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What problems can be solved with iccMAX?

Max Derhak (PhD)

Principal Scientist – ONYX Graphics Inc.

Co-Chair – International Color Consortium (ICC)

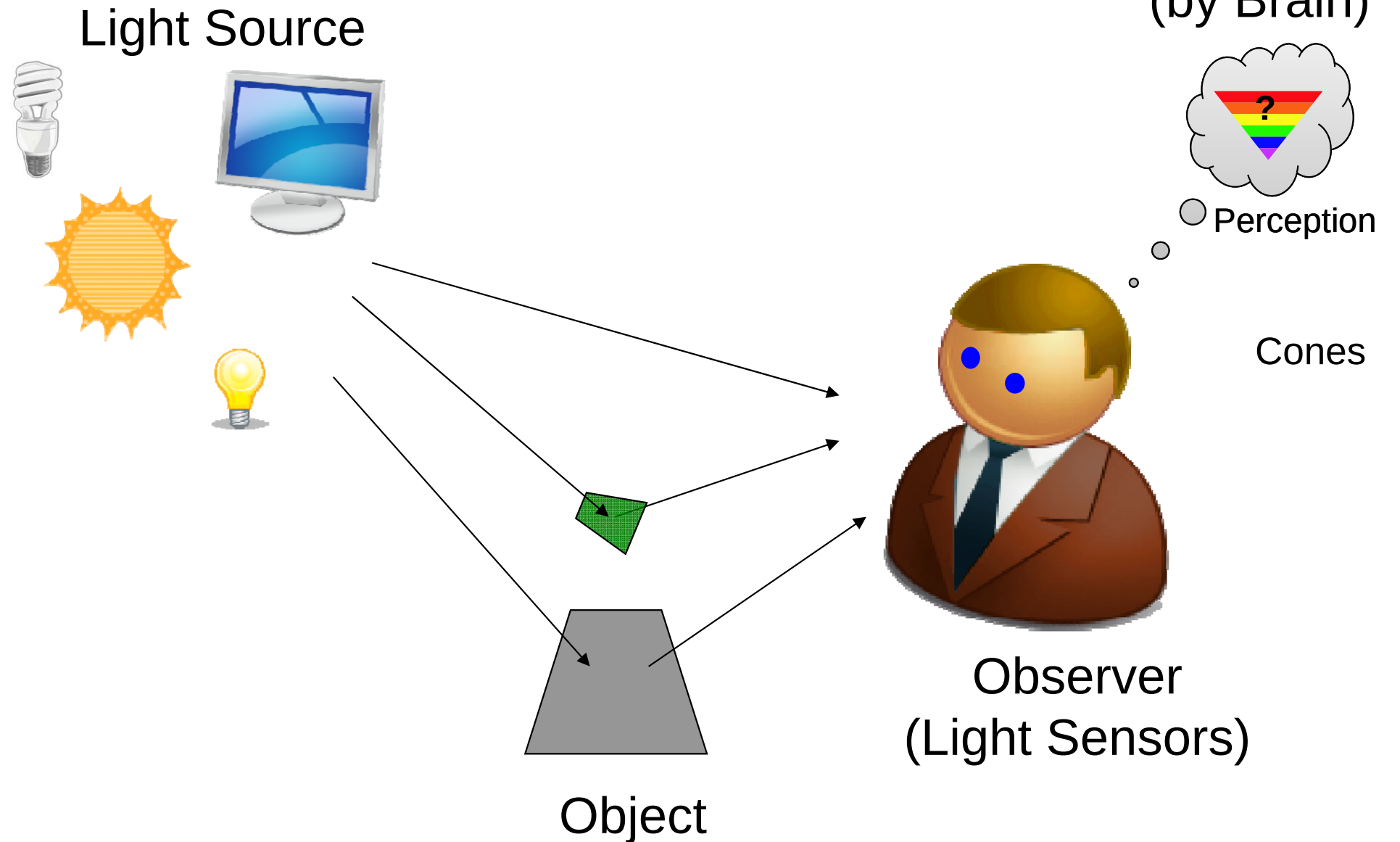


Overview

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



Color: The Perception of an Experience





Color Management

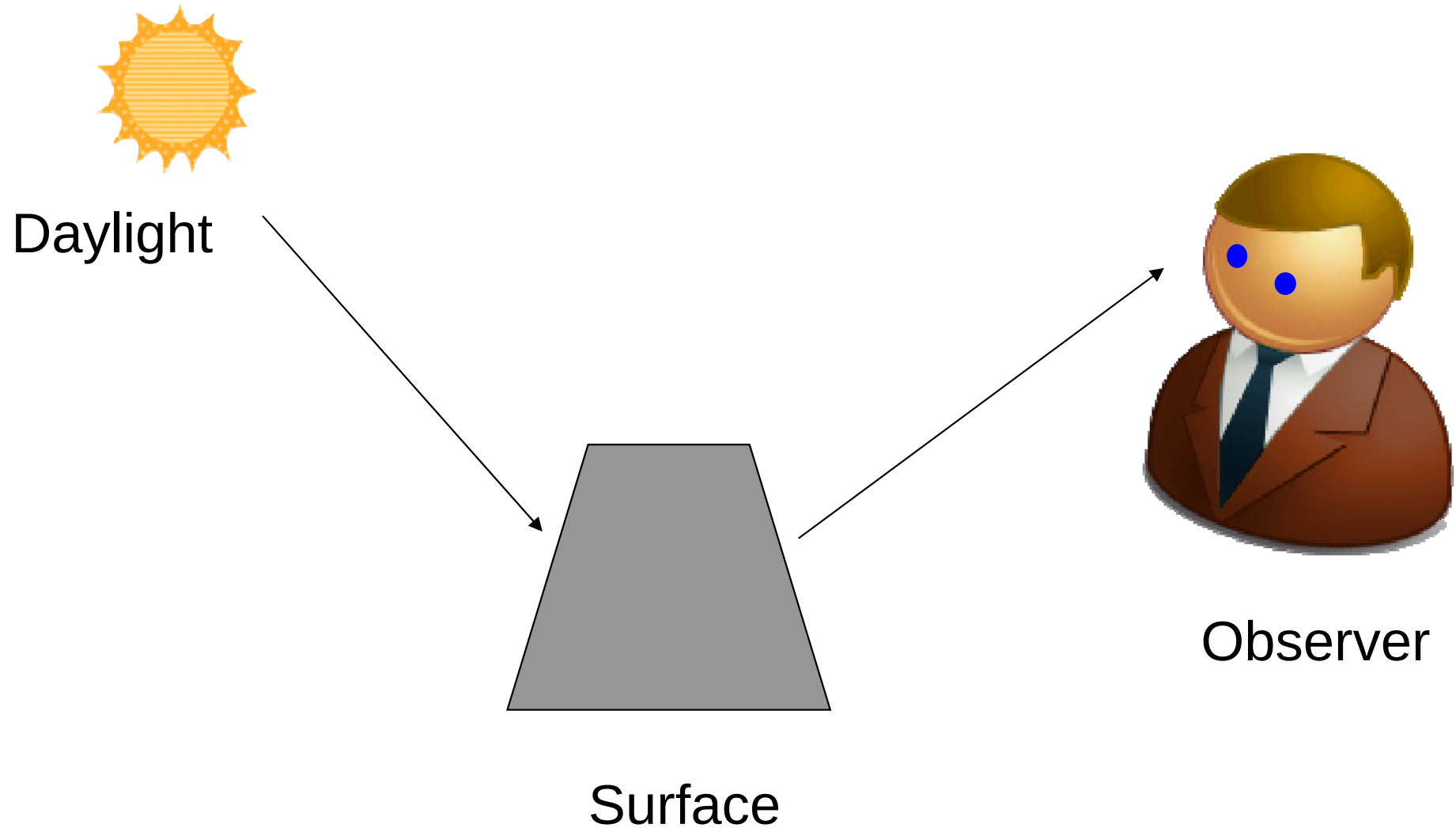
- **Color Management involves communicating about “Color Experiences”**
 - What is experienced?
 - Color Modeling
 - What the expected experience?
 - Color Reproduction



Limitations of ICC.1

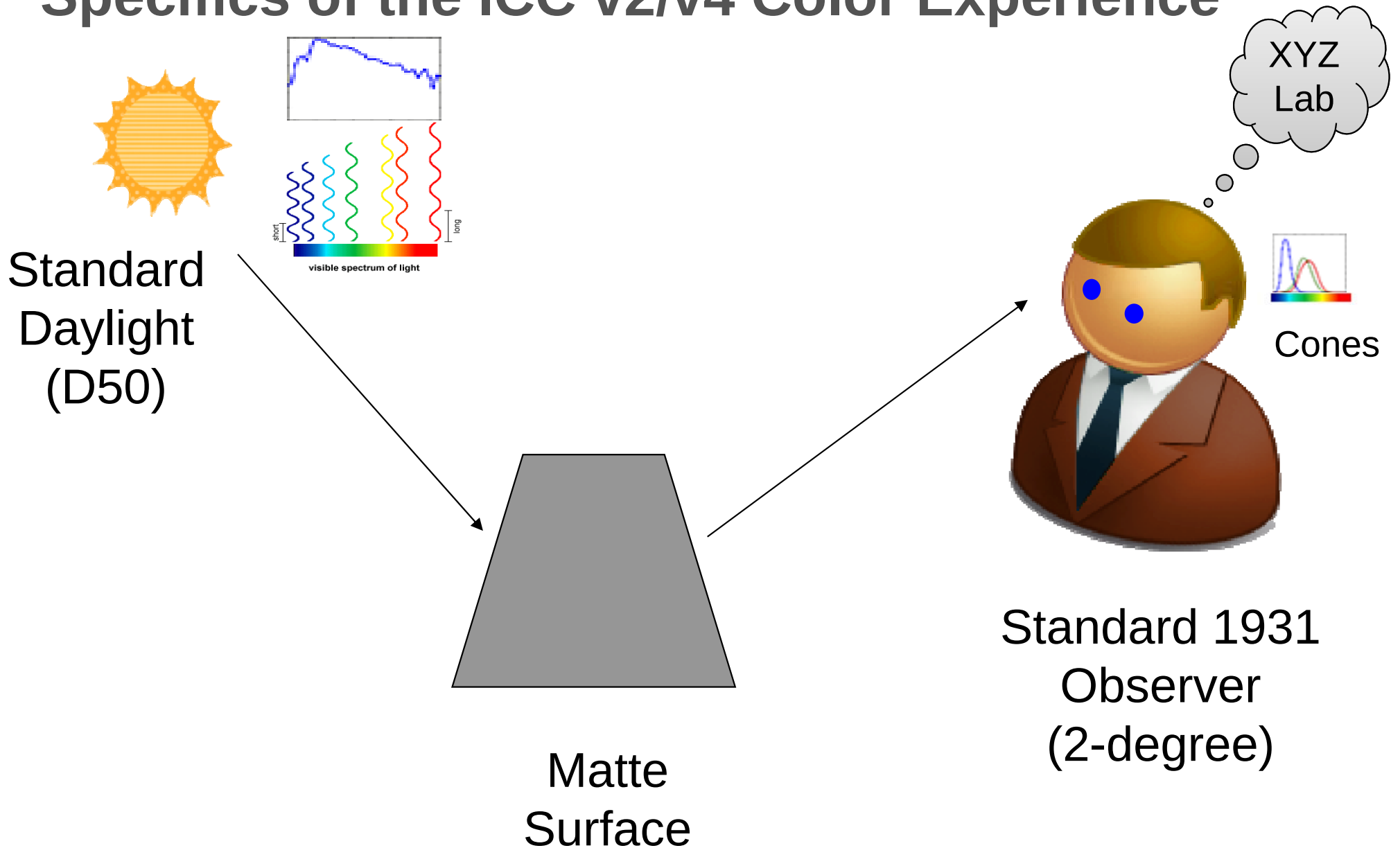


The ICC v2/v4 Color Experience





Specifics of the ICC v2/v4 Color Experience

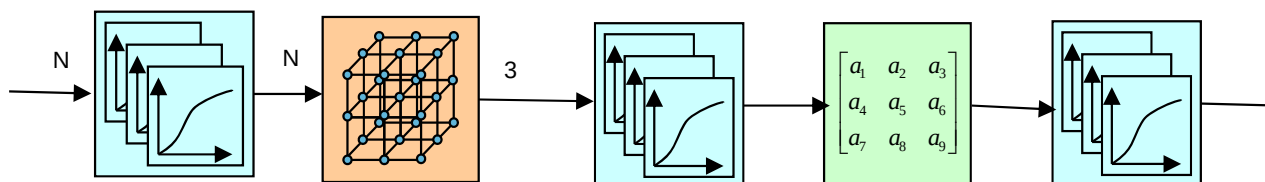




Fixed Sequences Using Color Lookup Tables

% 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) <i>(for steps of 5%)</i>	# 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



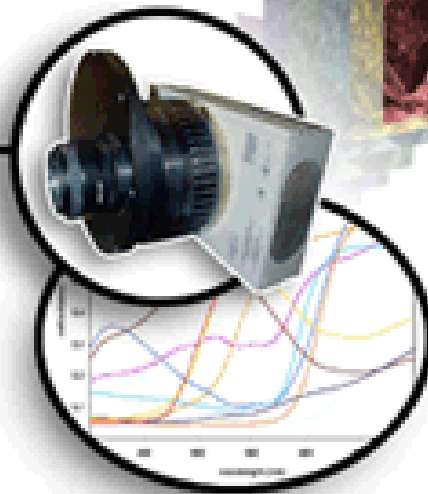
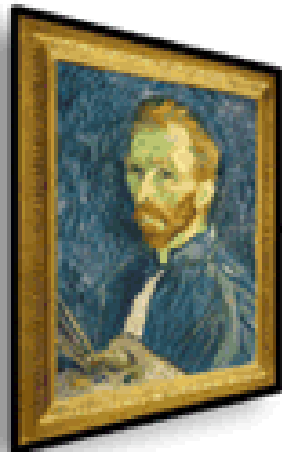
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Problems addressable with iccMAX



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

Multi-Channel Visible Spectrum Imaging



Digital Archiving

10100101001
11010101101
01101010011
10110010101
10101100101
01000101010
011
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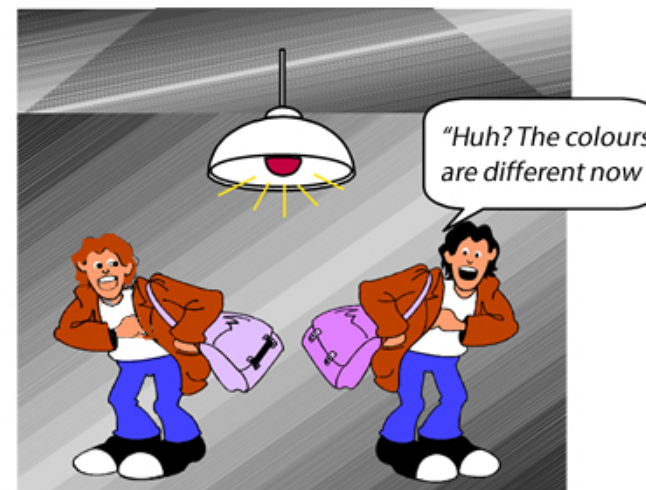
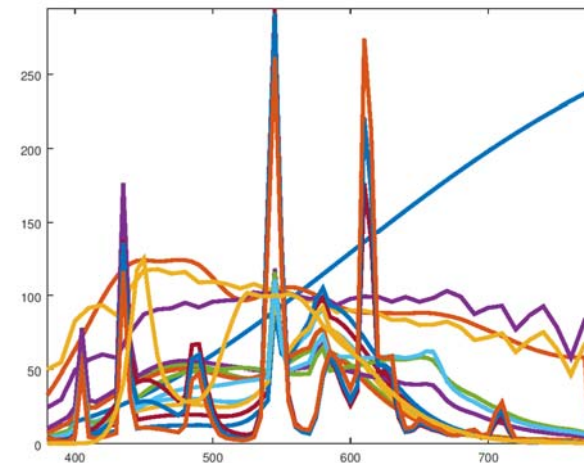
and Reproduction



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



#2: Handle (predict) changes in lighting





#3: Lightweight Profiles for Photography





#4: Wavelength changes in reflected light (Fluorescence)



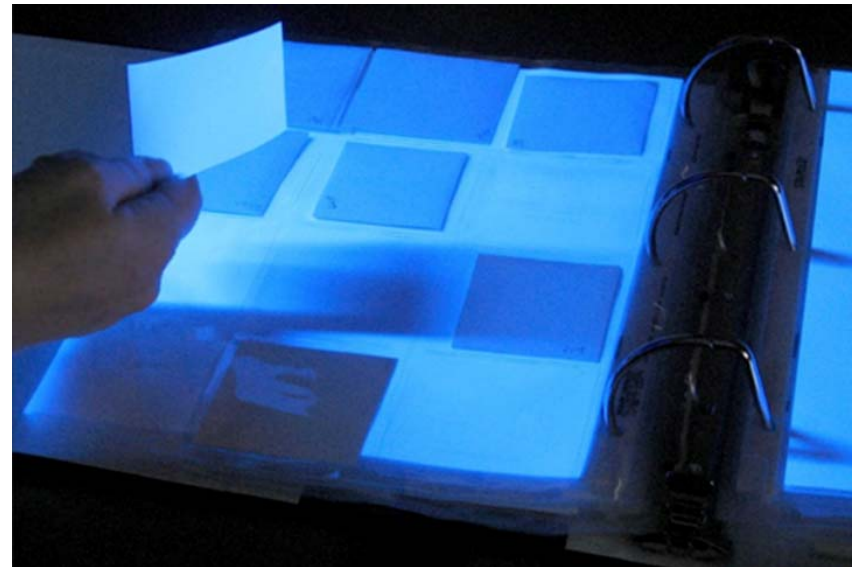
(Picture from <https://www.keech.org.uk/about/news-media/273-fluorescent-fun-for-keech-mum>)



#4: Wavelength changes in reflected light (Fluorescence)



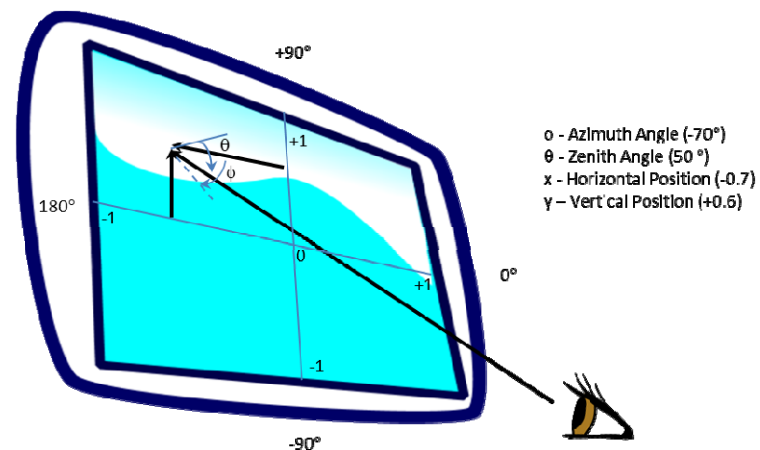
(Picture from <https://www.keech.org.uk/about/news-media/273-fluorescent-fun-for-keech-mum>)



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

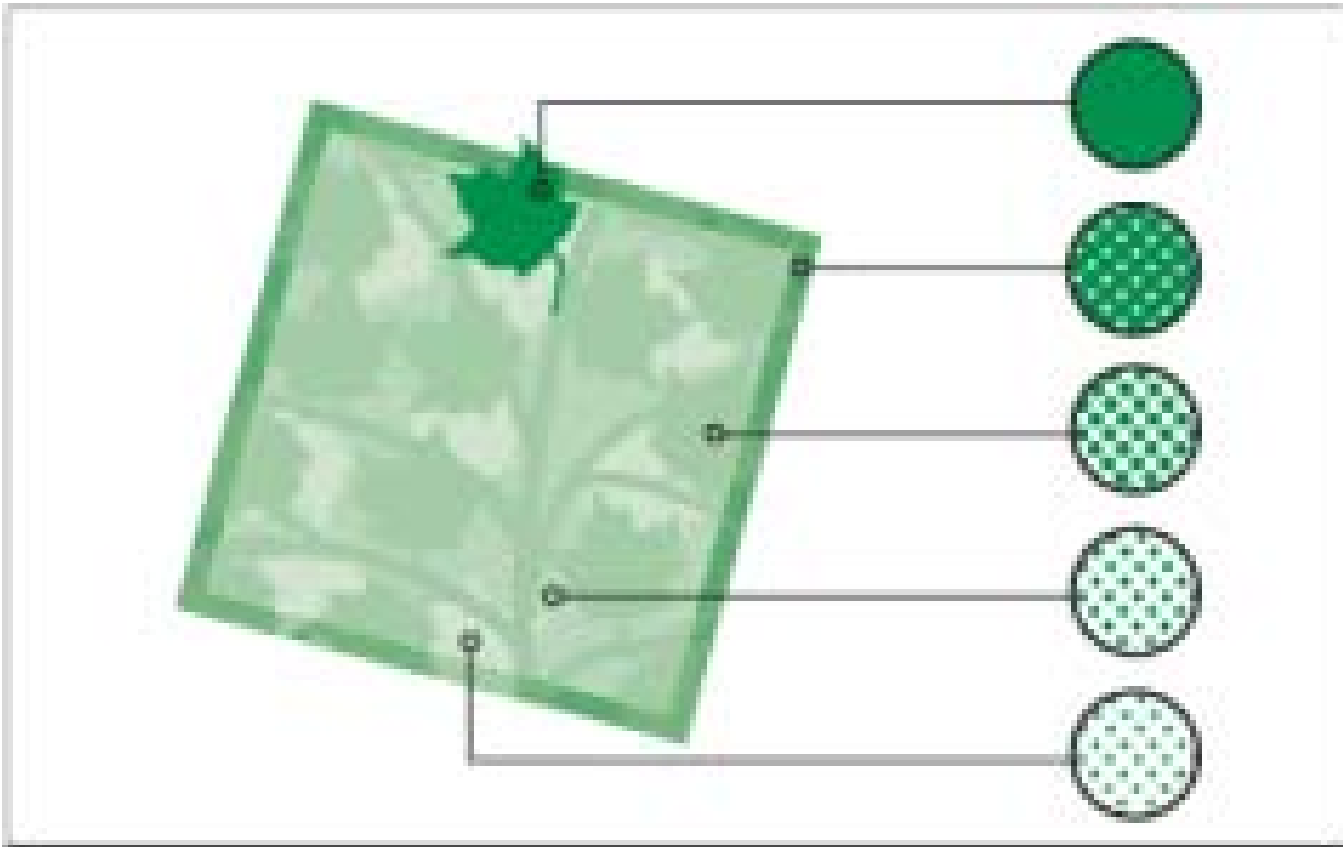


#5: Dependency of lighting and viewing angles



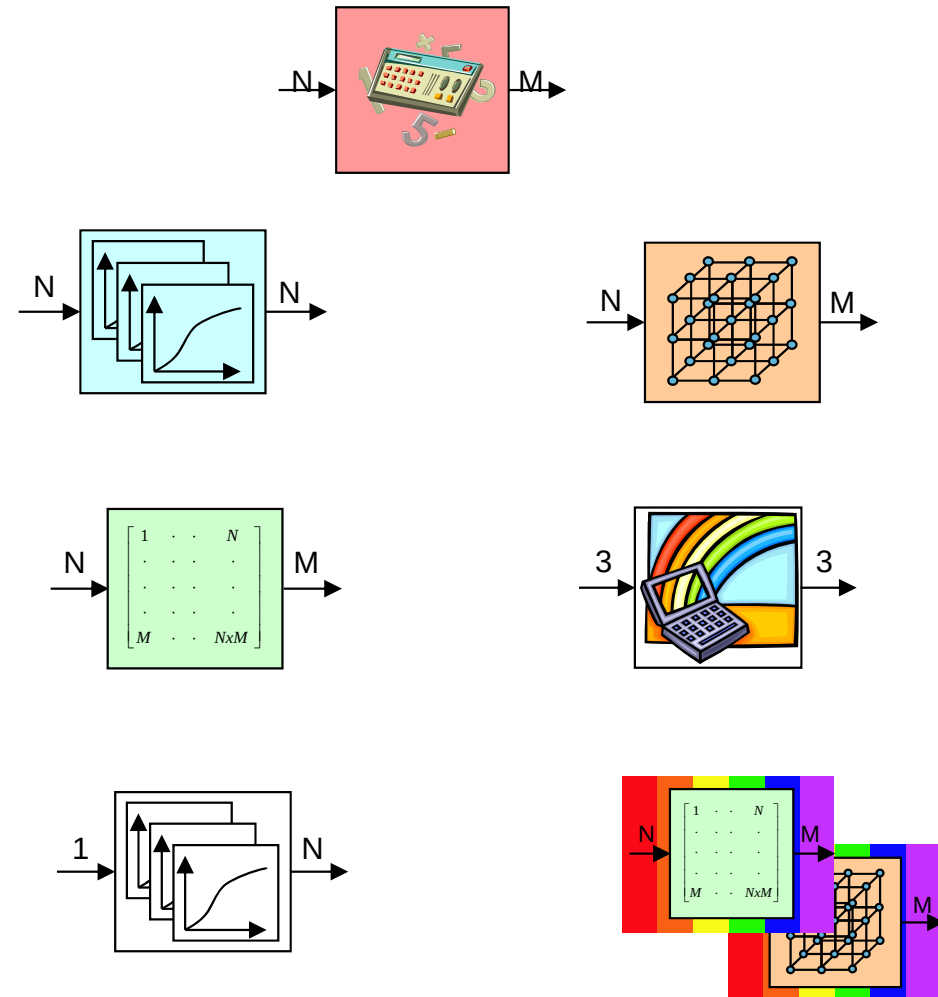
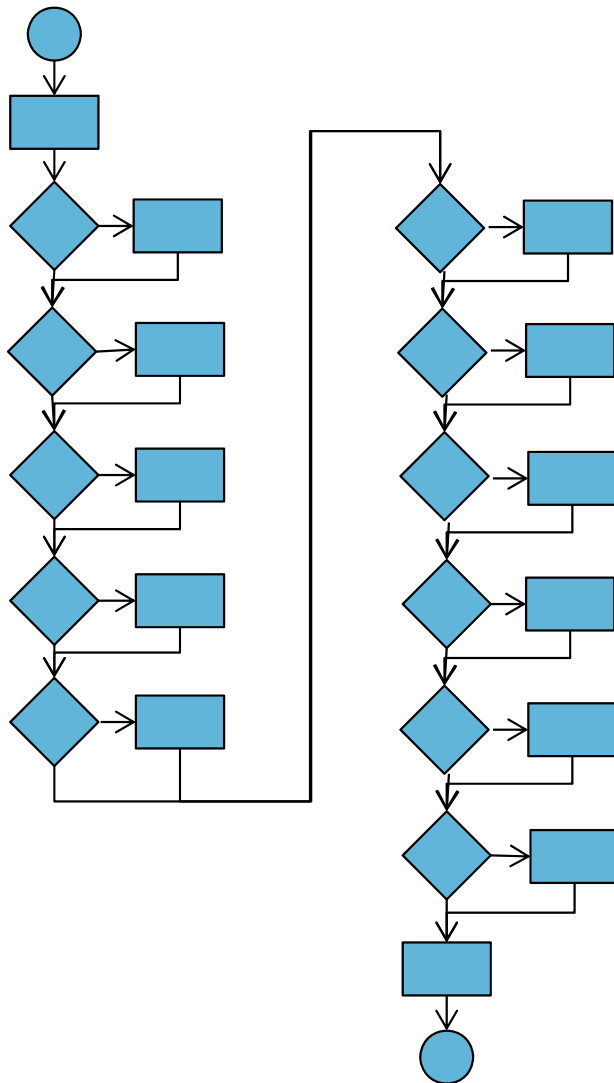


#6: Describe tints of named colors





#7: Compact (more accurate) profiles using algorithms



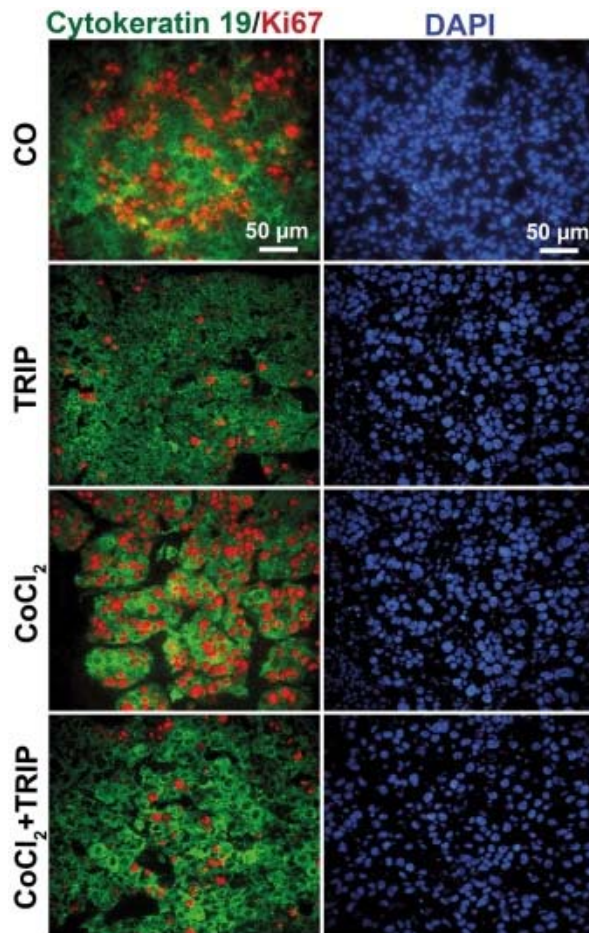


#8: Account for differences between observers

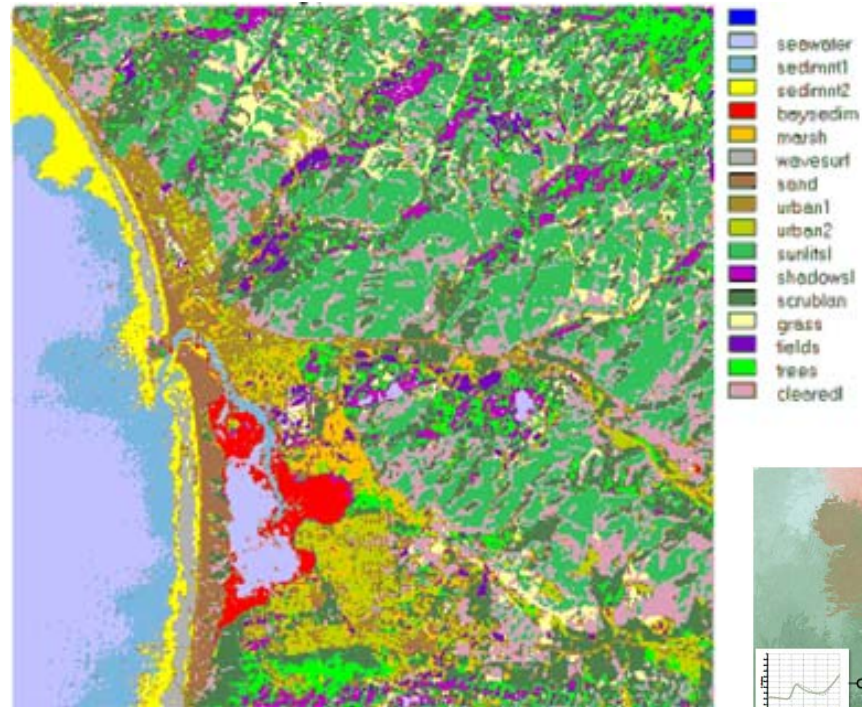




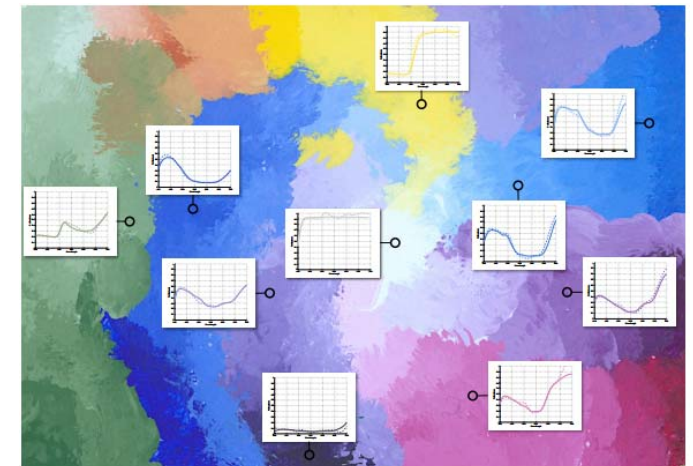
#9: Describe and visualize “color” in terms of “What is it?”



(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>)



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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**



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Thank You

Questions?

