



## Artistic possibilities with Real-Time lighting

Chris Doran  
Founder


Ivan Pedersen  
Lead Artist

## Goals

- Examine principles of composition, contrast and colour
  - Cinematography
  - Photography
  - Traditional art
- Explore how the principles are applied
  - Analyse images in Photoshop
  - Real-Time demos


Develop 2010



## Outline

- Viewpoint
- Separation
- Depth
- Light and Dark
- Colour

Develop 2010

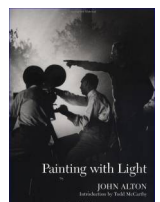


## Viewpoint


“ Because the screen in the motion picture theatre is a one-dimensional flat surface, it is imperative that we photograph everything from an *angle* from which most surfaces of the subject are visible to the camera”

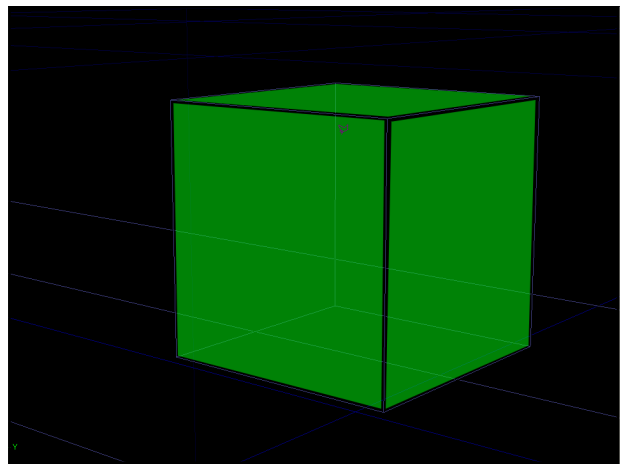
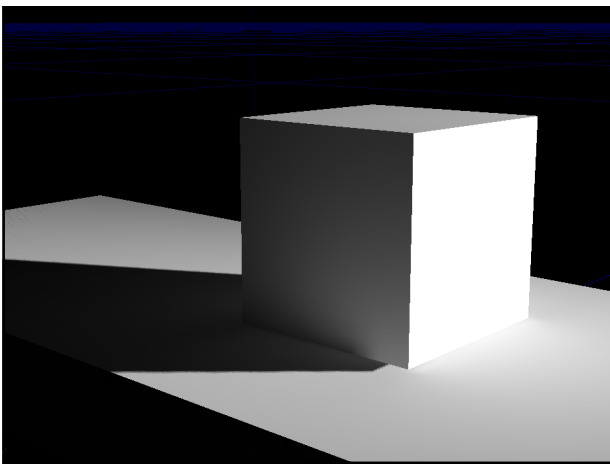
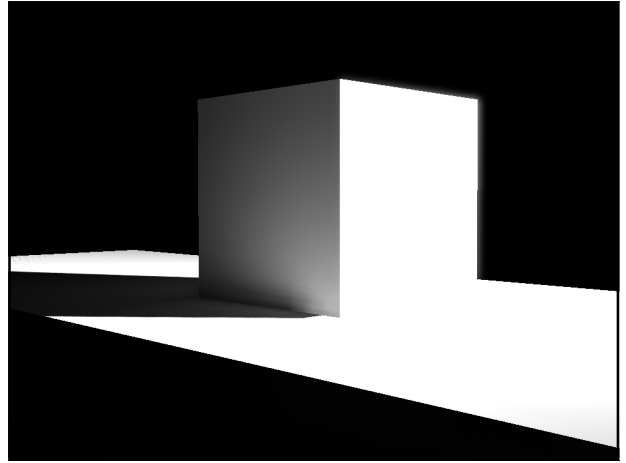
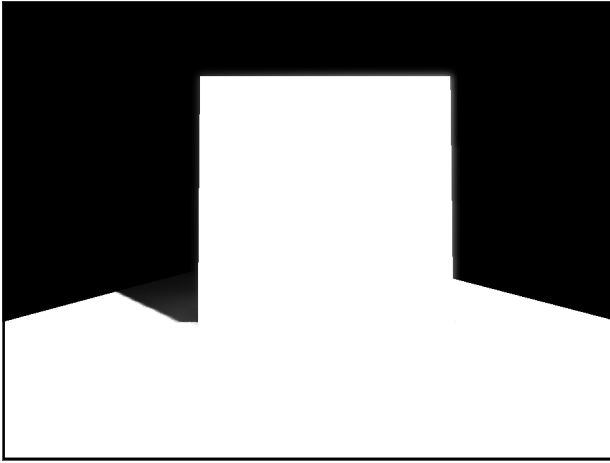
John Alton "Painting with Light", 1949

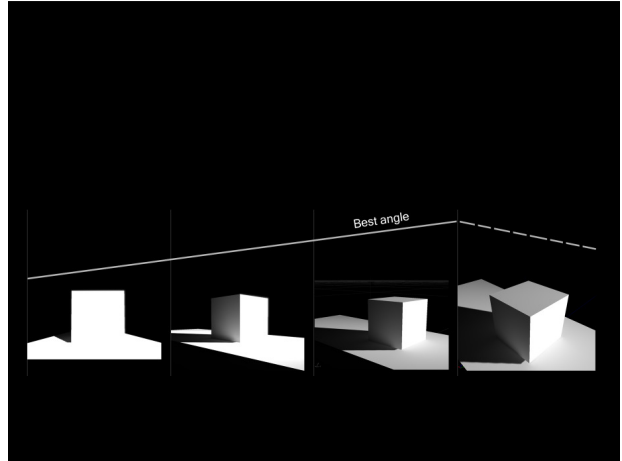
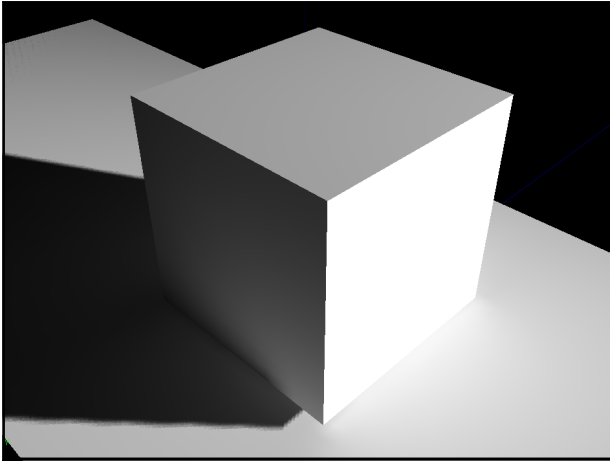
Reprinted by University of California Press, 1995



Develop 2010







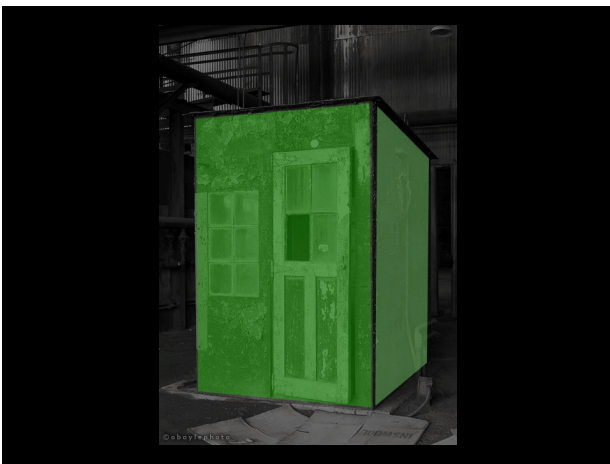
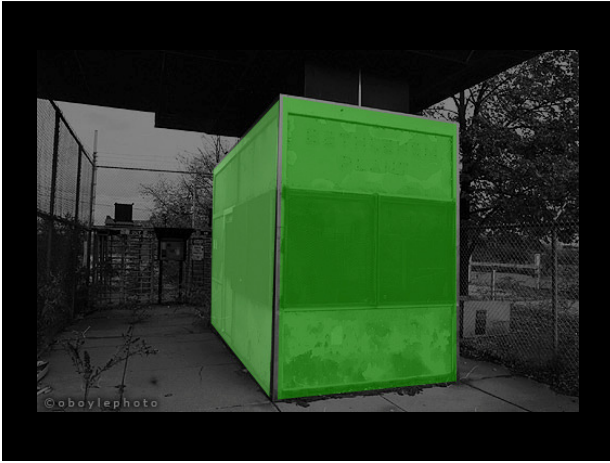
## Photographic Examples

- Images by Shaun O'Boyle
- [www.oboylephoto.com](http://www.oboylephoto.com)
  - Prints for sale

Develop 2010

Geomerics







## Viewpoint - Summary

- Images are shown on flat two-dimensional screens
- We need to reveal as many sides of our objects as possible to communicate their shape to our viewer
- We should avoid all sides taking up equal screen space

Develop 2010

Geomerics

## Outline

- Viewpoint
- Separation
- Depth
- Light and Dark
- Colour

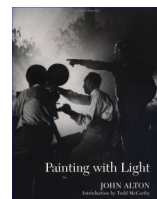
Develop 2010

Geomerics

## Separation

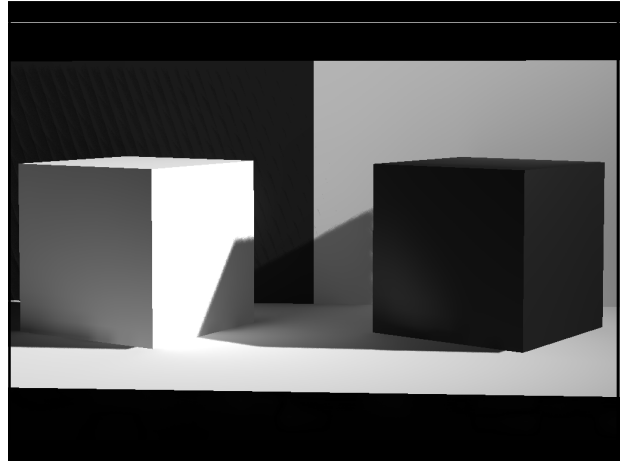
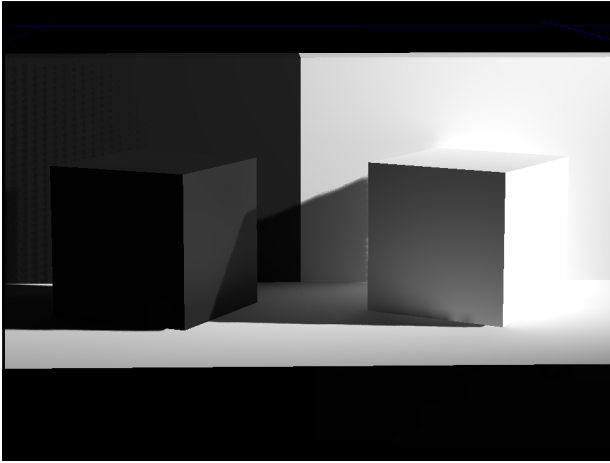
"The illusion of depth can be enhanced by separation of the [foreground and background]; that is, if the foreground is dark, the background should be light, or vice versa"

John Alton "Painting with Light"



Develop 2010

Geomerics



## Photographic Examples

- Images by Shaun O'Boyle
- [www.oboylephoto.com](http://www.oboylephoto.com)
  - Prints for sale

Develop 2010

Geometrics











## Separation

- We can separate various parts of our image into planes
- Can be any number of planes necessary to communicate the intention in our image
- Assigning different values to these adds depth to the image and shape to our objects through silhouetting

Develop 2010

Geomerics

## Outline

- Viewpoint
- Separation
- Depth
- Light and Dark
- Colour

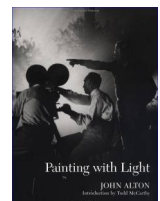
Develop 2010

Geomerics

## Lighting to add depth

"We sit in the dark looking at a light screen; this gives a definite feeling of depth"

John Alton "Painting with Light"



Develop 2010

Geomerics

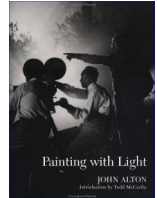


Orinda Theatre, Orinda, 1992 | © Hiroshi Sugimoto

## Lighting to add depth

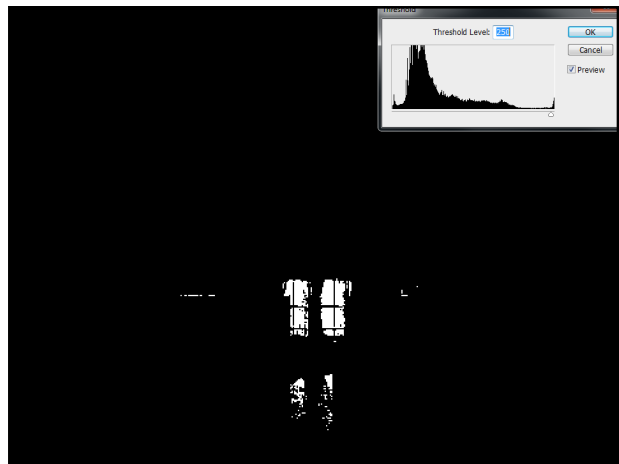
“In order to continue this depth on the screen, the progression from dark to light must be followed up. The spot which should appear to be the most distant should be the lightest...”

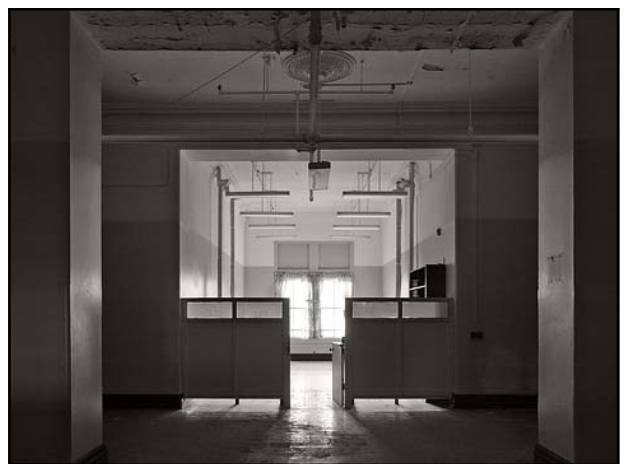
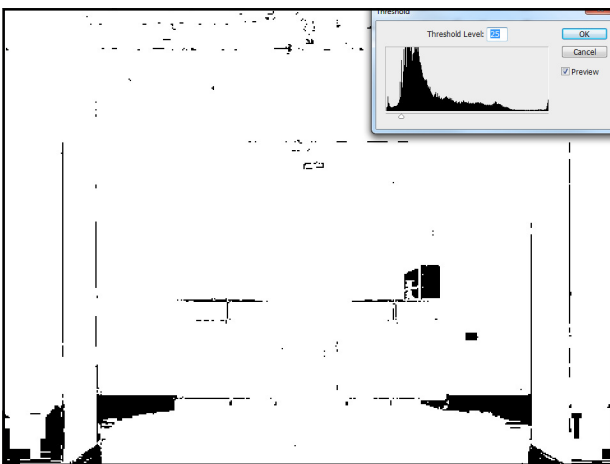
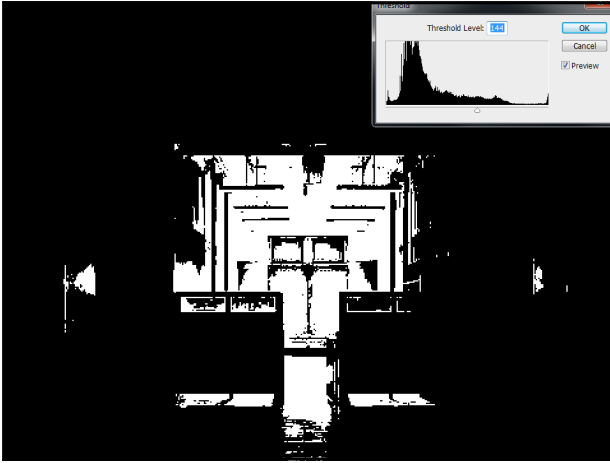
John Alton "Painting with Light"



Develop 2010

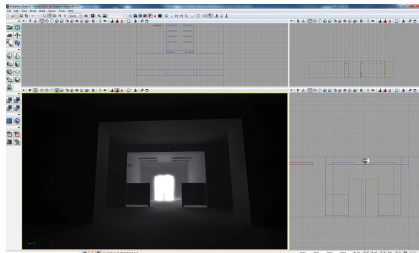
Geomerics





## Lighting to add depth

- Demo



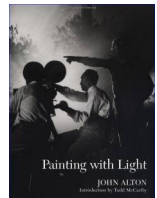
Develop 2010

Geomerics

## Lighting to add depth

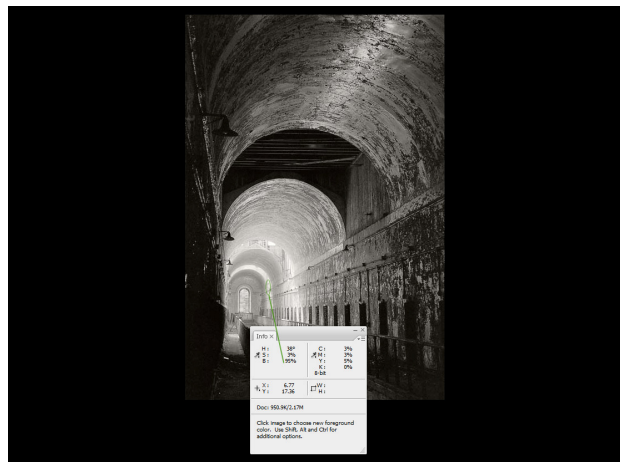
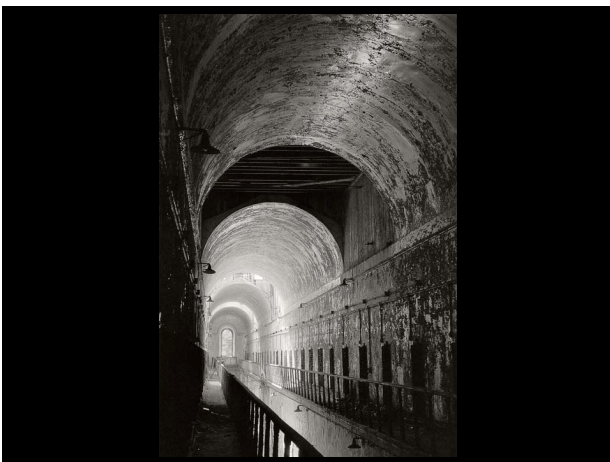
"The spot which should appear to be the most distant should be the lightest, and vice versa; the illusion is carried out by employing a full scale of shades from black to white"

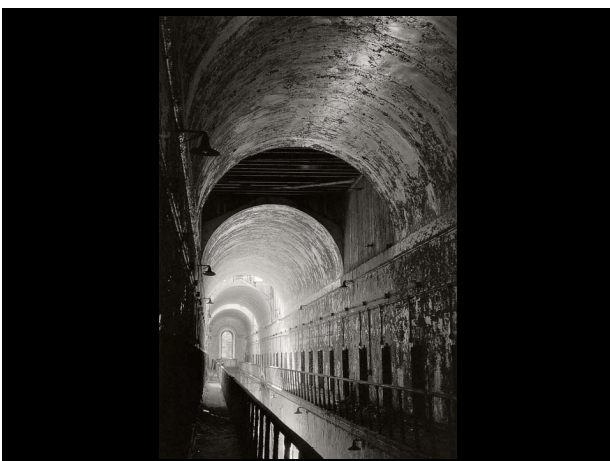
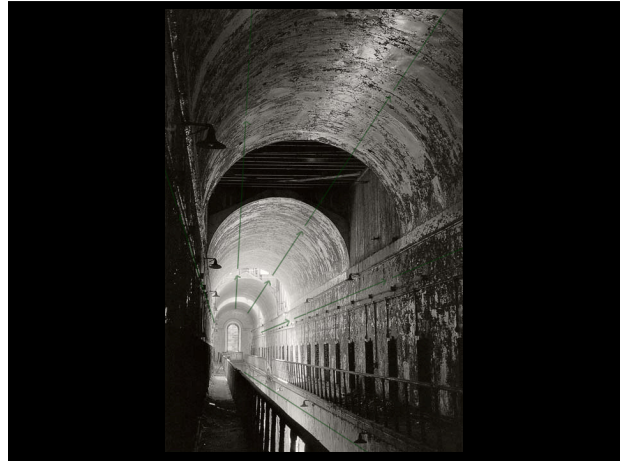
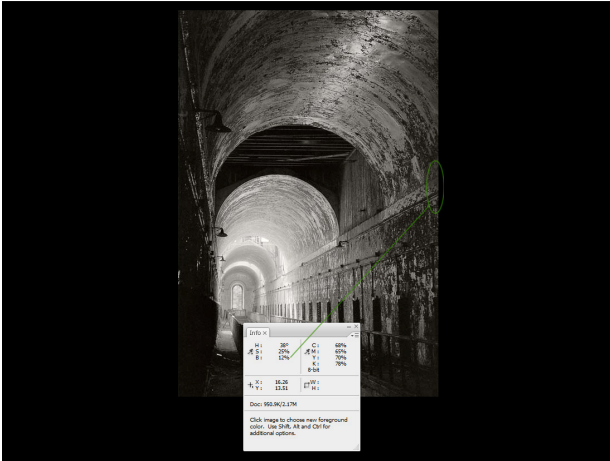
John Alton, Painting with Light



Develop 2010

Geomerics





### Lighting to add depth

- Demo

Develop 2010

Geomerics

## Lighting to add depth

- Brightest areas do not take up much space in the image
- Limited detail in the bright areas
- Most of the detail is biased towards shadows
- Lighting follows flow of composition
- The illusion of depth isn't a given!
  - We need to work with lighting and composition to make our viewer suspend disbelief and draw her in

Develop 2010

Geomerics




## Outline

- Viewpoint
- Separation
- Depth
- Light and Dark
- Colour

Develop 2010

Geomerics

## Light and Dark

- Achieve contrast through monochromatic / achromatic value gradients
- Value = luminance
  - 'How bright is the subject?'
- Means of expression
  - Smooth graduation 
  - Stepped graduation 
  - Cross hatching 

Develop 2010

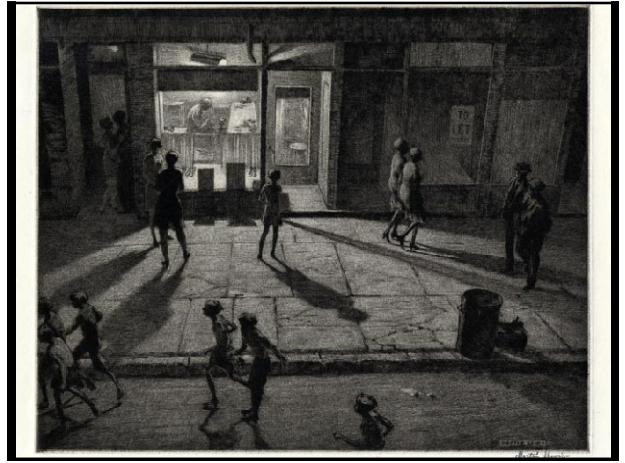
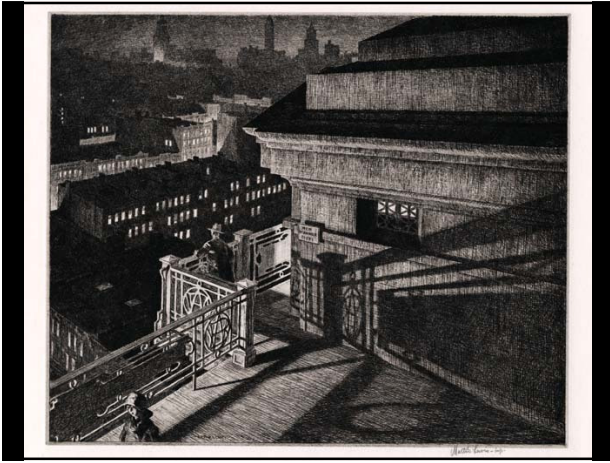
Geomerics

## Monochromatic / Achromatic contrast

- All examples from last section of talk were achromatic
  - We need to rely on viewpoint, separation and lighting to make this look good
  - Enables us to use a full range of values from black to white
- Martin Lewis (1881-1962)
  - Printmaker and painter
  - Etchings of New York City 1925-1935

Develop 2010

Geomerics



## Summary

- Detail in shadow is very effective
- Eye is very sensitive to changes in value in shadow
- Viewer fills in detail with imagination

Develop 2010

Geomerics

## Outline

- Viewpoint
- Separation
- Depth
- Light and Dark
- Colour

Develop 2010

Geomerics

## Colour Contrast

"Every colour you lay on your palette has an inherent tone"

"...the inherent tone of orange and lemon yellow, for example, is essentially light; red and green come in the mid-tone range; and purple and Winsor blue are both naturally dark colours"

"Colour and Light in Oils" p.51  
Nicholas Verrall  
Robin Capon



Develop 2010

Geomerics

## Colour Contrast

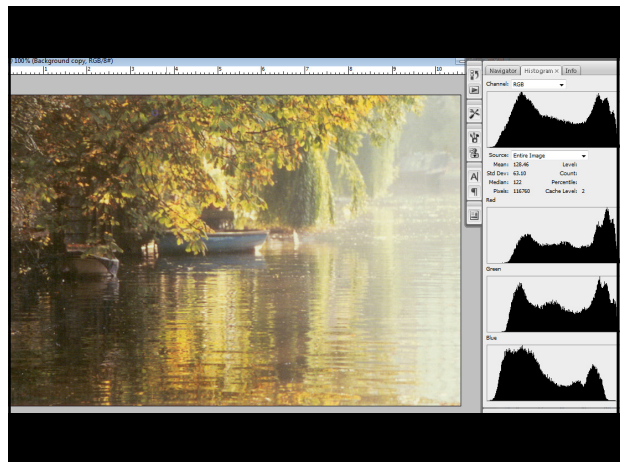
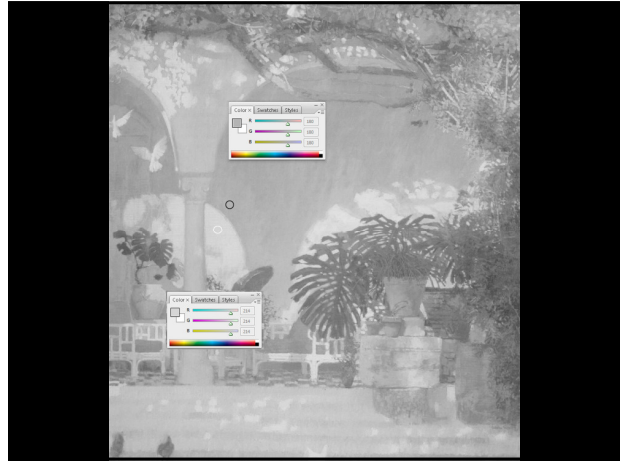
- Two main forms of colour contrast:
- Colour temperature contrast
- Contextual contrast

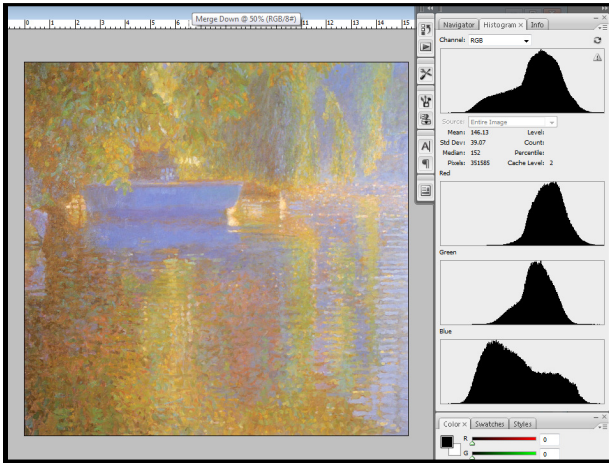


Develop 2010

Geomerics







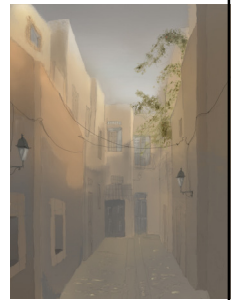
## Contextual contrast

"...in practice it is pointless to consider each colour as a separate entity. The impact of the painting is determined by the collective effect of the colours."

Colour and Light in Oils, p.51

"...when you see colour in different situations you tend to judge colour differently"

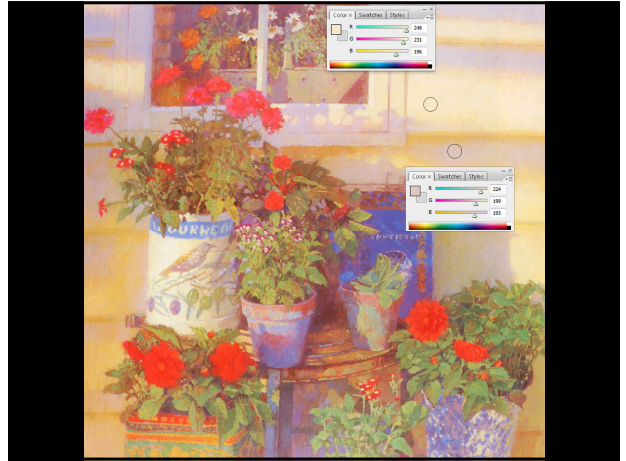
Jeremy Vickery, Practical Light and Colour



Develop 2010

Geomerics





### Hero

Develop 2010

**Geomerics**

### Alien

Develop 2010

**Geomerics**

## Principles of Composition

- What do you want to show in your image?
  - How do you want your viewer to discover your image?
- Use the composition to guide your viewer
  - Show as many surfaces as possible to the player
- Separate your image
- Light the separate areas distinctly
  - Brightest light source should be the most distant
- What do you want to communicate about the objects and mood in your image?
  - Use contrast to reveal this information

Develop 2010

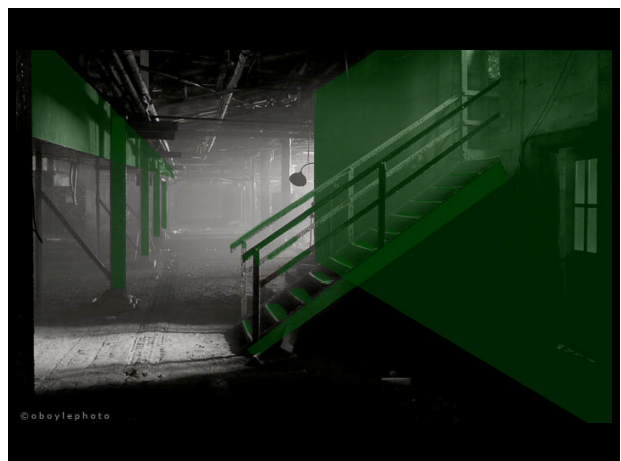
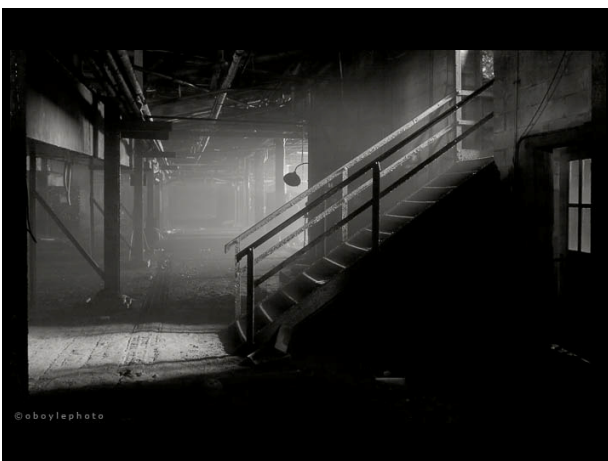
Geomerics

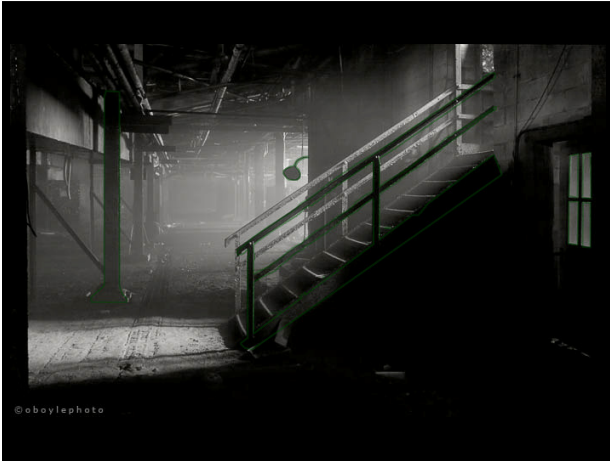
## Principles of Composition

- Combine and break the principles to create unique and interesting images!

Develop 2010

Geomerics





## Demo and Questions



Chris.Doran@geomerics.com  
Ivan.Pedersen@geomerics.com

Develop 2010

**Geomerics**