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 **inconspicious** 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

Palette

Complementary

Histogram

Key Light

Center vanishing point

1/3

2/3

Fill Light

Back Light

Chest height camera

Pitch = 0

Roll = 0

Shapshot by Tara Miller
http://writemeariver.files.wordpress.com/
2010/07/sdc11430.jpg
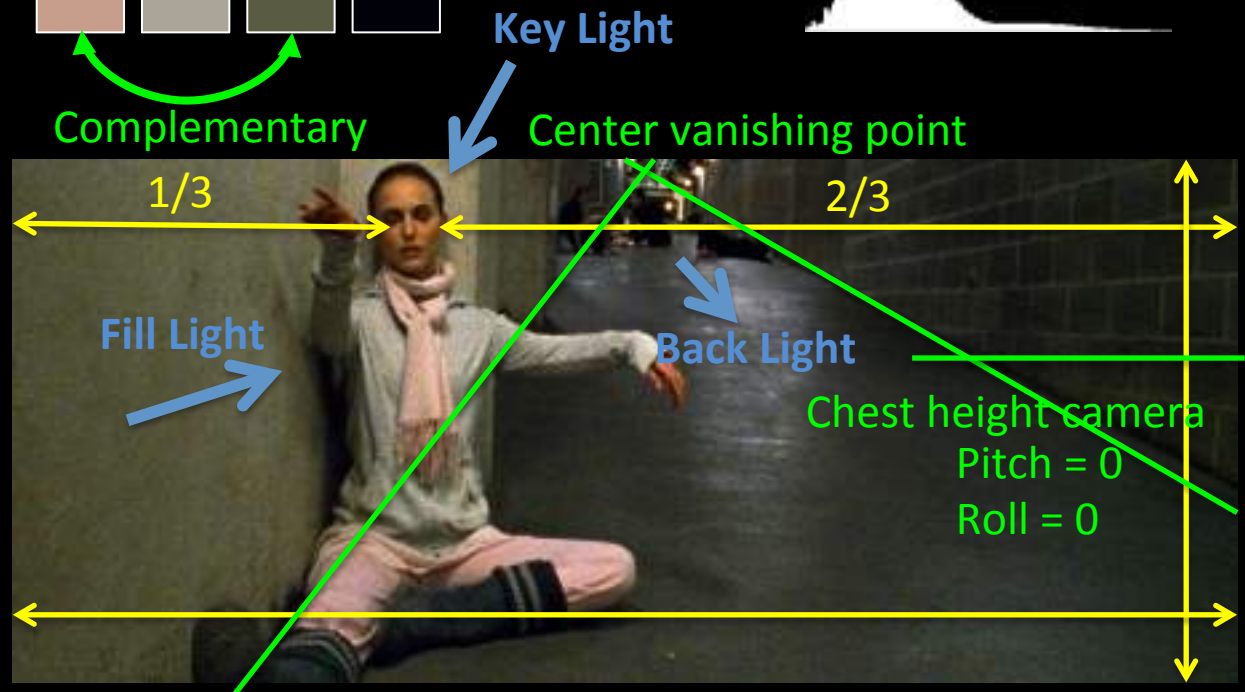
The Black Swan, dir: Aronofsky, 2006

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

Close-Up

Ali, dir: Mann, 2001

In the Mood for Love, dir: Wai, 2000

Extreme Close-Up

Capricorn One, dir: Hyams, 1977

Conveying Instability and Duress

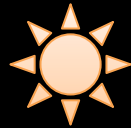**"Bavarian Angle"**

"Dutch Angle"

A Touch of Evil, dir: Welles, 1964

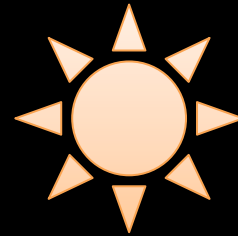*TRON*, dir: Lisberger, 1982

East of Eden, dir: Kazan, 1955
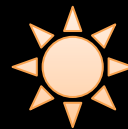
Three Point Lighting

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

Key Light
Bright and sharp
Defines highlights and shadows

Back Light
Dim (often not shadow casting)
Provides rim lighting
Makes metals and transparents 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

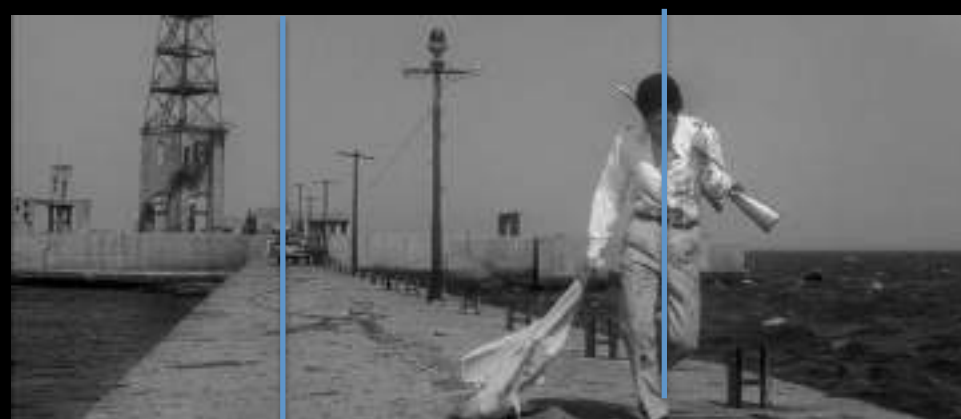*Tender Mercies*, dir: Beresford, 1983

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
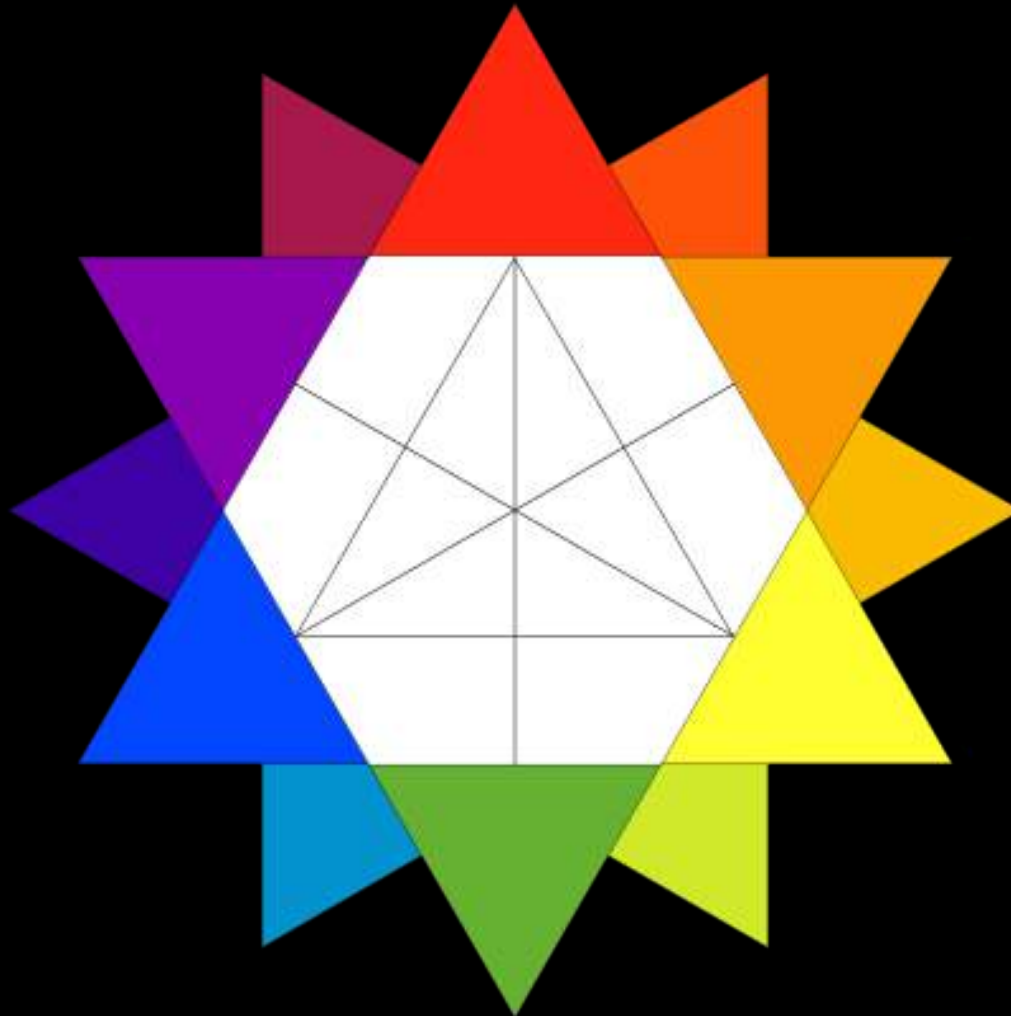
Vertigo, dir: Hitchcock, 1958

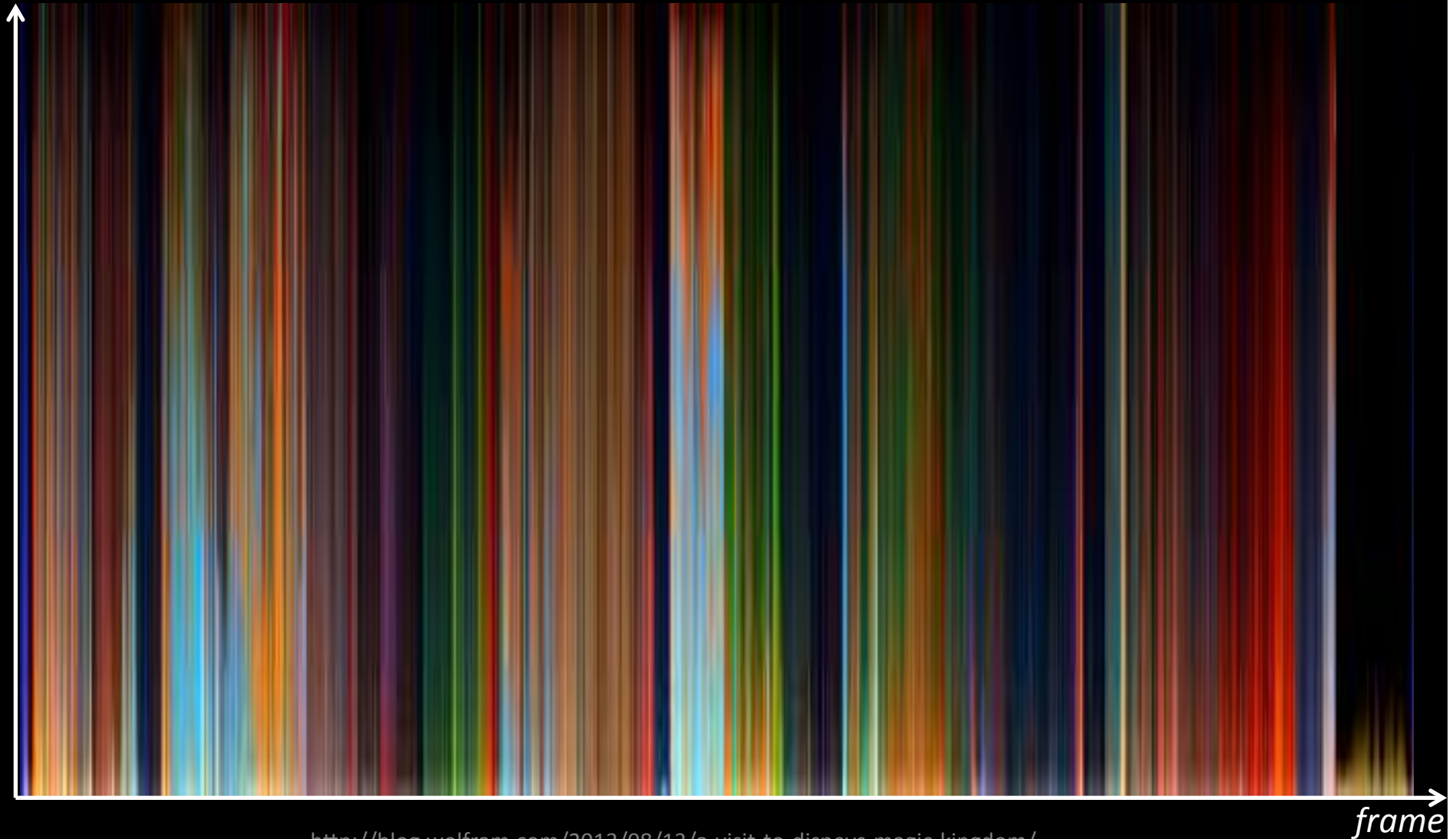*Back to the Future*, dir: Zemeckis, 1985

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

luminance

frame

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 transisions
  - 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

A

B

C

D

Line of Action
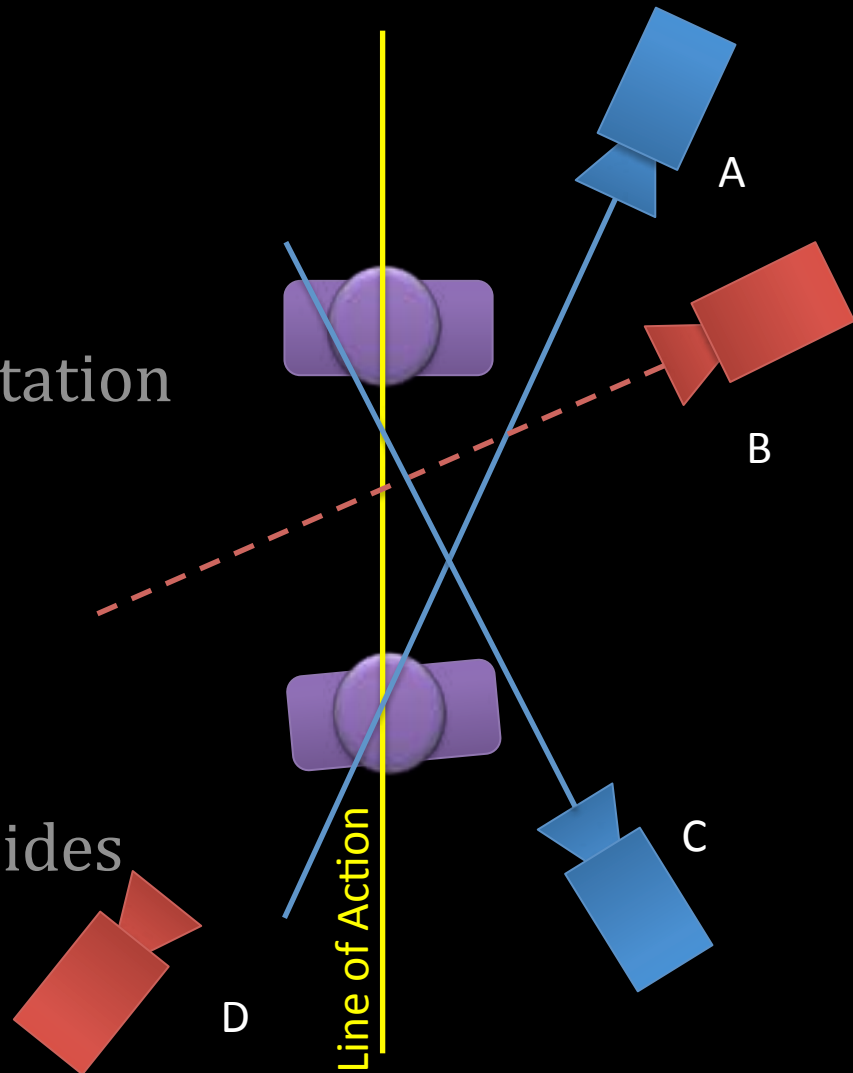
Cinematography Cheat Sheet

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
- Arijon, *Grammar of the Film Language*, Silman-James Press, 1976
- Masson, *CG 101: A Computer Graphics Industry Reference*, Digital Fauxtography Inc., 1999
- Malkiewicz, *Cinematography*, Simon & Schuster, 1992
- Frames captured by @OnePerfectShot