WEEK 11: FROM STILLS TO VIDEO

DIGITAL MEDIA E-10

EXPOSING DIGITAL PHOTOGRAPHY

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GETTING INTO THE GAME

ONE FRAME TO MANY
# Technical Differences

## Frame Rate

<table>
<thead>
<tr>
<th>23.976</th>
<th>29.97</th>
<th>59.94</th>
<th>120</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td>30</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

Image from [https://documentation.apple.com](https://documentation.apple.com)
OVER AND UNDER CRANKING

TECHNICAL DIFFERENCES
INTERLACED AND PROGRESSIVE

TECHNICAL DIFFERENCES

Image from http://video.stackexchange.com
http://images.hardwarezone.com
## Technical Differences

### Resolution, Frame Sizes

<table>
<thead>
<tr>
<th>Common Resolutions</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD 640 X 480</td>
<td>1.33:1</td>
</tr>
<tr>
<td>HD (720P) 1280 X 720</td>
<td>1.78:1</td>
</tr>
<tr>
<td>HD (1080P) 1920 X 1080</td>
<td>1.78:1</td>
</tr>
<tr>
<td>UHD 3840 X 2160</td>
<td>1.78:1</td>
</tr>
<tr>
<td>4K 4096 X 2160</td>
<td>1.89:1</td>
</tr>
</tbody>
</table>
TECHNICAL DIFFERENCES

RESOLUTION, FRAME SIZES

720 x 480
(DVD)

1280 x 720

1920 x 1080
(Full HD)

3840 x 2160
(4x 1080p)

4096 x 2160
DCI
Standard

Image from https://www.thirstt.com
# Technical Differences

**Aspect Ratio**

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:1 or 1x1</td>
<td>Box</td>
</tr>
<tr>
<td>1.33:1 or 4x3</td>
<td>SD</td>
</tr>
<tr>
<td>1.66:1</td>
<td>European</td>
</tr>
<tr>
<td>1.78:1 or 16x9</td>
<td>HD</td>
</tr>
<tr>
<td>1.85:1</td>
<td>Widescreen Theatre</td>
</tr>
<tr>
<td>2.40:1</td>
<td>Anamorphic</td>
</tr>
</tbody>
</table>

Image from [https://churchvisualmedia.wordpress.com](https://churchvisualmedia.wordpress.com)
# Technical Differences

## Resolution, Sensor

### Sensor Size Comparison Chart

<table>
<thead>
<tr>
<th>Type</th>
<th>1/3”</th>
<th>1/2”</th>
<th>2/3”</th>
<th>4/3”</th>
<th>APS-C</th>
<th>Canon Nikon Pentax DX</th>
<th>Super 35</th>
<th>APS-H</th>
<th>35mm Full Frame</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensor w x h</td>
<td>4.8 x 3.6mm</td>
<td>6.4 x 4.8mm</td>
<td>8.8 x 6.6mm</td>
<td>17.8 x 10mm</td>
<td>22.2 x 14.8mm</td>
<td>23.6 x 15.5mm*</td>
<td>24.89 x 18.66mm</td>
<td>28.7 x 19.1mm</td>
<td>36 x 24mm</td>
</tr>
<tr>
<td>Sensor diagonal</td>
<td>6mm</td>
<td>8mm</td>
<td>11mm</td>
<td>20.41mm</td>
<td>26.7mm</td>
<td>28.4mm</td>
<td>31.1mm</td>
<td>34.5mm</td>
<td>43.3mm</td>
</tr>
<tr>
<td>Sensor area</td>
<td>17.3mm²</td>
<td>30.7mm²</td>
<td>58.1mm²</td>
<td>178mm²</td>
<td>329mm²</td>
<td>366mm²*</td>
<td>464.44mm²</td>
<td>548mm²</td>
<td>864mm²²</td>
</tr>
<tr>
<td>Crop factor</td>
<td>7.21</td>
<td>5.41</td>
<td>3.93</td>
<td>2</td>
<td>1.62</td>
<td>1.52</td>
<td>1.39</td>
<td>1.26</td>
<td>1</td>
</tr>
</tbody>
</table>

### Applicable Cameras

- 1/3”:
  - Panasonic AG-AF101
- 1/2”:
  - Canon EOS 7D
  - Canon EOS 60D
  - Canon EOS 50D
  - Sony NEX-VG10E
- 2/3”:
  - *Approx
- 4/3”:
  - Arri Alexa
  - Sony PMW-F3
  - Sony SRW-9000PL
  - Sony F35
- APS-C:
  - Canon EOS 5D
  - Nikon D3s
Rule of Thumb for a “film” look, natural motion blur: Shutter Speed = Frame Rate * 2
SHUTTER SPEED: SLOW
SHUTTER SPEED: FAST
SHUTTER SPEED EXAMPLES

1/6

1/24

1/48 (NORMAL)

Shortened from https://www.youtube.com/watch?v=9-Jum6TrCl0
GLOBAL VS ROLLING SHUTTER

TECHNICAL DIFFERENCES

Image from http://www.juzaphoto.com
RAW VS VIDEO

TECHNICAL DIFFERENCES
CODECS

TECHNICAL DIFFERENCES

coder-decoder

“… encodes a data stream or signal for transmission, storage or encryption, or decodes it for playback or editing”
<table>
<thead>
<tr>
<th>COMMON WEB FORMATS</th>
<th>COMMON PRO FORMATS</th>
</tr>
</thead>
<tbody>
<tr>
<td>H.264 / AAC (MP4)</td>
<td>APPLE PRORES</td>
</tr>
<tr>
<td>VP8 / VORBIS (WEBM)</td>
<td>AVID DNXHD</td>
</tr>
</tbody>
</table>

https://en.wikipedia.org/wiki/Codec
Gamma encoding refers to the logarithmic curve applied to the scene data coming from the sensor to maximize the tonal range of the image. It is usually proportional to exposure measured in stops.
LOG VS LUT

TECHNICAL DIFFERENCES
SHOT SIZES

CREATIVE DIFFERENCES

Extreme Wide Shot (XWS)  Full Shot / Long Shot  3/4 Shot  Medium Shot (MS)

Medium Close Up (MCU)  Close Up (CU)  Extreme Close Up (ECU)
SHOT SIZES

CREATIVE DIFFERENCES

Extreme Wide Shot (XWS)  Full Shot / Long Shot  3/4 Shot  Medium Shot (MS)

Medium Close Up (MCU)  Close Up (CU)  Extreme Close Up (ECU)

Image from https://hifsaarshad.files.wordpress.com
CREATIVE DIFFERENCES

180 DEGREE RULE
I HAVE TO WORRY ABOUT THAT TOO?

A U D I O

Image from http://w5jgv.com
DSLRS ARE NOT GOOD AT AUDIO

AUDIO

Image from http://33.media.tumblr.com
DSLRs are not good at audio

Audio

Image from http://33.media.tumblr.com

DYNAMIC MICROPHONE

AUDIO

Image from http://blog.hookeaudio.com
LAV(ALIER) MICROPHONE

AUDIO

Image from http://www.talamas.com
SHOTGUN MICROPHONE

AUDIO

Image from http://www.globalmediapro.com
HANDHELD MICROPHONE

AUDIO

Image from http://www.trewaudio.com
PHANTOM POWER (+48V)

AUDIO

Image from http://www.realtimeaudio.ca
PHANTOM POWER, CONTINUED

AUDIO

Does not need Phantom power

Wireless Mics  
Dynamic Mics  
Powered Condensers

Needs Phantom Power

Powered Mixers  
Studio Condenser

Image from http://filmmakeriq.com
PICKUP PATTERNS

AUDIO

[Image from http://coursyo.com/]

(cardioid (unidirectional))
Phantom Pickup Patterns, Continued

Audio

Image from http://www.techwarelabs.com
WIRELESS VS WIRED AUDIO

Image from http://static.bhphoto.com
Each line represents a new sample. The time between each line/sample represents the sampling period, which equals 1/44,100 of a second, for a CD with a sampling rate of 44.1 kHz.
COMMON SAMPLE RATES

AUDIO

- CDs = 44.1 KHz
- Pro video = 48 KHz
OVERMODULATION

AUDIO

Image from http://s3.amazonaws.com
Signal to Noise Ratio

Audio

![Diagram of signal to noise ratio]

Image from [http://www.vettaville.nl](http://www.vettaville.nl)
WHAT DO GOOD LEVELS LOOK LIKE

AUDIO

Image from i566.photobucket.com
SETTING AUDIO LEVELS

AUDIO

Image from: http://cinescope.co.in
https://play.google.com
COMMON SAMPLE RATES

AUDIO

MIC PLACEMENT

AUDIO

Image from https://www.gearslutz.com
Best Practices
CAMERAS

PRODUCTION HARDWARE
PRODUCTION

FOCUS
TRIPODS AND HEADS

PRODUCTION HARDWARE
Handheld and Shoulder Production Hardware
DOLLY AND JIB

PRODUCTION HARDWARE
MOVI AND GLIDE CAM

PRODUCTION HARDWARE
HIGH LEVEL STEPS

PRE-PRODUCTION

- Script is complete
- Secure locations
- Cast actors
- Schedule shoots and Crew
- Production Design
- Determine the look
- Break down the script into shots
- Storyboard
PRE-PRODUCTION

- Consider what locations your script calls for
- Figure out what connections you have
- Scout Locations
  - Below flight path / Next to freeway / Excess Noise?
  - Where is power
  - Bathrooms
  - Camera movement / equipment storage
Director needs to determine if the actor can convey the “vision”
Poor casting is the downfall of the whole production
For student films, consider a joint casting call
Read key excepts from the script, make sure the actor fits the part
**Scheduling Shoots and Crew**

**Pre-Production**

- Always plan for extra days, production always runs long
- Have a plan ‘B’ for what you can skip shooting if a day is running late
- Make sure your crew understands the “vision”
- Consider distance between locations
- You do not have to shoot things in order, complete all scenes in a given location before moving on (really important for the director to understand the “vision” and explain where the actors are in a scene)
PRODUCTION DESIGN

PRE-PRODUCTION

- Props, where will you get them
- Costumes
- Appearance of the set
- How will elements look on camera
PRE-PRODUCTION

• What camera
• What lenses
• Test shoots and look at color grades
• Shooting style (what kind of movement, lighting, palate)
CONTINUED:

Moments pass - The other boys finish congregating around
the radio and all three make their way over to the
instruments set behind Peter, still sitting and staring
deep into space.

GARY
(standing with a bass
guitar around his neck)
Peter, are you ready?
PETER
(standing up hastily)
No, I, gotta go. Sorry guys,
I'll see you tomorrow, yeah?

He grabs his canvas satchel, motorcycle helmet and leather
jacket and heads out of the door. The three boys look at
each other, confused.

EXT. SUBURBAN STREETS, DAY.

Peter is riding his motorbike through roads on the edge of
the city. Around a particularly tight corner he drives off
screen and the visual CUTS TO BLACK as we hear the bike
collide with a car. A woman is heard to step out of the
car and scream, and a man's voice is heard to say "Oh
god". As she calls to the man "David, ring an ambulance"
the noise of them and of engines running fades.

INT. PETERS BEDROOM, DAY.

FADE UP to see Peter, laid up in bed, covered in cuts and

Image from https://jonscinematographyblog.files.wordpress.com
accad.osu.edu
PRODUCTION

- Crew / cast arrives
- Scenes are set
- Movie is shot (not in order)
HIGH LEVEL STEPS

POST-PRODUCTION

• Edit the film in a Non-Linear Editor (NLE)
• Add Sound/Sound effects
• Add color corrections / grade
• Add effects, transitions
• Titles
POST-PRODUCTION

- Stay organized
- Keep backups (RAID)
- Establish your scene
- Show relationships
- Montages
- Jump Cuts
- L and J Cuts
EXPORTING AND DISTRIBUTION

POST PRODUCTION

Image from https://www.youtube.com

http://www.trewaudio.com/rentals/ca_senn_skm185_handheld_microphone.jpg
OTHER RESOURCES

Remove Background hum/hiss
https://www.youtube.com/watch?v=DLdEqTayr9g

Download Sound Effects
https://www.freesound.org/
http://www.partnersinrhyme.com/pir/PIRsfx.shtml

Software Tutorials:
http://www.lynda.com/

Resources:
http://filmmakeriq.com/
http://nofilmschool.com/

http://google.com