Basic Cinematography

Prof. McGuire - CS371: Computational Graphics – Fall 2014
Cinematography is Extensive

- Imagine trying to teach “programming” or “solving differential equations” or “writing a great novel” in 20 minutes

- This presentation only covers the most cursory aspects of cinematography
- You need to watch a lot of films
- You need to make a lot of films
- Improve one element with revision
- **Greatness** takes a career and talent
- *Strive for inconspicuous and ordinary in your first year, so that the audience can focus on your film’s content and not be distracted by amateur style errors*
Cinematic is better than Real

-Shapshot by Tara Miller
http://writemeariver.files.wordpress.com/2010/07/sdc11430.jpg

-The Black Swan, dir: Aronofsky, 2006
Cinematography Has Specific Techniques

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Cinematography Time Scales

- (Series)
- Film
- Part
- Scene*
- Shot
- Beat
- Frame

* “Scene” means a narrative scene here; elsewhere I use the CG definition of scene = cameras + lights + actors + set + ...
Shot Elements

- **Scene**
  - Camera
  - Lights
  - Subjects
  - Props
  - Set
  - Music
  - Dialog
  - Foley
  - VFX

- **Duration**

- **Transition**

- **(Context)**
Virtual Camera Controls

- Field of view = zoom
- Distance from subject
- Position
- Orientation
  - Usually only yaw
- Motion
  - Usually
- Sensitivity
- Motion blur extent
- Tone curve & tint
- Bloom
- Focus depth
- Defocus radius
- Aspect ratio
- Frame rate

*These are also properties of real cameras, but they can’t be controlled independently*
Standard Camera Locations

• Establishing shot
• Close-up ("Insert shot")
• Over-the-shoulder
• Tracking shot (follow cam)
• Crane shot ("3rd person")
• Point-of-view ("1st person")
  – Extremely rare!
  – Usually preceeded by a reaction shot
Establishing Shot

*Manhattan*, dir: Allen, 1979

*Stand By Me*, dir: Reiner, 1986
Extreme Close-Up

Capricorn One, dir: Hyams, 1977
Conveying Instability and Duress

“Dutch Angle”

A Touch of Evil, dir: Welles, 1964

“Bavarian Angle”

TRON, dir: Lisberger, 1982
East of Eden, dir: Kazan, 1955
Three Point Lighting

Key Light
Bright and sharp
Defines highlights and shadows

Fill Light
Dim and diffuse
(or non-shadow casting)
Fills in key shadows
Often just indirect light

Back Light
Dim (often not shadow casting)
Provides rim lighting
Makes metals and transparencies look good

Sometimes add a fourth light shining only on the background
Taxi Driver, dir: Scorsese, 1976
The Prince and the Showgirl, dir: Olivier, 1957
Strong Backlighting for Effect

*House of Games*, dir: Mamet, 1987

*The Big Red One*, dir: Fuller, 1980

*Portrait of Jennie*, dir: Dietrle, 1948
Vertical Elements Contrast Characters

*Tender Mercies*, dir: Beresford, 1983
Rule of Thirds

- Put interesting elements (faces, key props, bright spots) at 1/3 vertically or horizontally.
- Leave the 2/3 on the side a subject is “facing” (unless you want to simulate claustrophobia).

*Act of Violence*, dir: Zinnemann, 1948
Raiders of the Lost Ark, dir: Spielberg, 1981

Branded to Kill, dir: Suzuki, 1967

Blade Runner, dir: Scott, 1982

Psycho, dir: Hitchcock, 1960
Color Composition

• Compose and light the image in grayscale

• Choose a single dominant color
  – Desaturate and accent with the desaturated complementary color
  – Or, make the image monochrome
  – Saturated colors are very rare
  – Prefer tinted direct or indirect light to material color

• Vary colors for shots over time
  – Theme to characters, settings, tension, and mood
Complementary Colors are Opposite on this **Perceptual** Color Wheel

Vertigo, dir: Hitchcock, 1958

Back to the Future, dir: Zemeckis, 1985

Secretary, dir: Shainberg, 2002

Fear and Loathing in Las Vegas, dir: Gilliam, 1998
Color Script
Colors of each frame of *The Lion King*, sorted by luminance

http://blog.wolfram.com/2013/08/13/a-visit-to-disneys-magic-kingdom/
52 Disney Color Scripts

http://blog.wolfram.com/2013/08/13/a-visit-to-disneys-magic-kingdom/
Transitions

• Cut audio 1/2s - 2s before video
• Prefer cuts to other transitions
  – Fading in & out major shots is acceptable
  – Use wipe, split-screen, and crossfade only for self-conscious edits
• Usually cut between different views of the same content
  – Exception: reaction/cutaway
Cut Angle Rules

• **30 degree rule**
  – A -> C is ok
  – A -> B is too close
  – Will appear as transportation

• **180 degree rule**
  – C -> A is ok
  – C -> D is too far
  – Characters will switch sides
Cinematography Cheat Sheet

1. Directly mimic specific, typical shots from good films; don’t get fancy
2. Use a narrow field of view and a relatively distant camera
3. Prefer cuts between cameras to a moving camera
   – At least 30 degree change of orientation
   – Don’t cross the line of action between two actors
4. Put the camera at chest height
5. Place the subject 1/3 of the way across the frame
6. Use one bright light, one dim light, and ambient
7. Cut audio before video
8. Show an establishing shot before cutting closer
9. Prefer the lighting, camera, and action to dialog for narrative
10. Adjust lights and set between shots within the same “scene”
References

• Haigh-Hutchinson, *Real-Time Cameras*, Morgan Kaufmann, 2009
• Malkiewicz, *Cinematography*, Simon & Schuster, 1992
• Frames captured by @OnePerfectShot