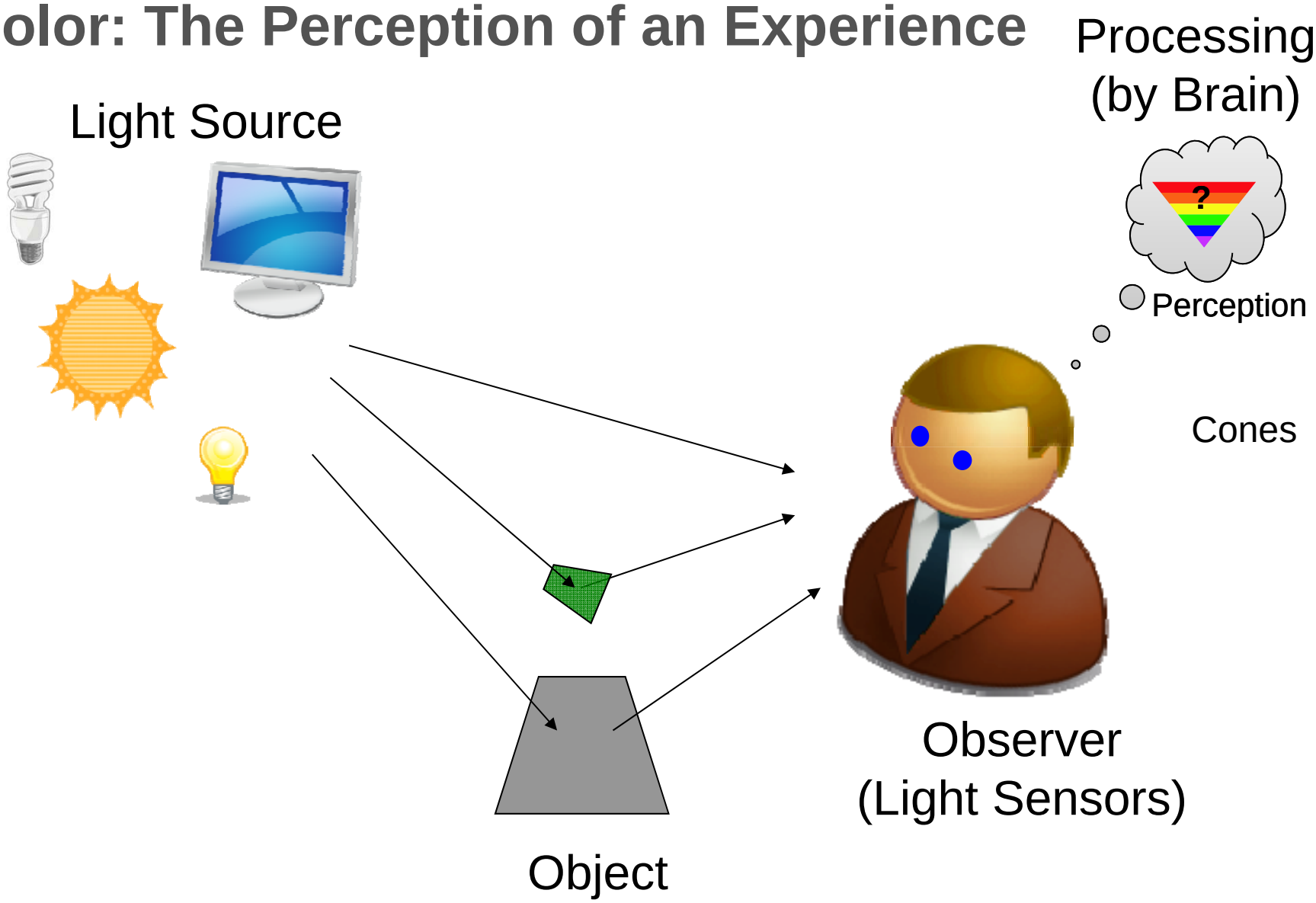
Overview

- **Color and Color Management**
- **Limitations of ICC.1**
- **Problems addressable using iccMAX**
- **Conclusion**

Color: The Perception of an Experience

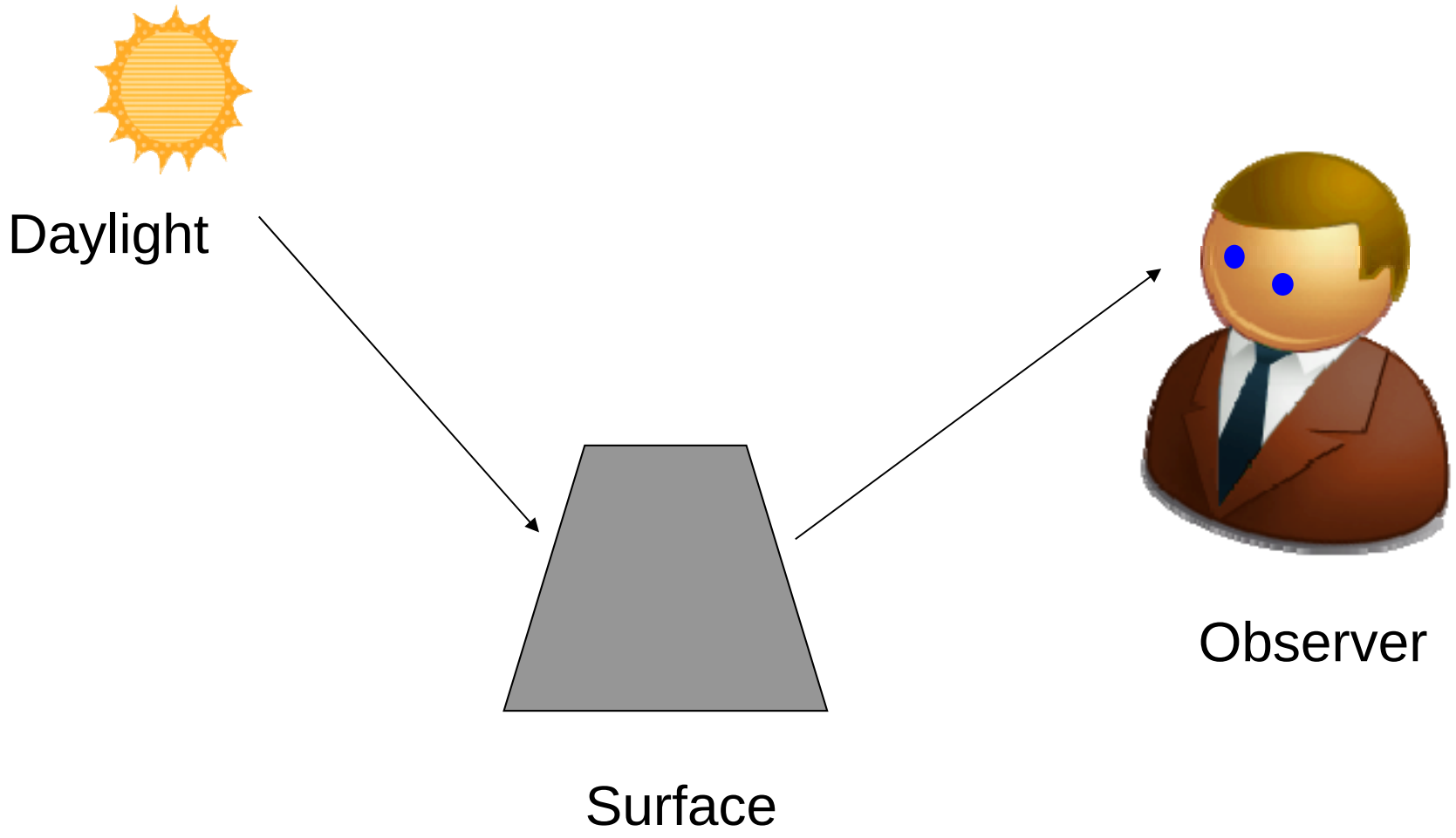


Color Management

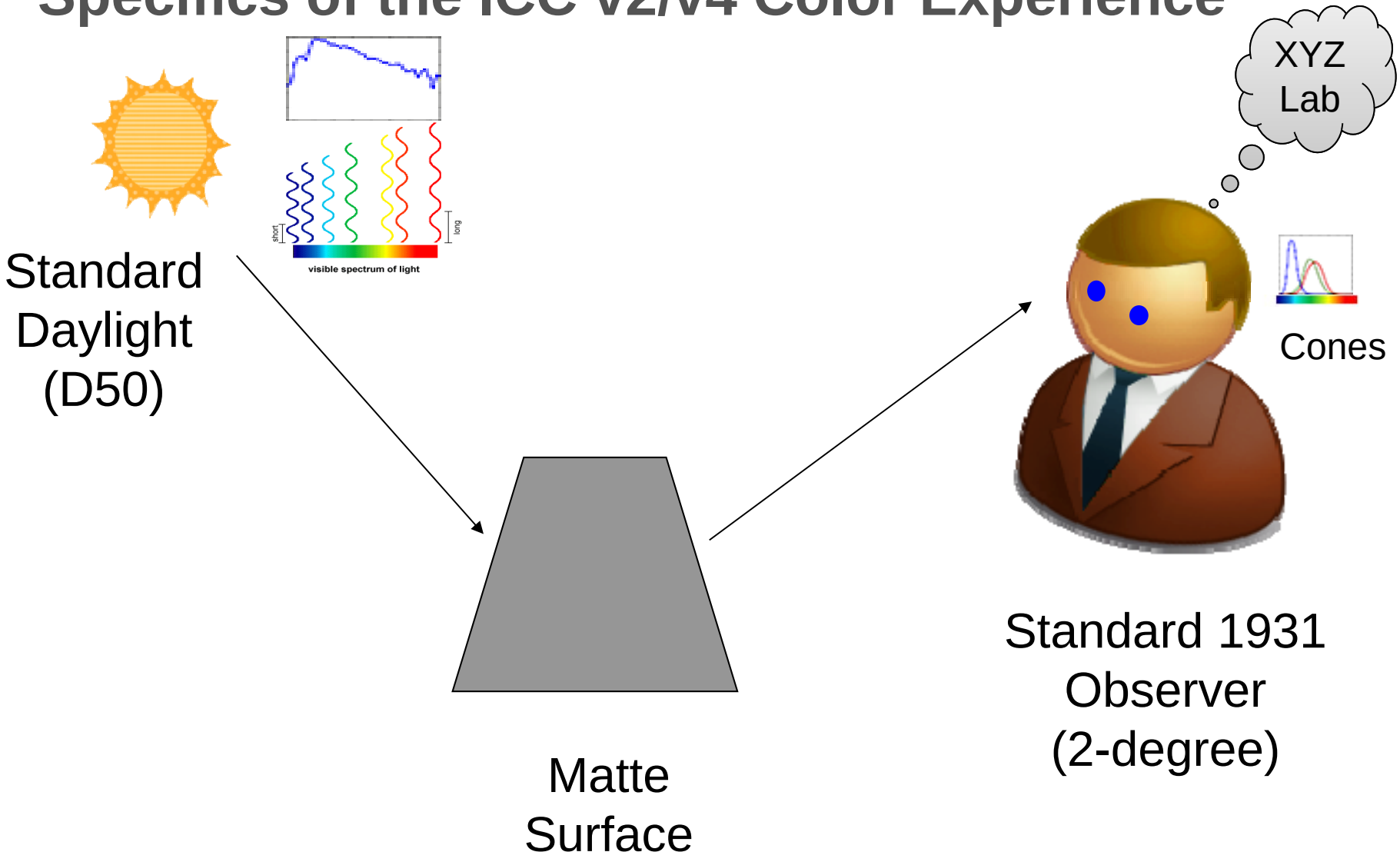
- **Color Management involves communicating about “Color Experiences”**
  - What is experienced?
    - Color Modeling
  - What the expected experience?
    - Color Reproduction

Limitations of ICC.1

The ICC v2/v4 Color Experience



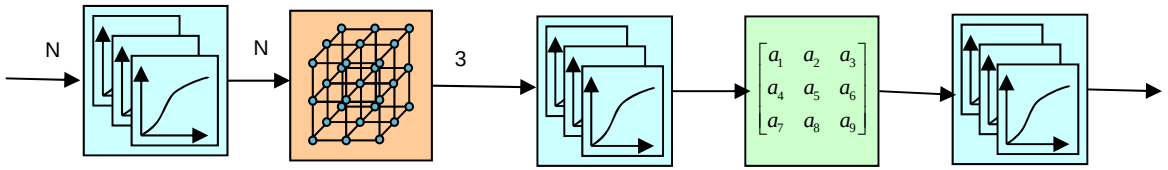
Specifics of the ICC v2/v4 Color Experience



Fixed Sequences Using Color Lookup Tables

% In	% Out
0	0
10	5
20	12
30	18
40	28
.	.
.	.
.	.
100	100

C	M	Y	K	L*	a*	b*
0	0	0	0			
33	0	0	0			
66	0	0	0			
100	0	0	0			
0	33	0	0			
33	33	0	0			
.	.	.	.			
.	.	.	.			
100	100	100	100			

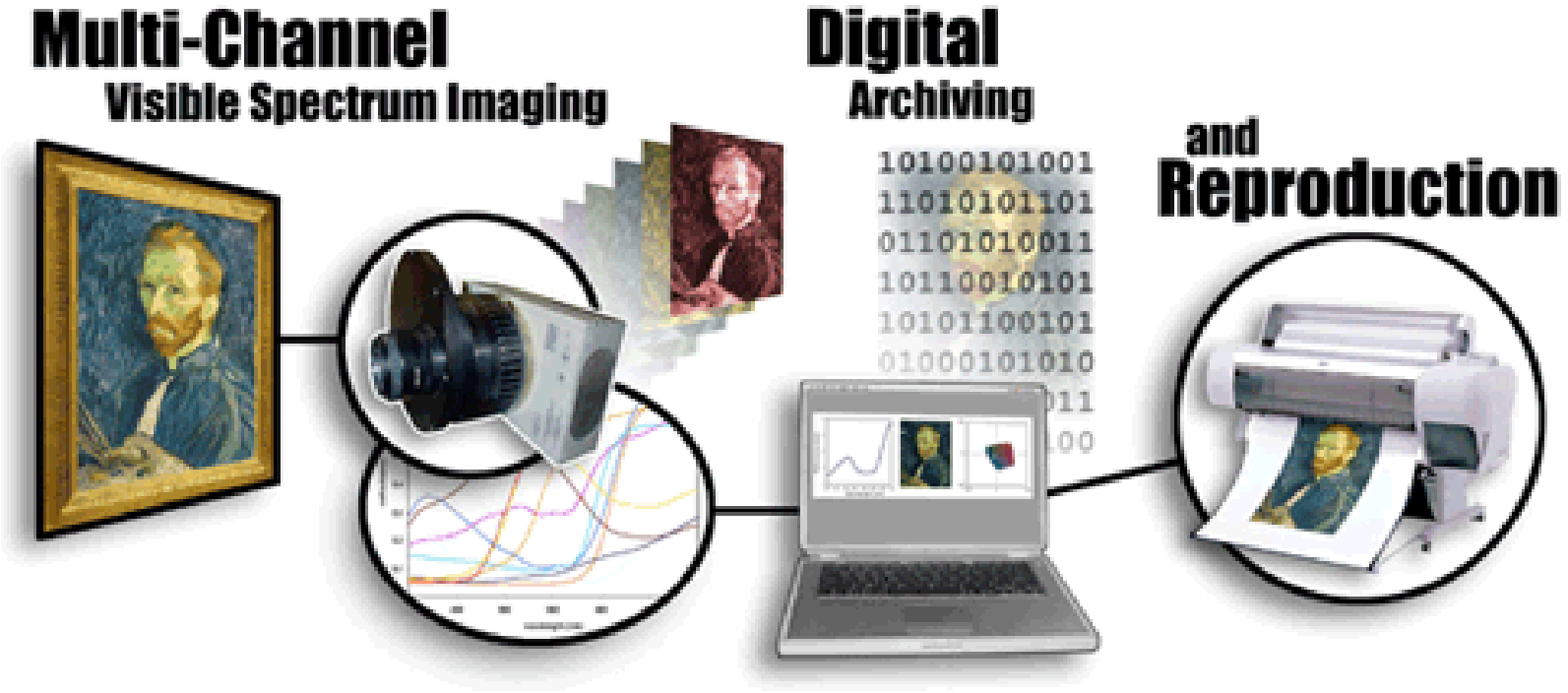


N-Color Lookup Table Challenge

# Channels	# Table Entries (Storage) *(for steps of 5%)*	# Interpolation Points (Computation)
1	21	2
2	441	4
3	9,261	8
4	194,481	16
5	4,084,101	32
6	85,766,121	64
7	1,801,088,541	128
…	…	…
N	21^N	2^N

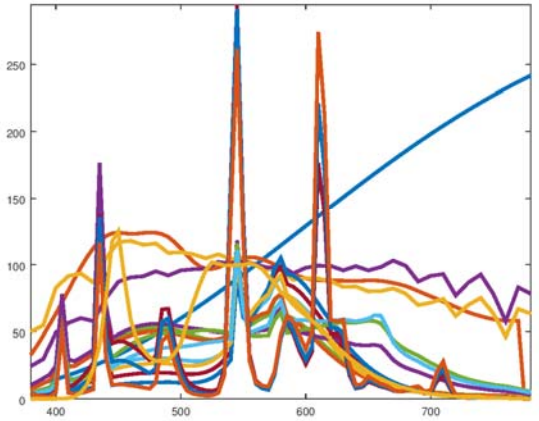
Problems addressable with iccMAX

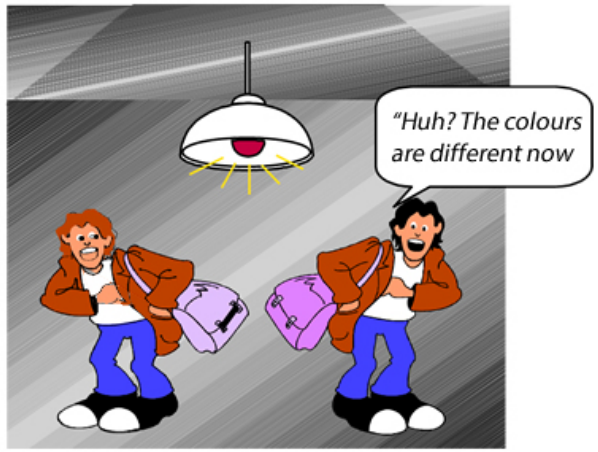
#1: Light (and observer) independent color capture and reproduction



(Picture from http://www.art-si.org/)

#2: Handle (predict) changes in lighting





(Picture from http://www.coatsindustrial.com/en/information-hub/apparel-expertise/metamerism-and-illuminants)

#3: Lightweight Profiles for Photography

#4: Wavelength changes in reflected light (Fluorescence)

(Picture from https://www.keech.org.uk/about/news-media/273-fluorescent-fun-for-keech-mum)

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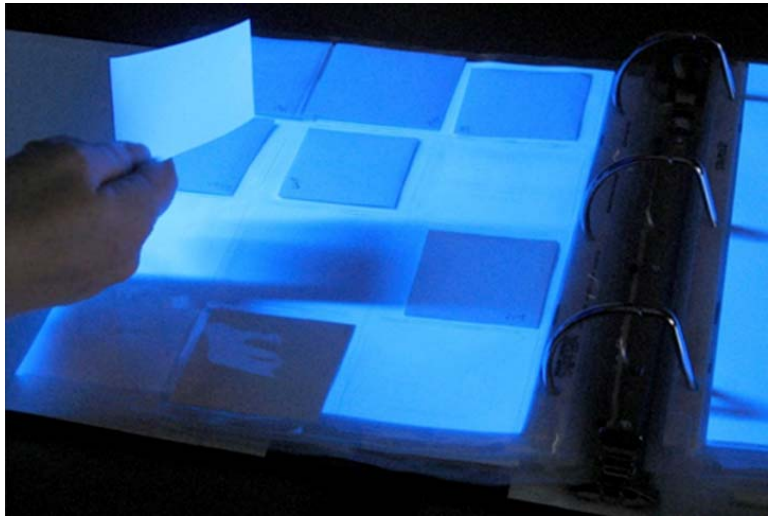
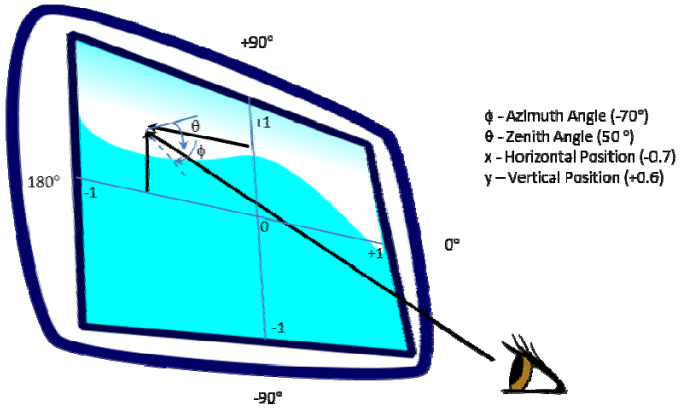
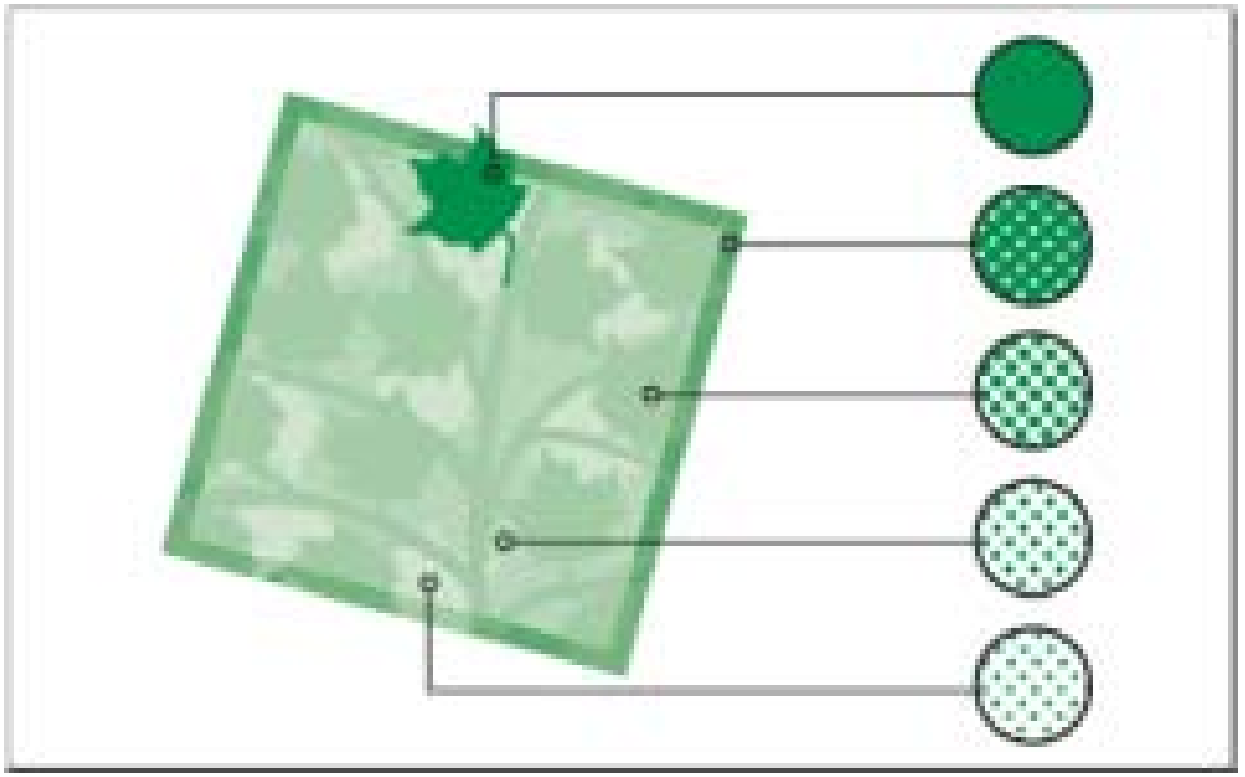


(Picture from http://news.yale.edu/2015/02/19/yale-launch-lens-media-lab-photograph-research-and-conservation)

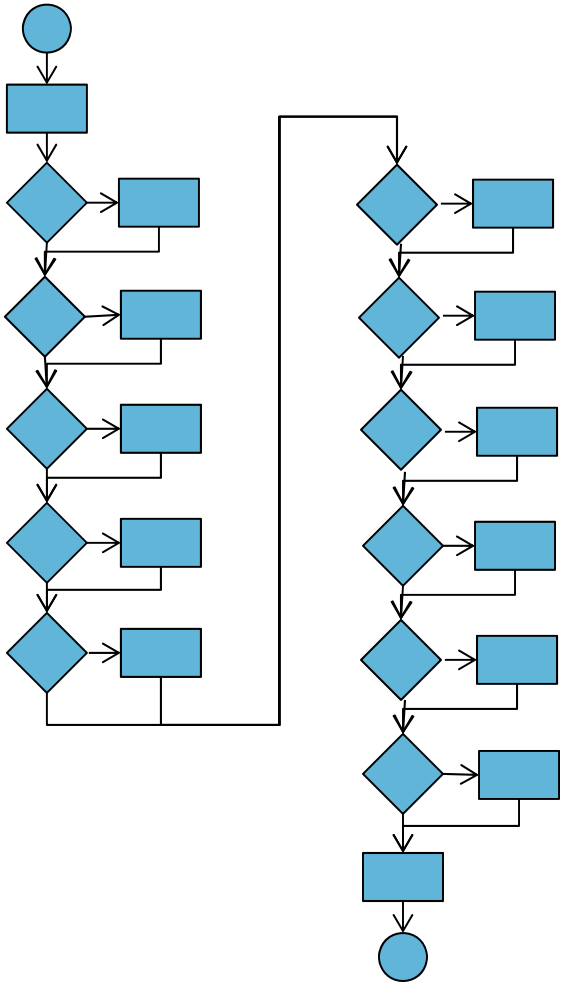
#5: Dependency of lighting and viewing angles

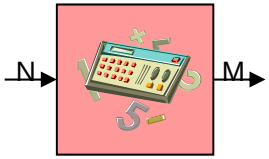


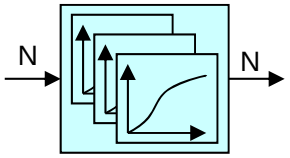
#6: Describe tints of named colors

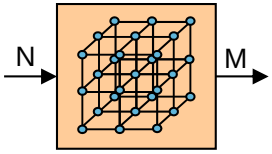


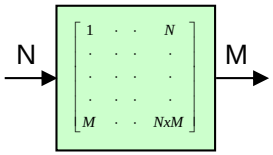
#7: Compact (more accurate) profiles using algorithms

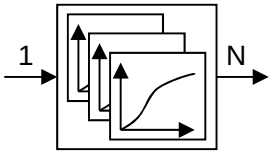


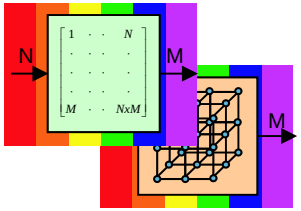






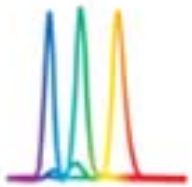




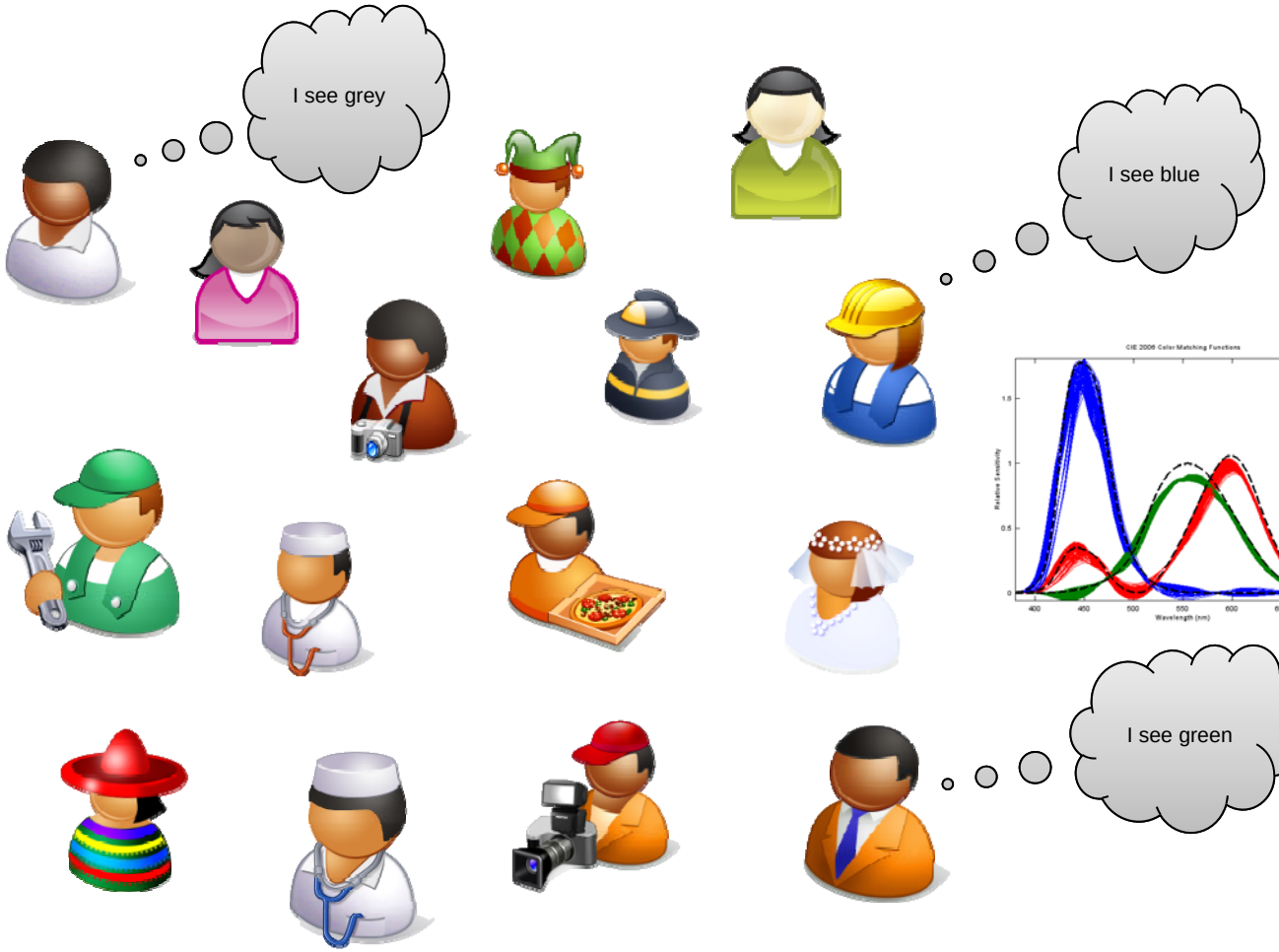


#8: Account for differences between observers

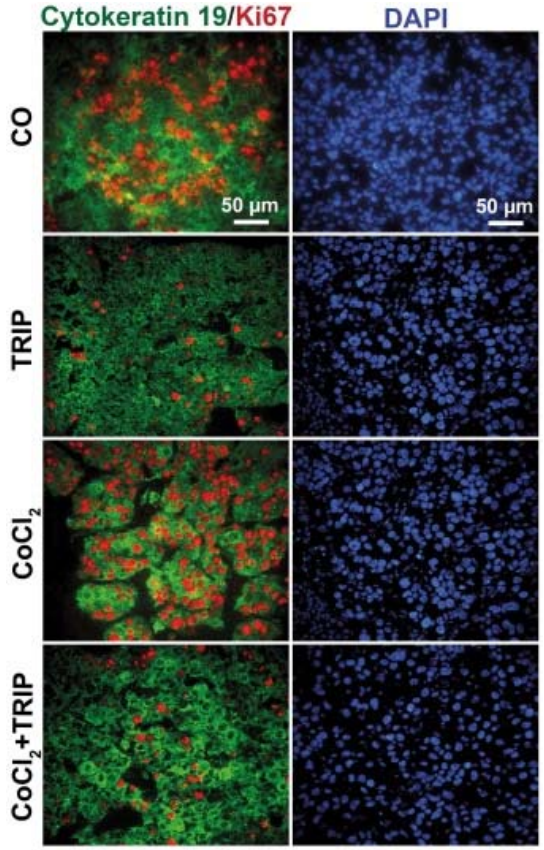
LCD Display



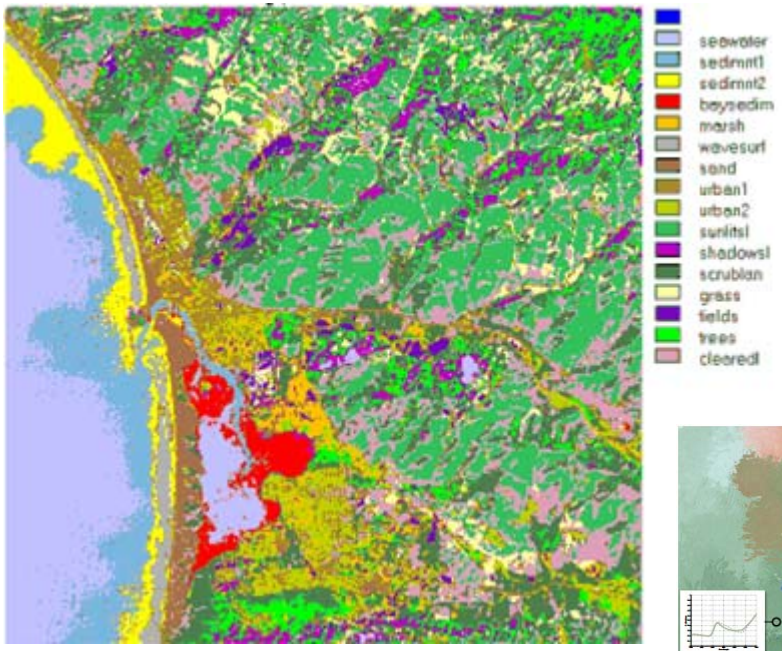
Quantum Dot Display



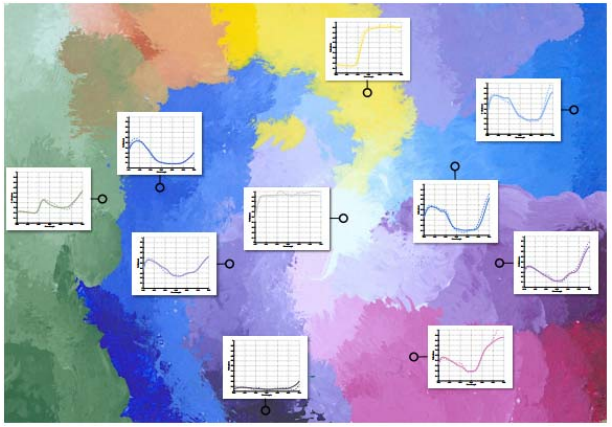
#9: Describe and visualize “color” in terms of “What is it?”



(Picture from https://www.spandidos-publications.com/10.3892/or.2014.3196)



(Picture from http://wgbis.ces.iisc.ernet.in/envisrs/?q=node/26/)



(Picture from http://scholarworks.rit.edu/cgi/viewcontent.cgi?article=9306&context=theses)

In Conclusion…

iccMAX is for the Real World

- **The complexities of color in the Real World are encompassed by iccMAX**

- **iccMAX provides a flexible and extensible platform for modeling and defining color workflows**

Thank You

Questions?