

WEEK 8: BASIC VIDEO PRODUCTION

DIGITAL MEDIA E-5

EXPLORING DIGITAL MEDIA

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FRAME RATES



HUMAN PERCEPTION

3 fps



HUMAN PERCEPTION

6 fps



HUMAN PERCEPTION

12 fps



HUMAN PERCEPTION

24 fps

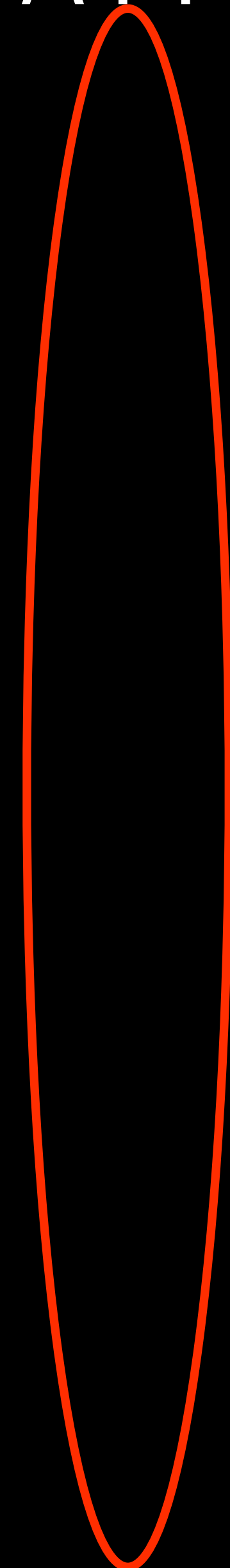


HUMAN PERCEPTION

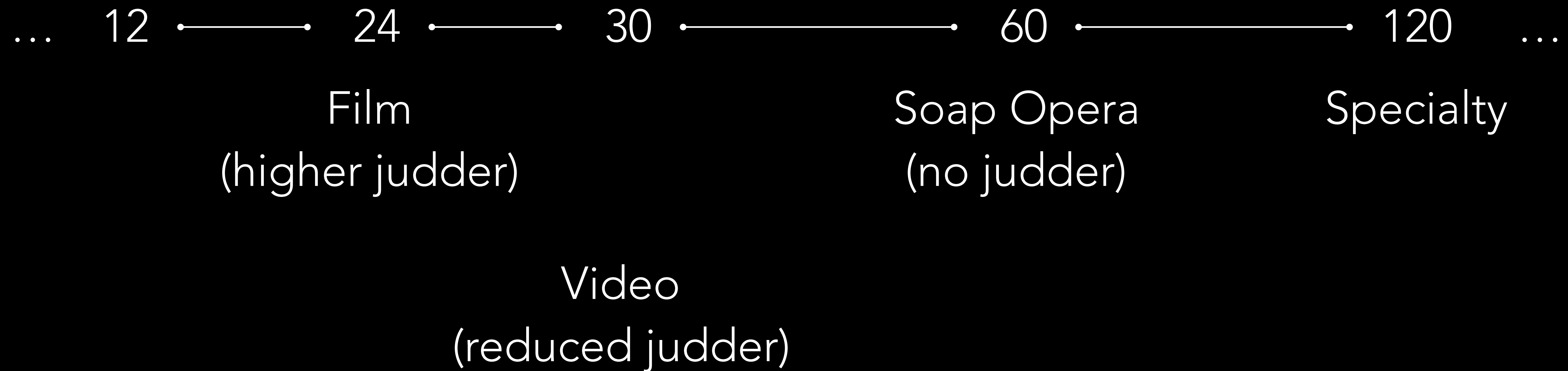
~12 fps one frame indistinguishable from the next

~24 fps feels comfortable, natural motion

WHY 24 FRAMES PER SECOND (FPS)?



DETERMINING YOUR FRAME RATE



Movie rec. size

1920x1080 30fps 60:00
Low comp. (intra frame, ALL-I)

- | | | | | | |
|--|--|---|-------------------------------|-----------------------------|--------------------------------|
| <input checked="" type="checkbox"/> 1920 | <input checked="" type="checkbox"/> 30 | <input checked="" type="checkbox"/> ALL-I | <input type="checkbox"/> 1280 | <input type="checkbox"/> 60 | <input type="checkbox"/> ALL-I |
| <input type="checkbox"/> 1920 | <input type="checkbox"/> 30 | <input type="checkbox"/> IPB | <input type="checkbox"/> 1280 | <input type="checkbox"/> 60 | <input type="checkbox"/> IPB |
| <input type="checkbox"/> 1920 | <input type="checkbox"/> 24 | <input type="checkbox"/> ALL-I | <input type="checkbox"/> 640 | <input type="checkbox"/> 30 | <input type="checkbox"/> IPB |
| <input type="checkbox"/> 1920 | <input type="checkbox"/> 24 | <input type="checkbox"/> IPB | | | |

Canon

File Format

- XAVC S 4K XAVC S 4K
- XAVC S HD XAVC S HD
- AVCHD AVCHD
- MP4 MP4

Sony

Record Setting

- 60P 60p 50M
- 30P 30p 50M
- 24P 24p 50M
- 120P 120p 100M
- 120P 120p 60M

Movie settings

Frame size/frame rate

- 1080 P 60 1920x1080; 60p
- 1080 P 30 1920x1080; 30p
- 1080 P 24 1920x1080; 24p
- 720 P 60 1280x 720; 60p
- 424 P 30 640x 424; 30p

Nikon

"OVERCRANKING" AND "UNDERCRANKING"







OVER & UNDER CRANKING

"Captured" frame rate vs your "project" frame rate

f/2.8 $\frac{1}{3}$
180° (1/48s)
ISO 400

24 fps @ 24 fps



f/4
360° (1/250s)
ISO 1000

250 fps @ 24 fps



f/4
360° (1/250s)
ISO 1000

250 fps @ 250fps



f/4
360° (1/120s)
ISO 500

120 fps @ 24 fps



f/4
360° (1/60s)
ISO 250

60 fps @ 24 fps



f/2.8 $\frac{1}{3}$
270° (1/40s)
ISO 250

30 fps @ 24 fps



f/2.8 $\frac{1}{3}$
180° (1/24s)
ISO 250

12 fps @ 24 fps



f/2.8 1/3
180° (1/24s)
ISO 250

12 fps @ 12 fps



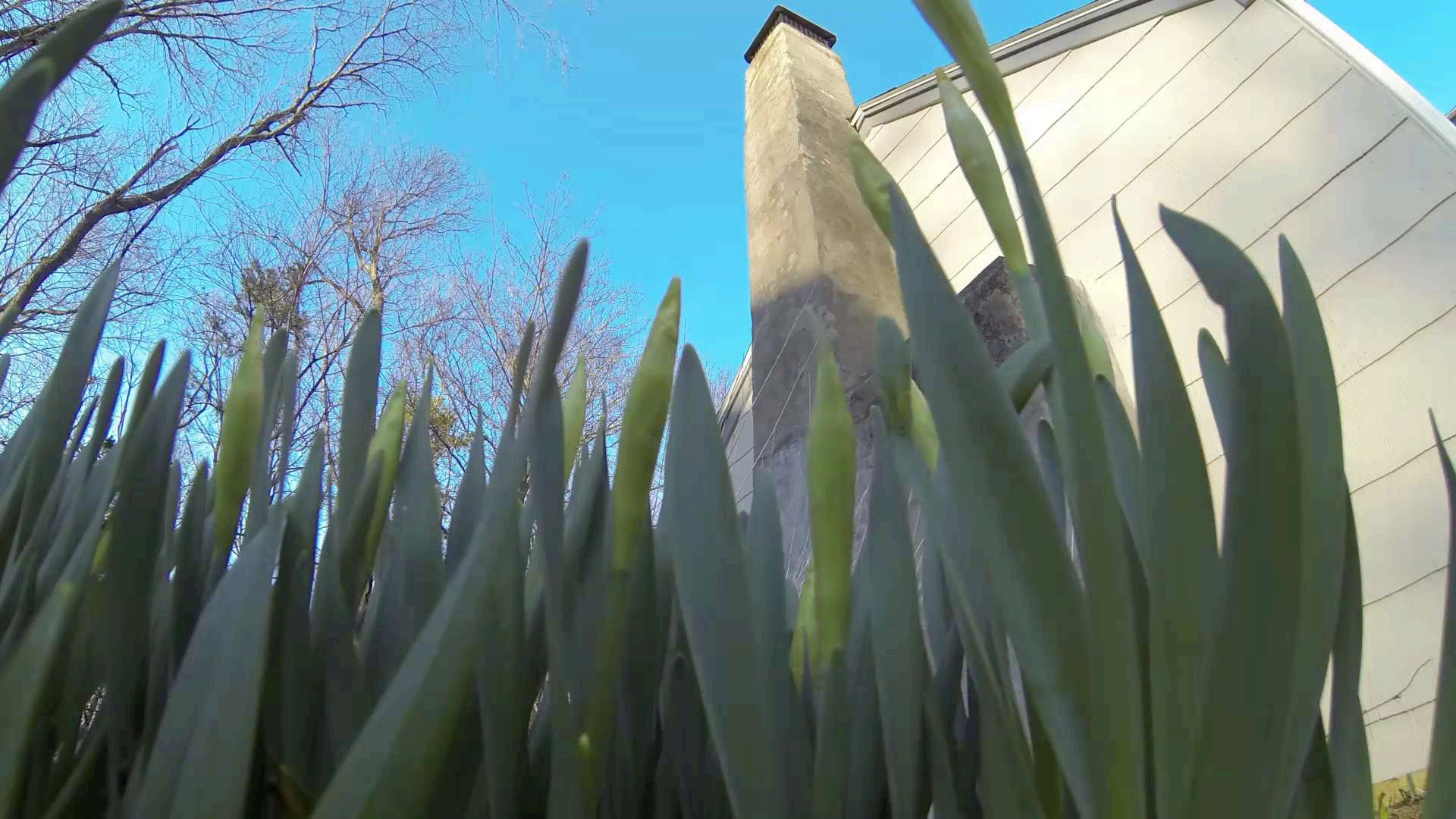
f/2.8 1/3
180° (1/8s)
ISO 250

4 fps @ 24 fps



FRAME RATE

Watch these examples





EXPOSURE TRIANGLE

ISO

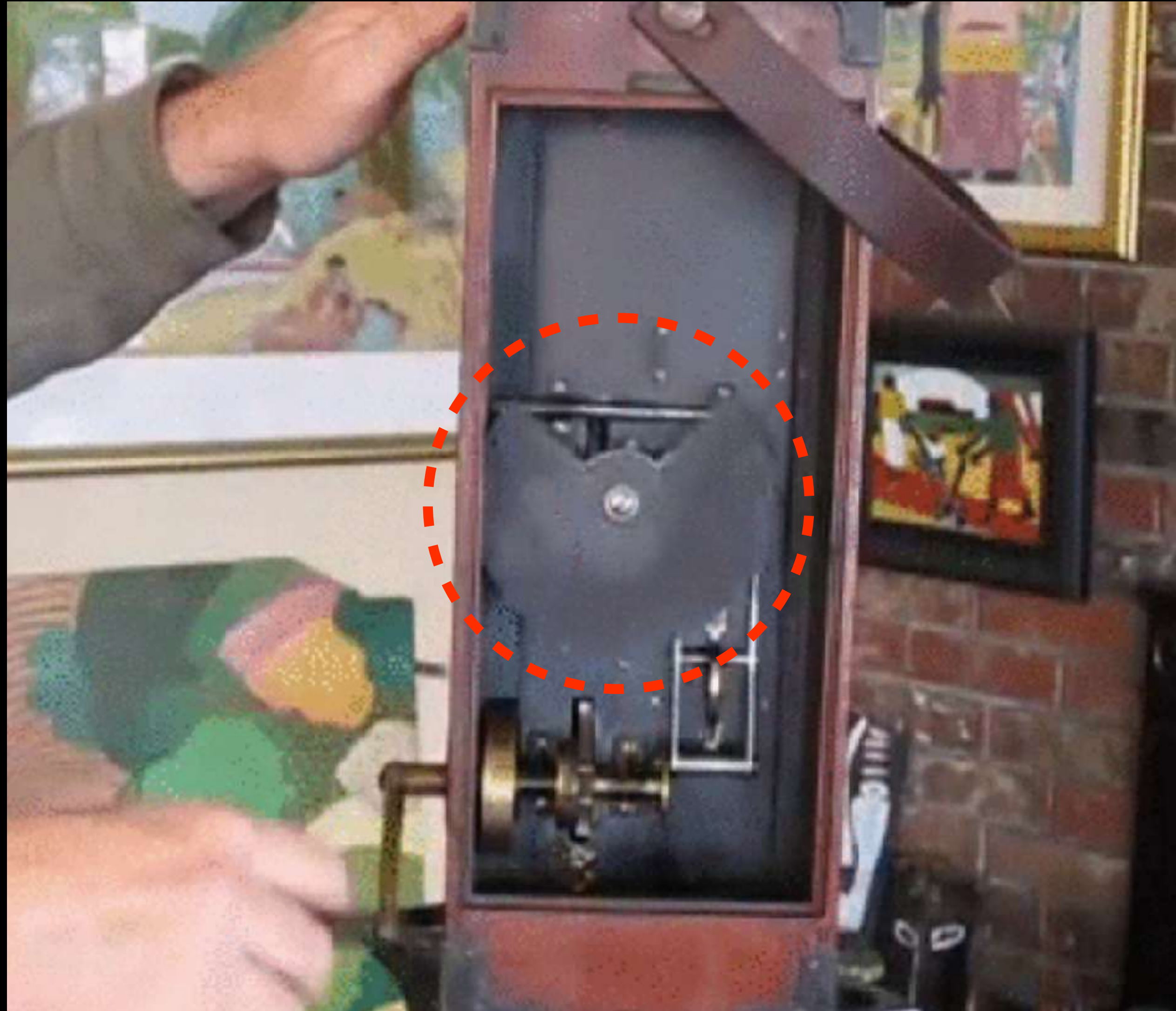


APERTURE

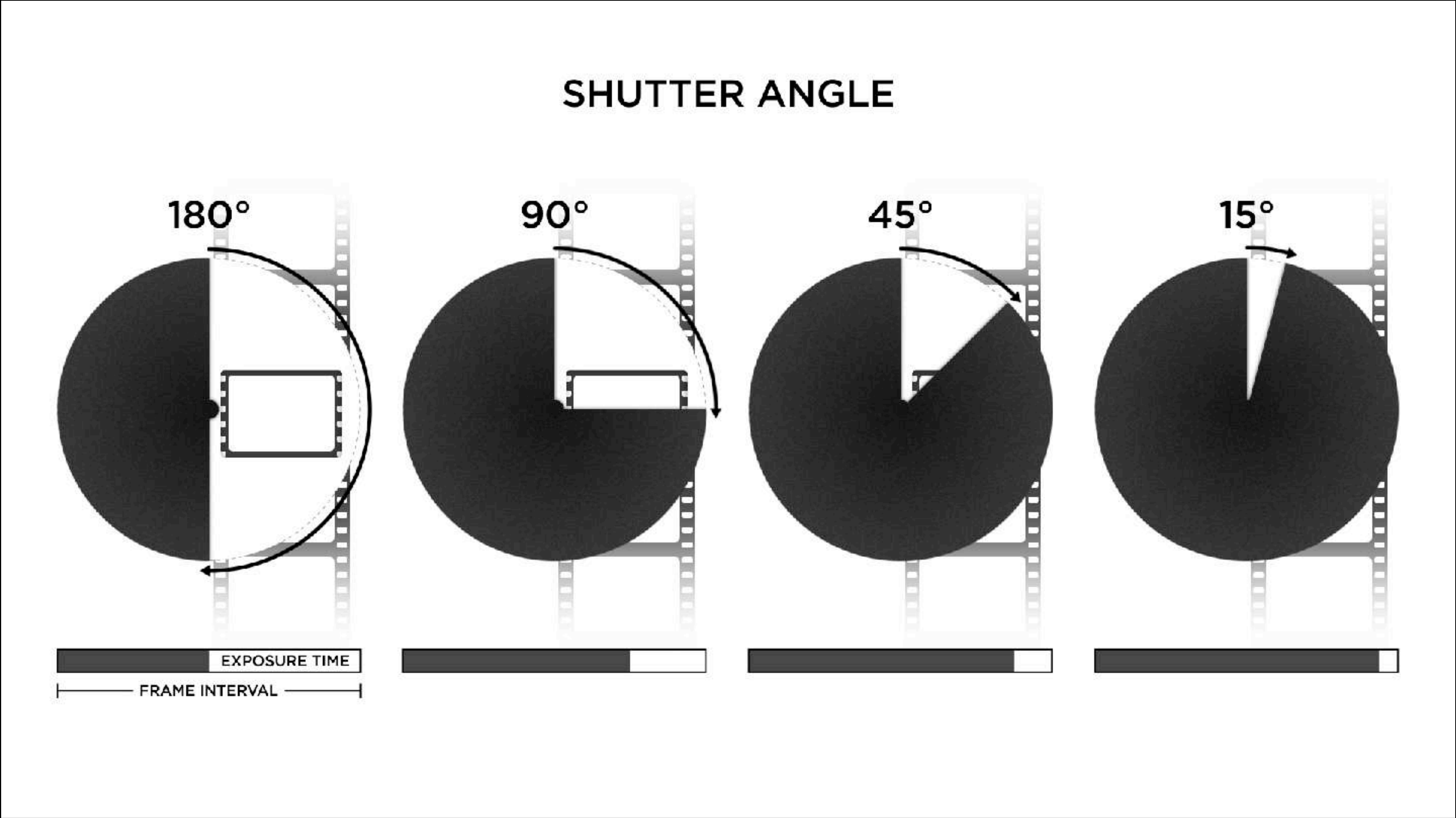
SHUTTER SPEED



SHUTTER SPEED



SHUTTER SPEED



Fractional
Equivalents
(24fps)

1/48

1/96

1/198

1/576

SO WHAT TO CHOOSE?

For a traditional cinematic look:

24 fps

1/48s shutter speed (180° shutter)*

* some cameras can't do 1/48s, use 1/50 instead

f/4
360° (1/24s)
ISO 250

24 fps



f/4
360° (1/24s)
ISO 250

24 fps



f/4
180° (1/48s)
ISO 500

24 fps



f/4
180° (1/48s)
ISO 500

24 fps



f/4
90° (1/96s)
ISO 1000

24 fps



f/2.8
45° (1/192s)
ISO 1000

24 fps



f/2.8
45° (1/192s)
ISO 1000

24 fps



f/2.8
45° (1/192s)
ISO 1000

24 fps



f/2 ²/₃
22.5° (1/384s)
ISO 1600

24 fps



f/2 ²/₃
22.5° (1/384s)
ISO 1600

24 fps



f/2 ²/₃
11° (1/768s)
ISO 3200

24 fps



f/2 ²/₃
11° (1/768s)
ISO 3200

24 fps



SHUTTER SPEED



[Watch These Examples](#)

SHUTTER ANGLE TO SHUTTER SPEED

Frame Rate vs Shutter Angle	24 fps	30 fps	60 fps	120 fps
360°	1/24s	1/30s	1/60s	1/120s
180°	1/48s	1/60s	1/120s	1/240s
90°	1/96s	1/120s	1/240s	1/480s
45°	1/192s	1/240s	1/480s	1/960s
22°	1/384s	1/480s	1/960s	1/1,920s



Shortened from "Saving Private Ryan" (1998)

THE "JELLO" EFFECT



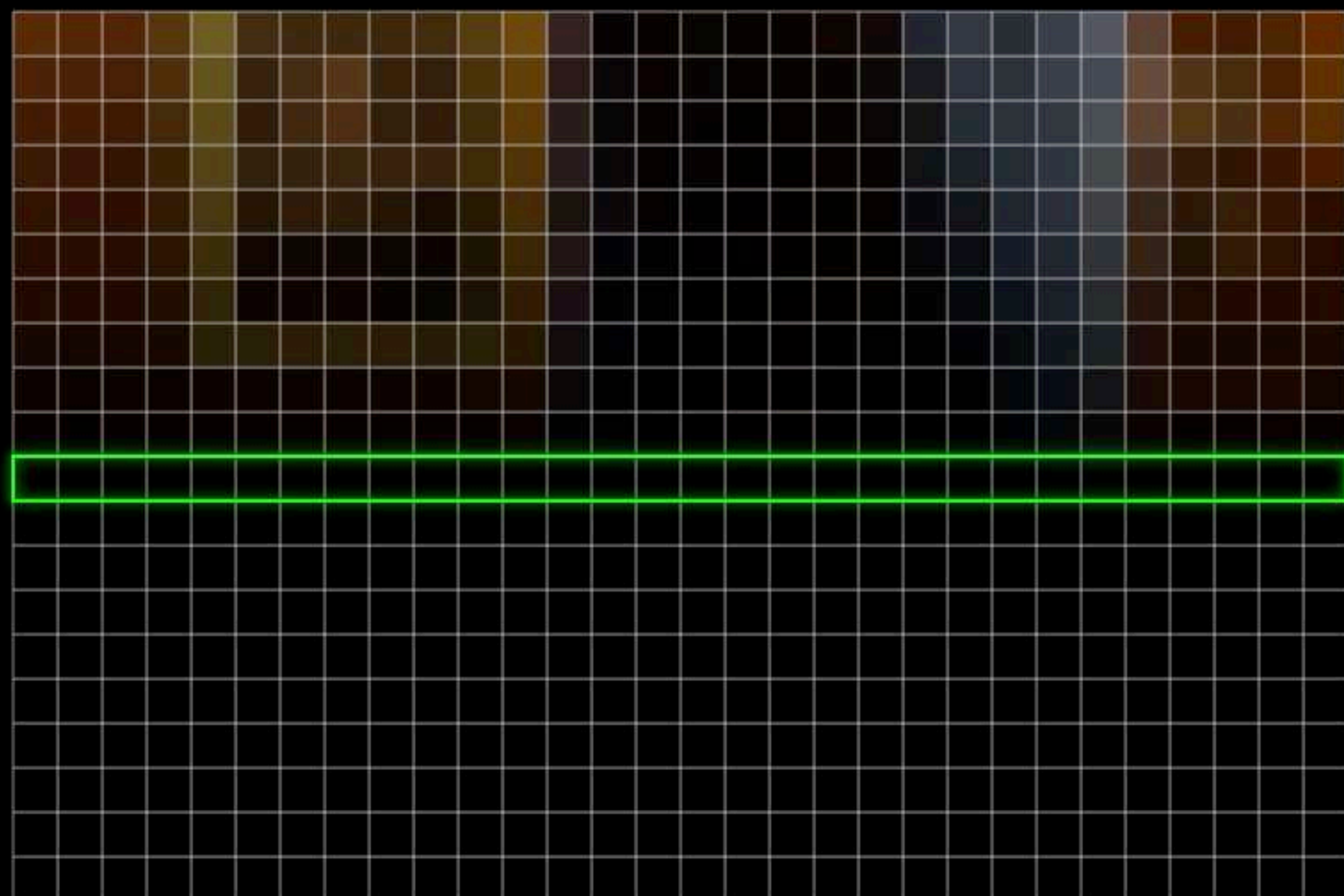
Canon 5D Mark IV
Rolling Shutter
4K



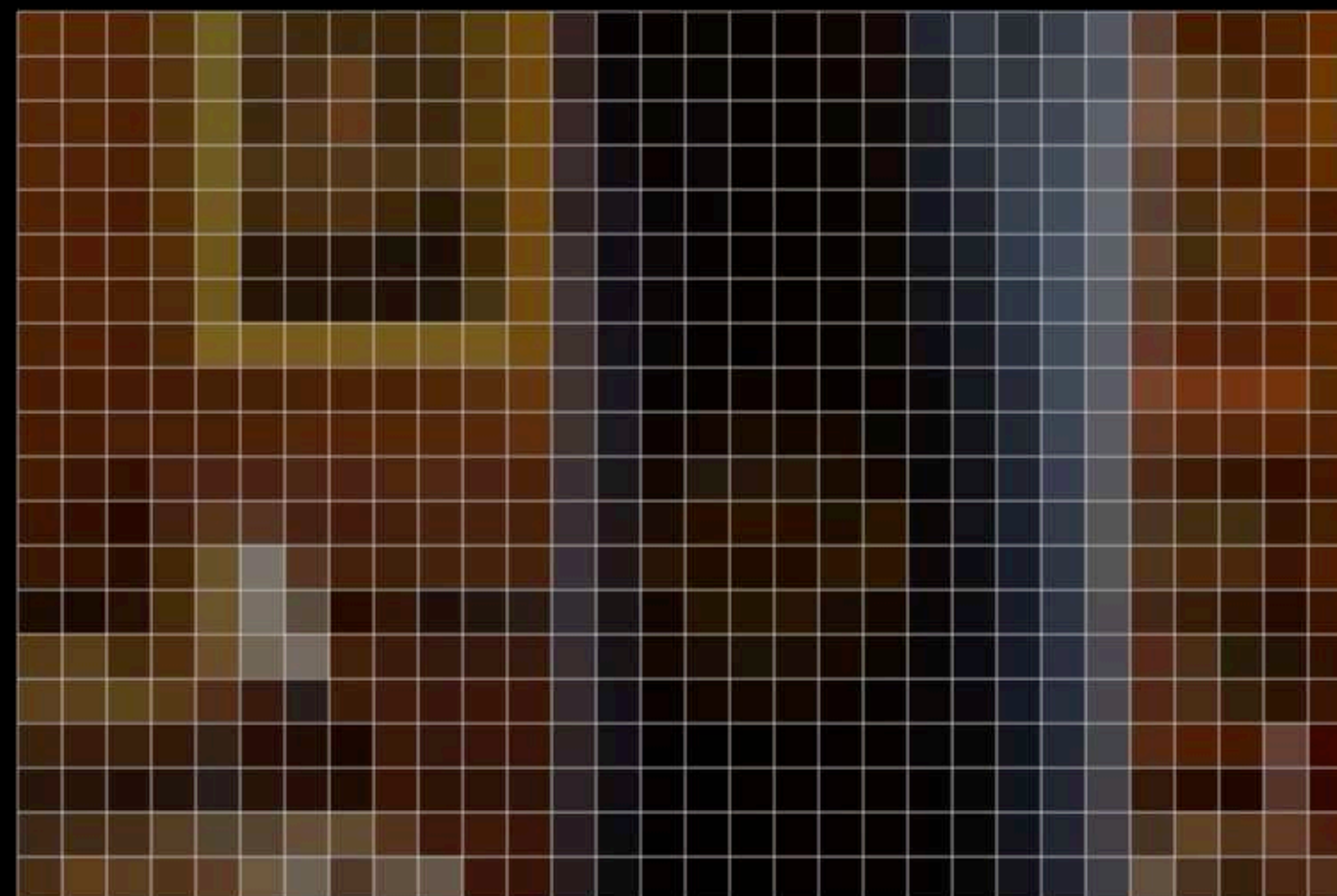
RED EPIC DRAGON
Rolling Shutter
5K



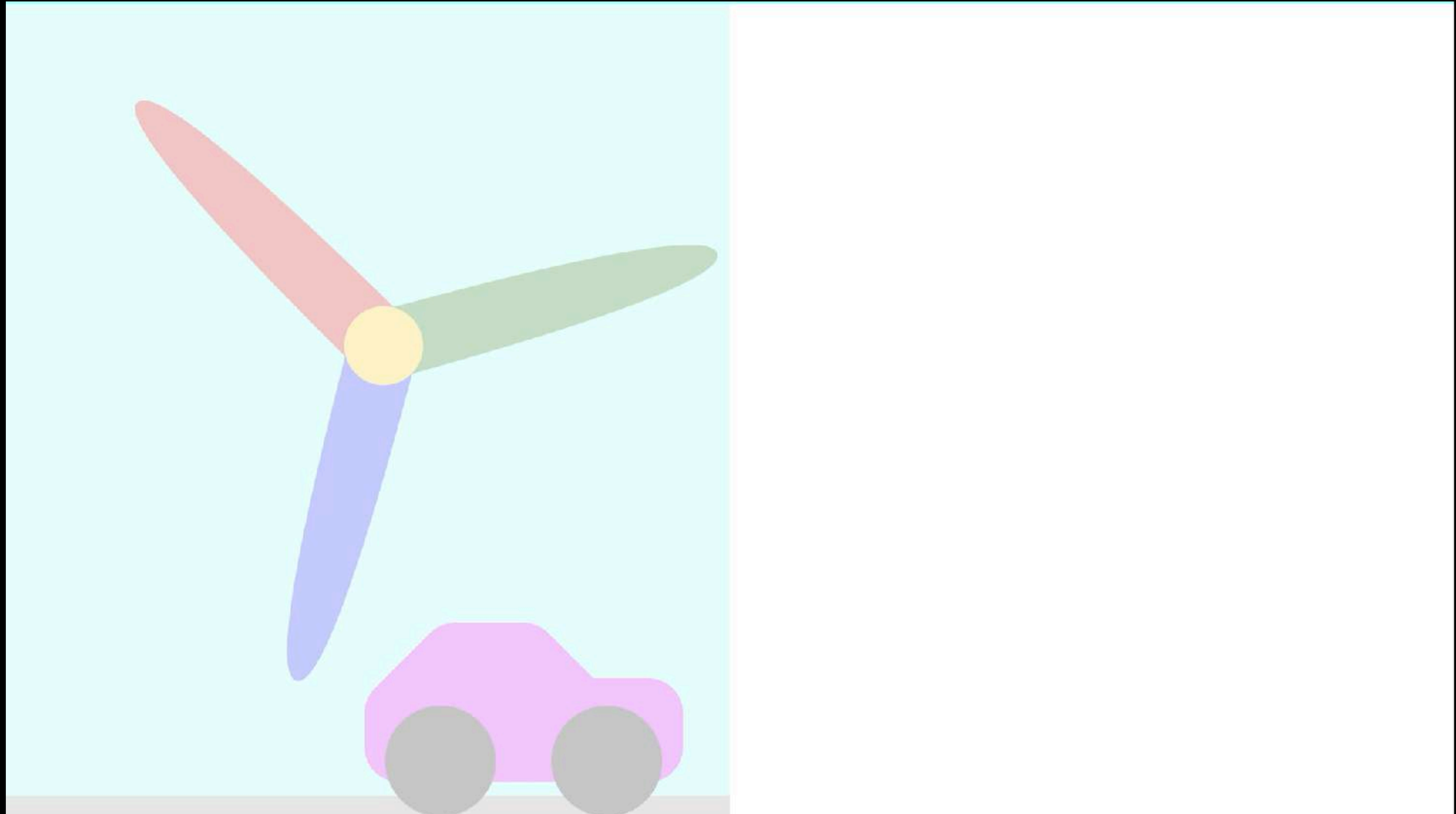
ROLLING SHUTTER



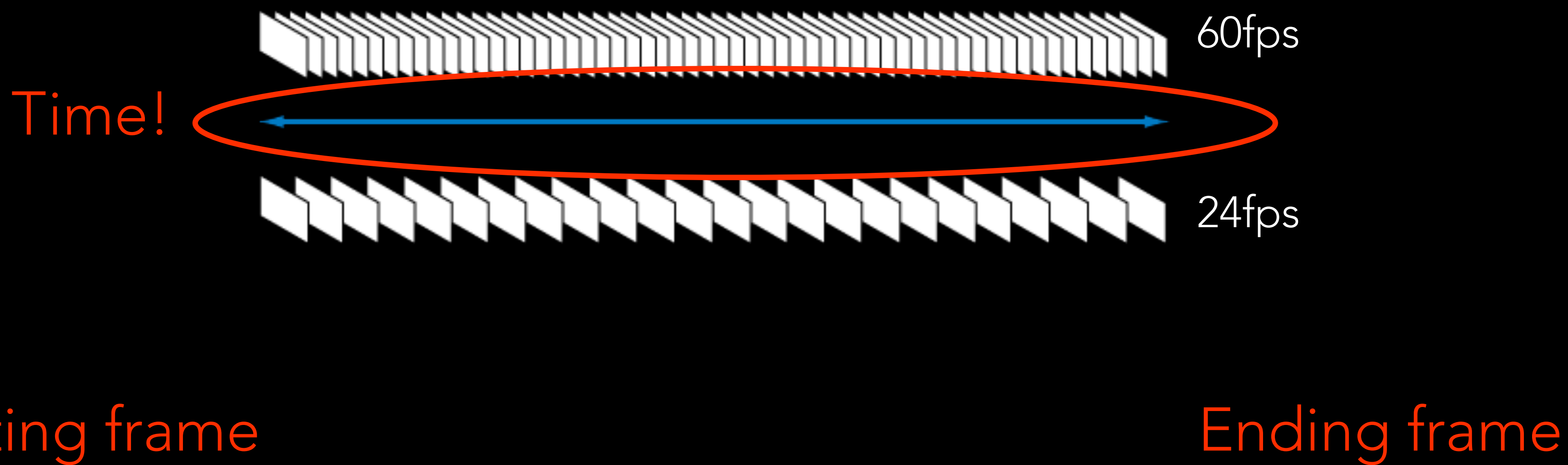
GLOBAL SHUTTER

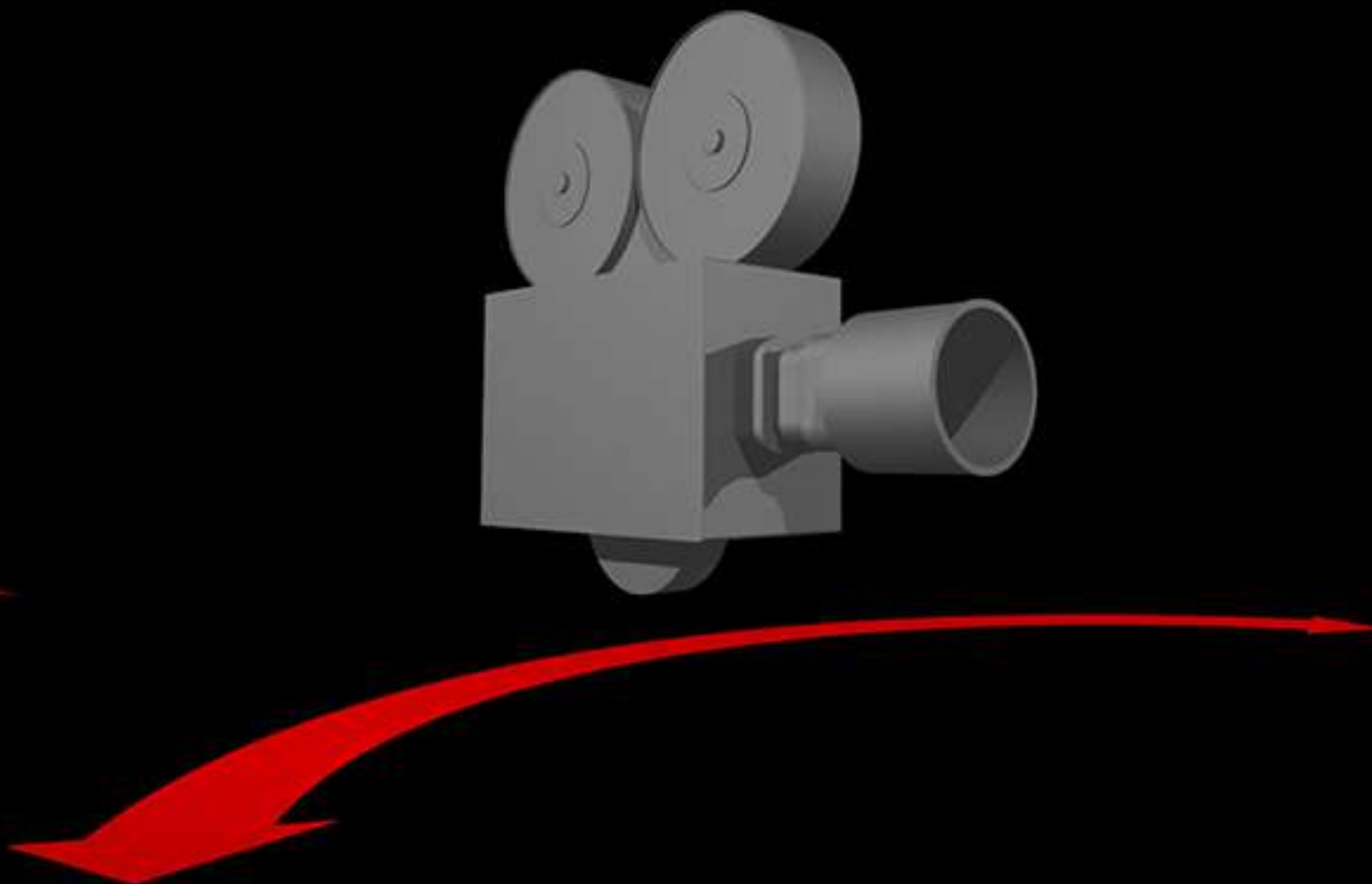
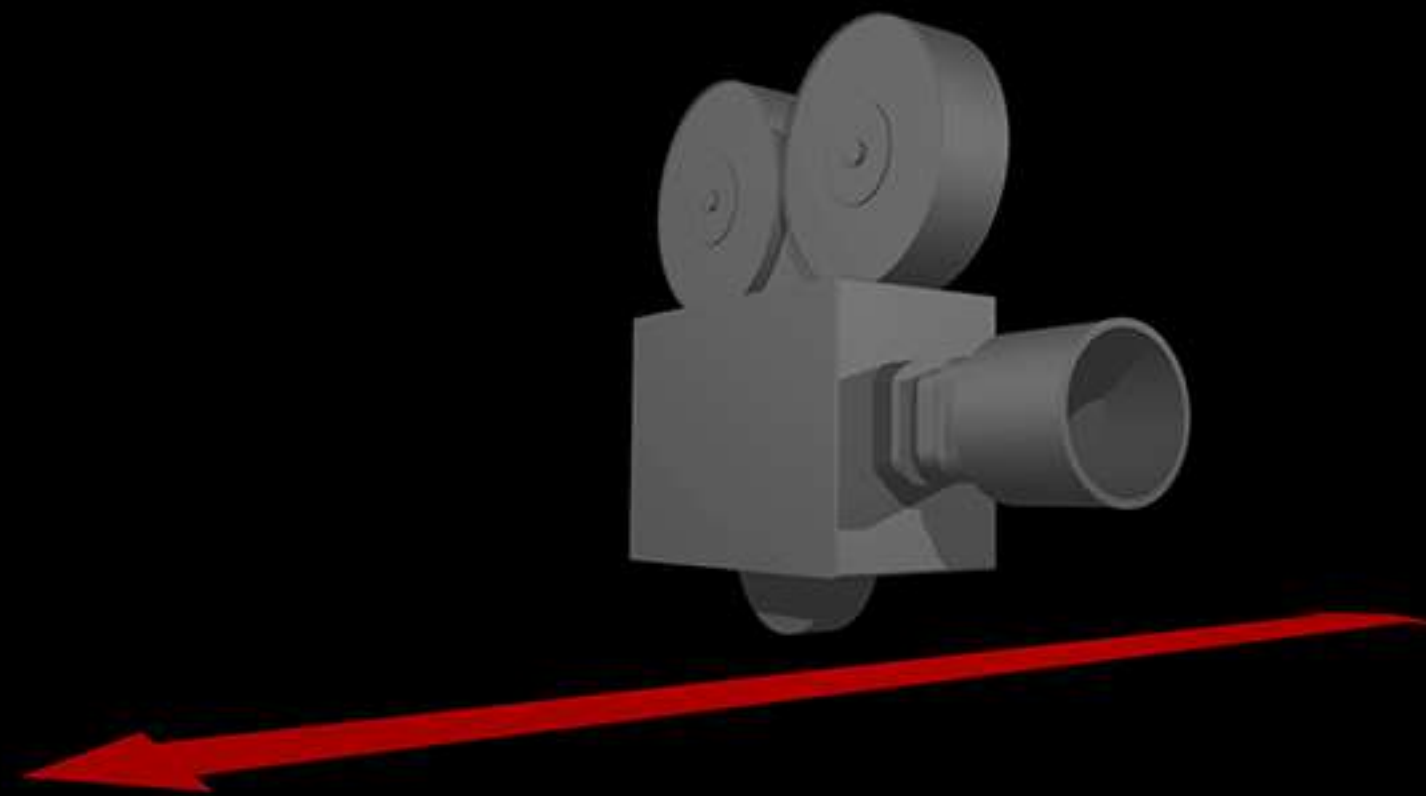
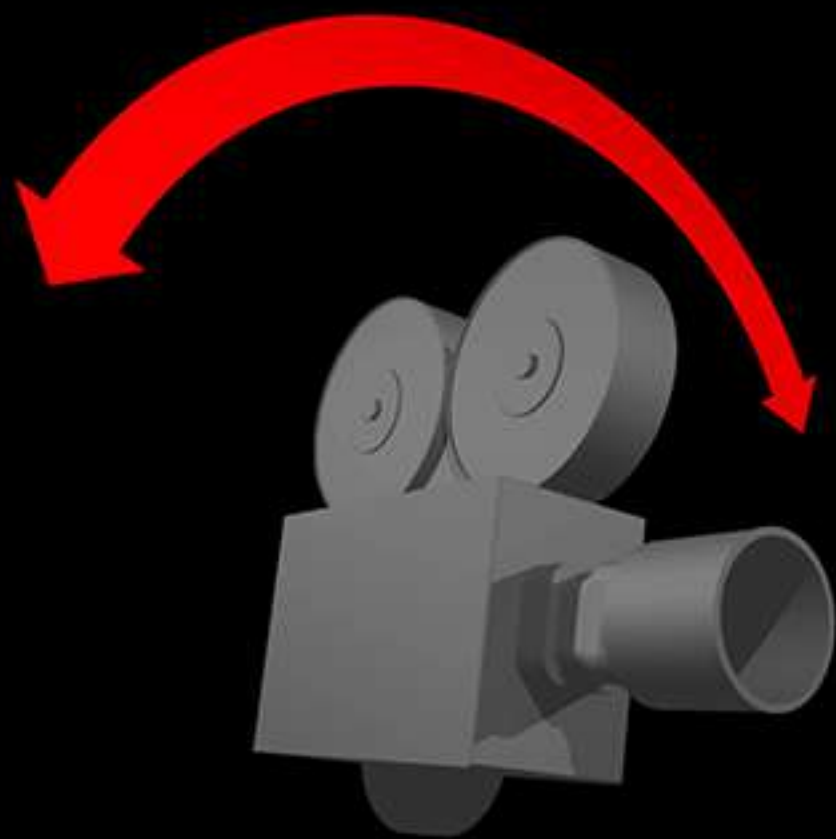
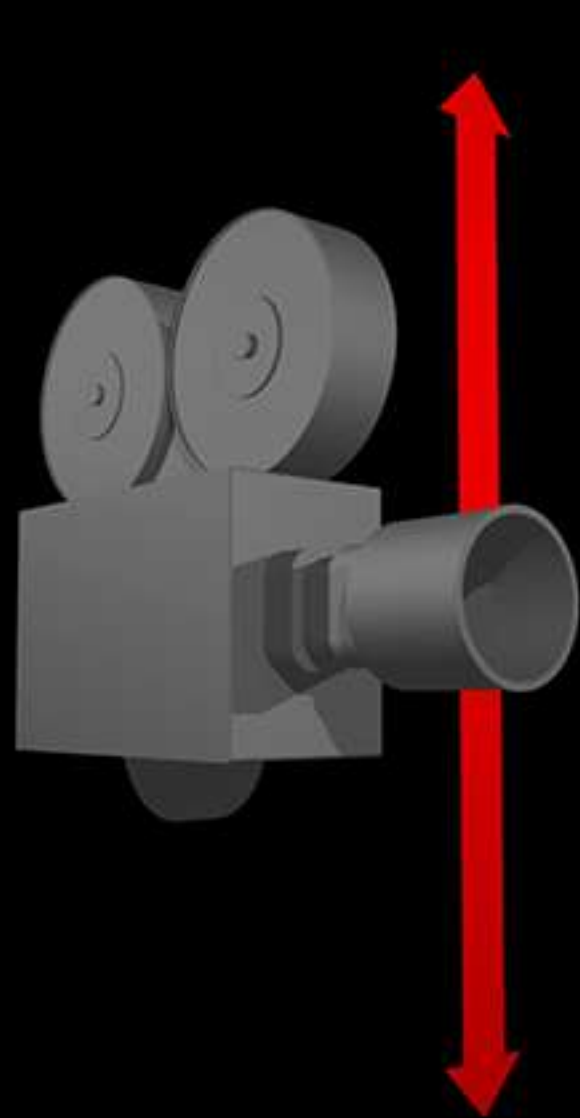
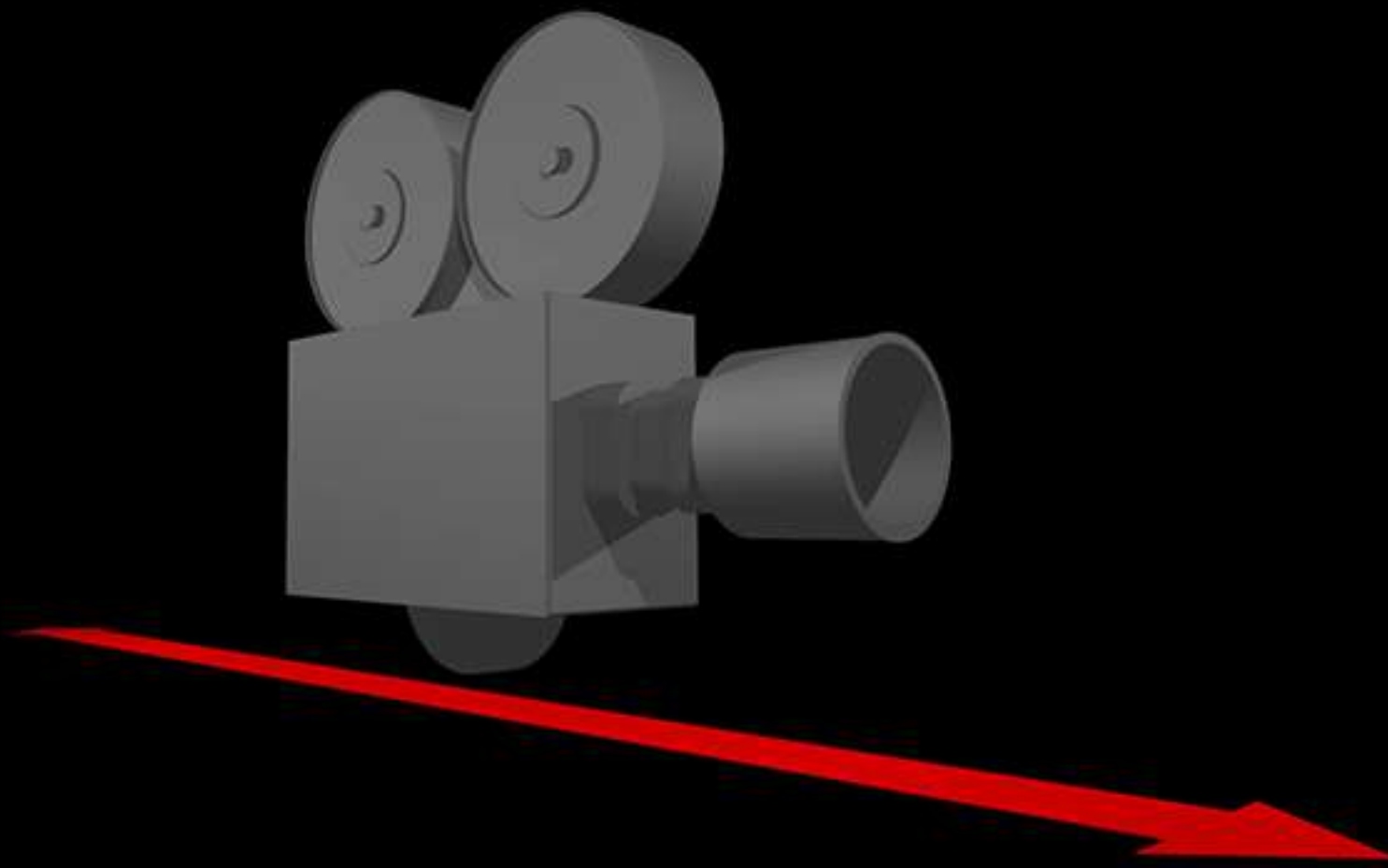
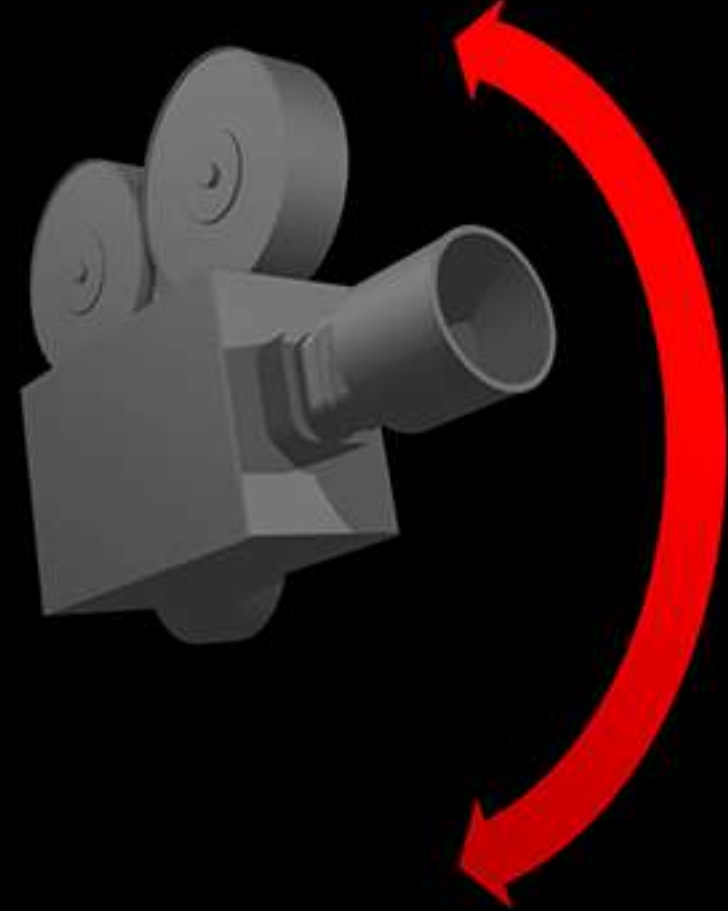
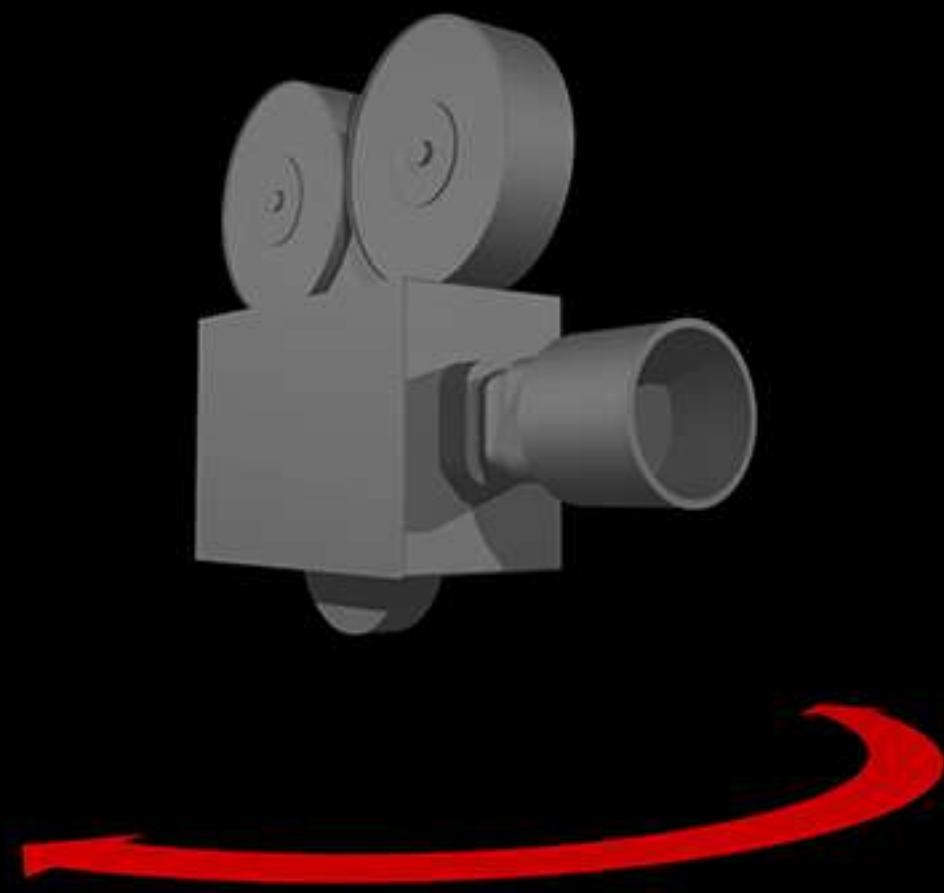


ROLLING SHUTTER

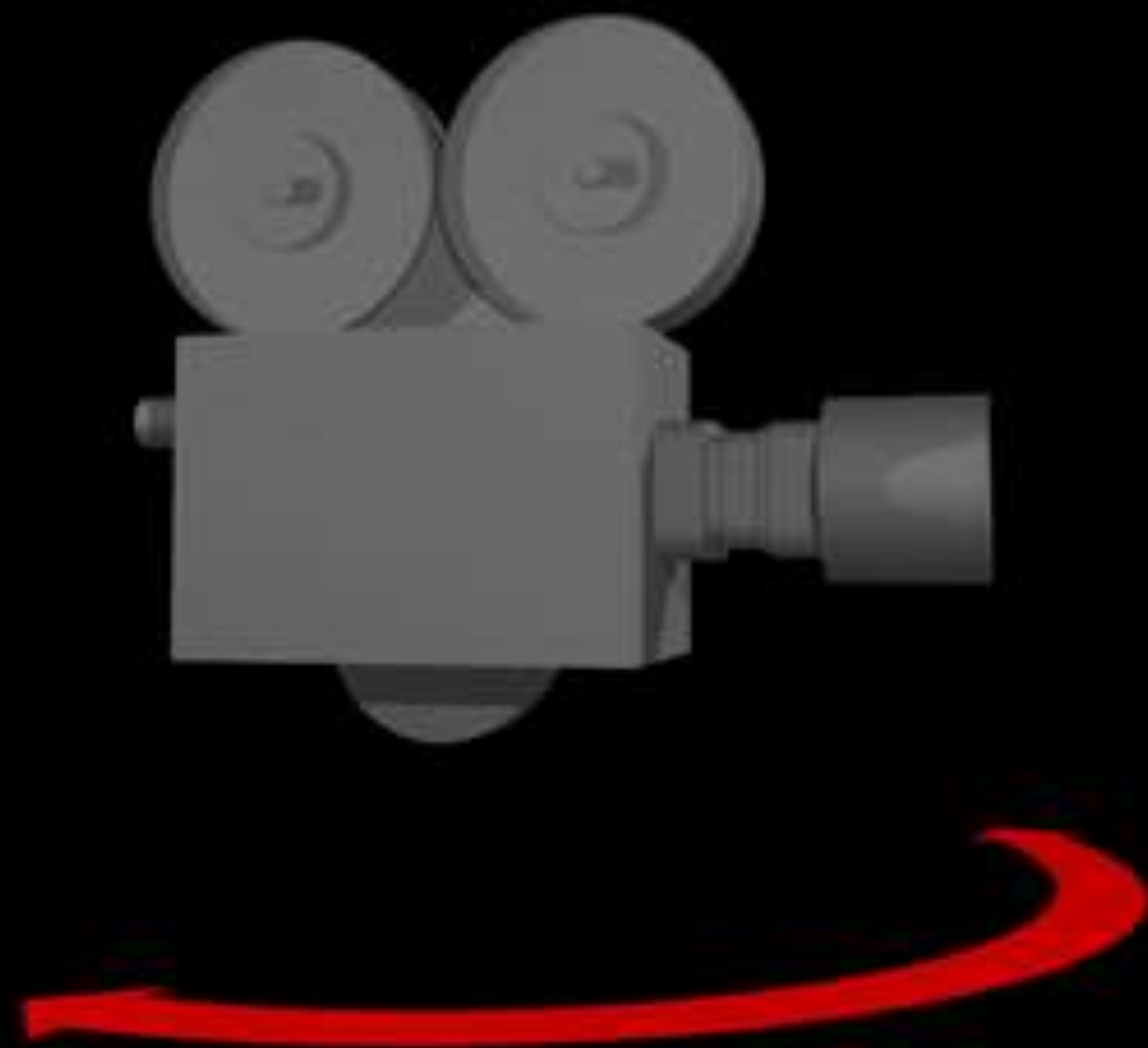


CAMERA MOVEMENT

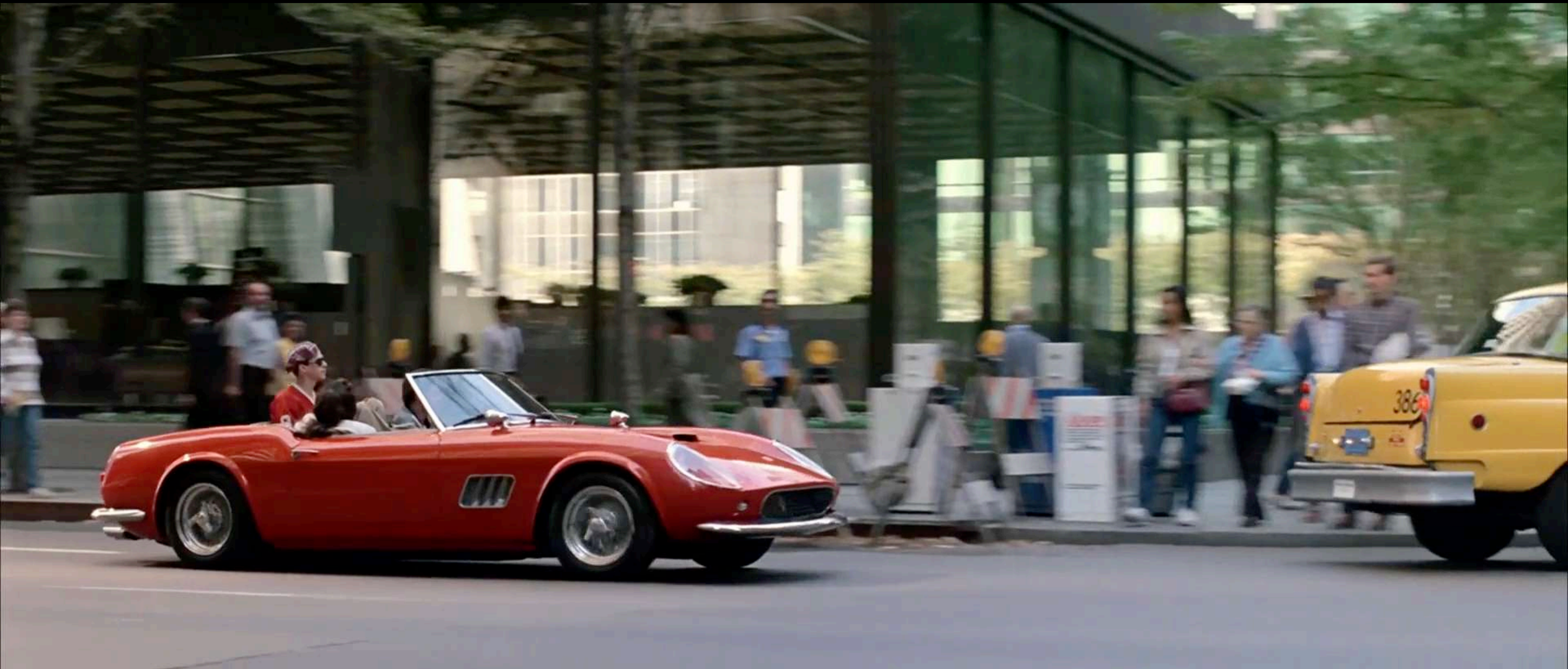




PAN



PAN



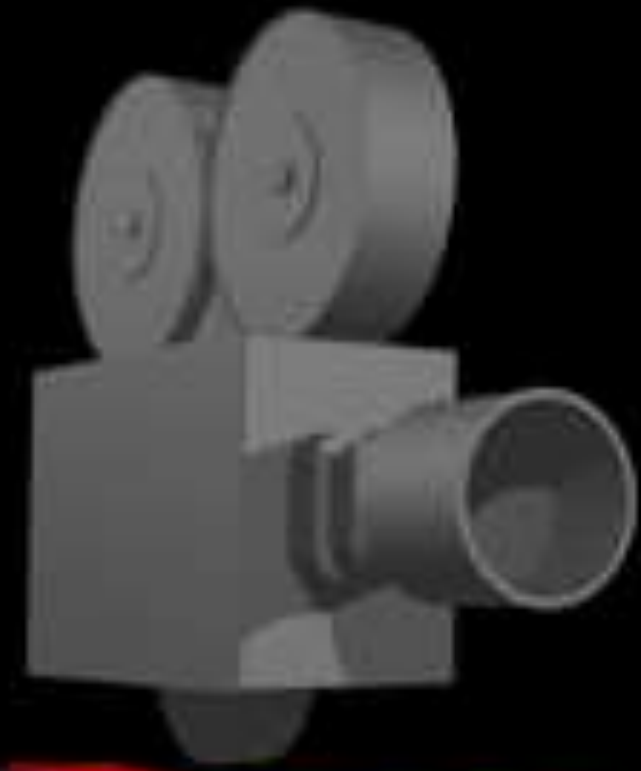
TILT



TILT



DOLLY



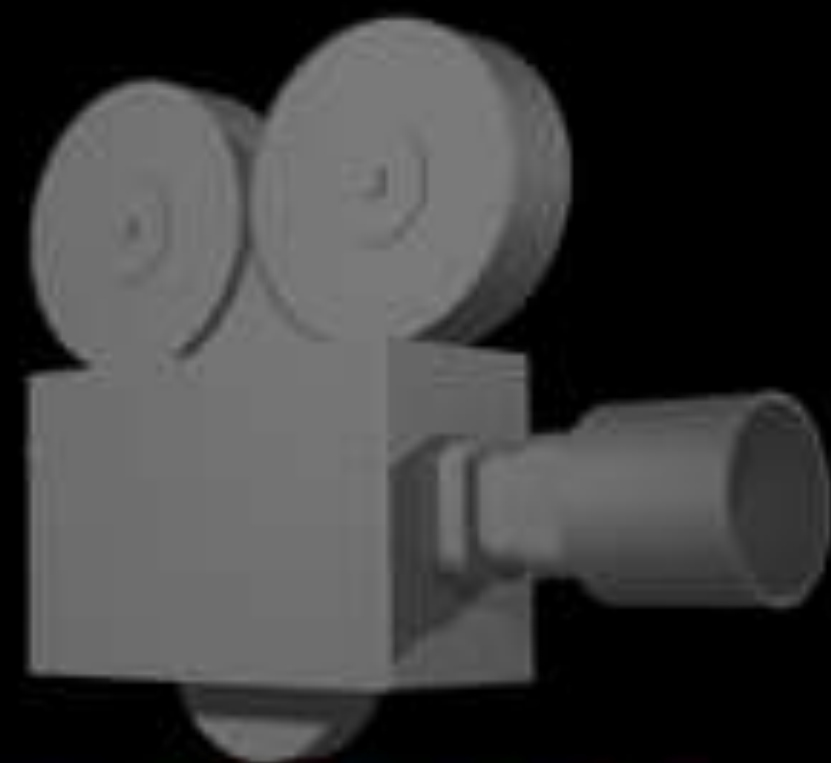
DOLLY



DOLLY



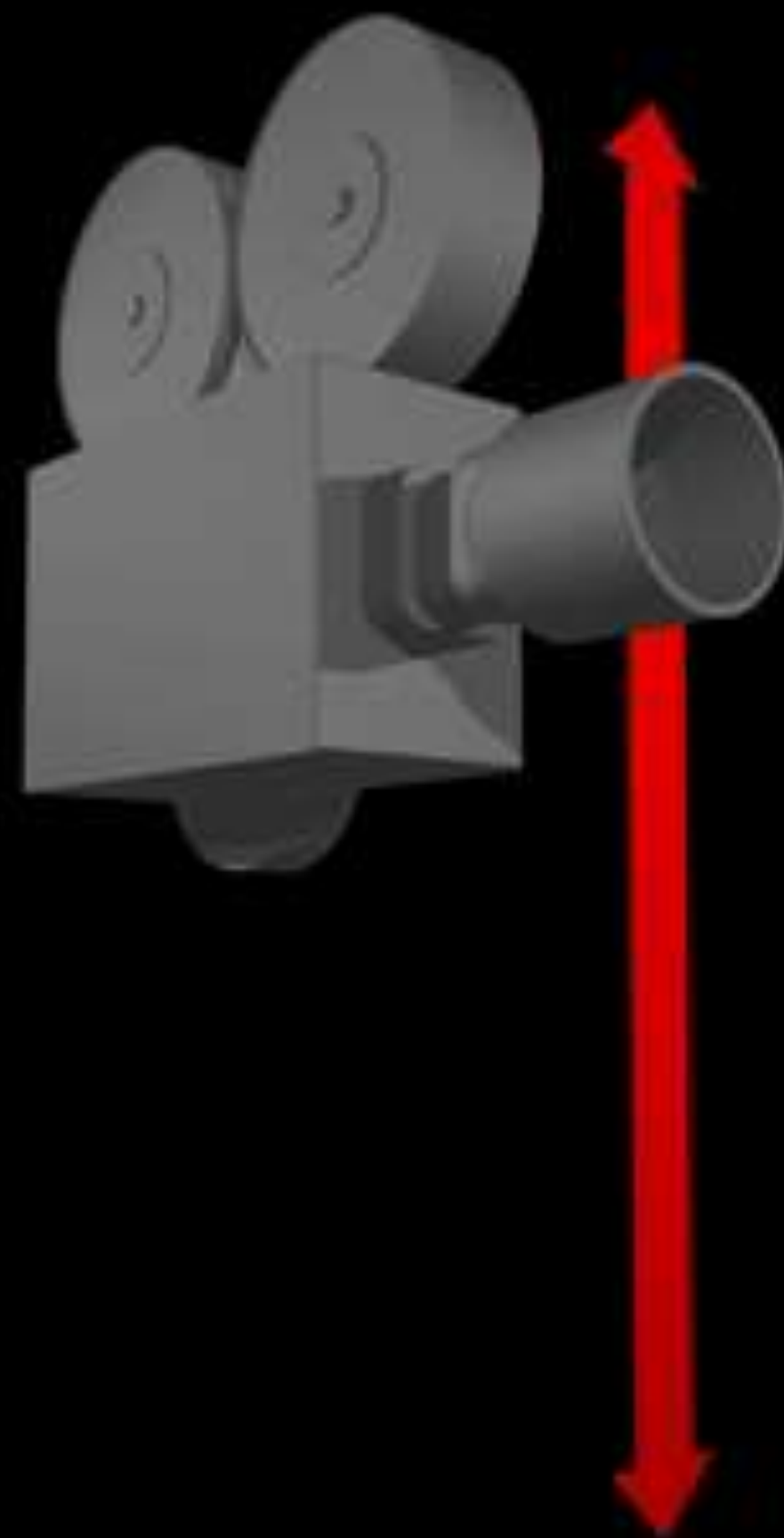
TRUCK



TRUCK



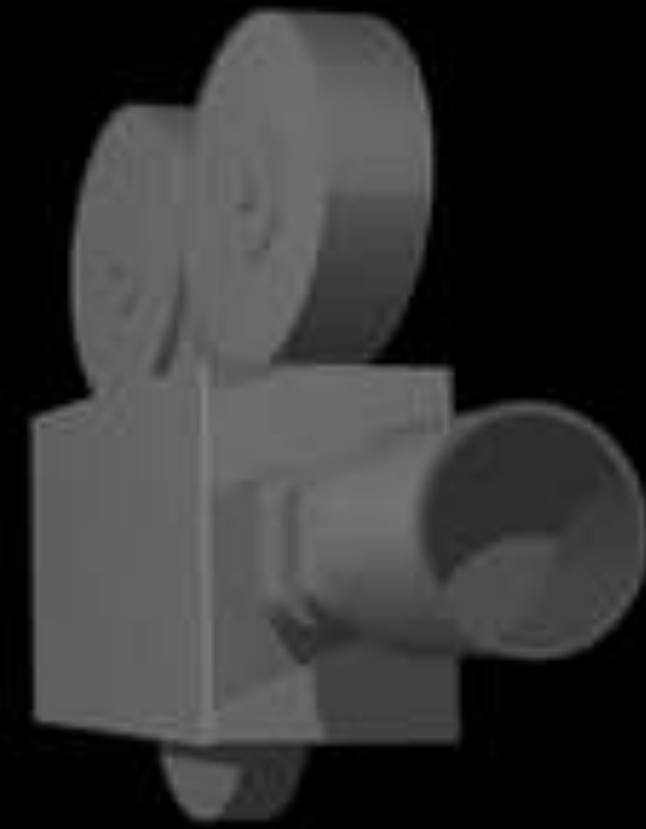
PEDESTAL (PED)



PED (PEDESTAL)

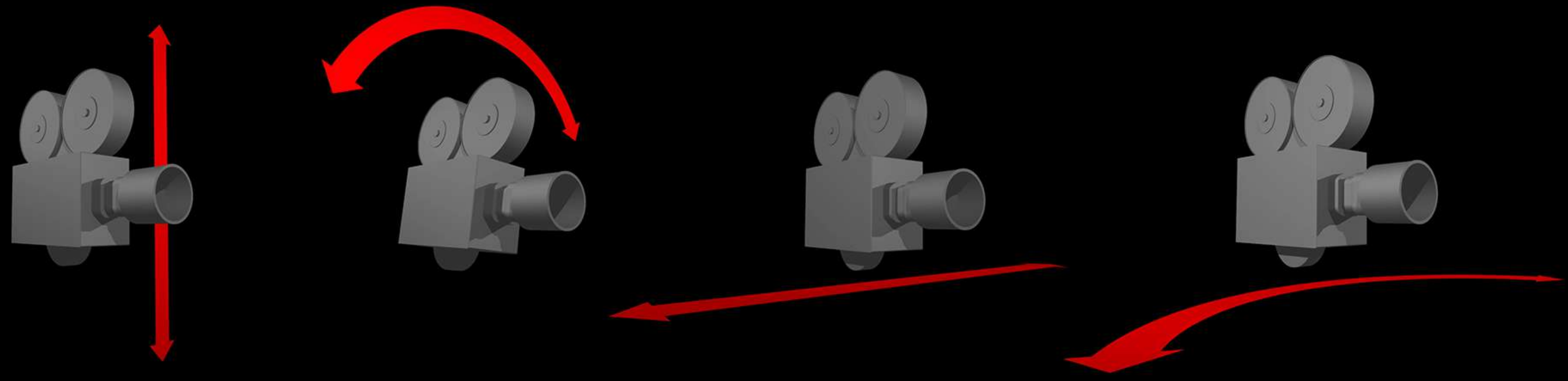
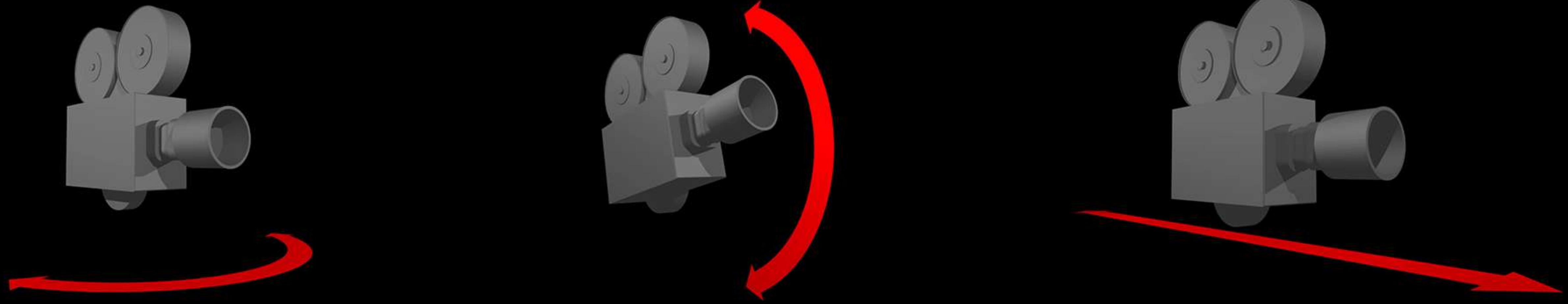


ARC



A R C





CAMERA SUPPORT

TRIPOD



MONOPOD



HANDHELD



SHOULDER



DOLLY



SLIDER



POV ACTION CAMERAS / DRONES



GIMBAL BASED STABILIZERS





Image from <http://i.imgur.com/>

GIMBAL BASED STABILIZERS



not stabilized



stabilized





PRACTICALLY SPEAKING

CONTINUITY

The representation of a smooth flow of time and space

- Always be aware of your continuity while shooting (actors/objects)
- Consider how to handle transitions between shots/scenes
- If you break continuity, do so intentionally!

CONTINUITY

Preserving screen direction

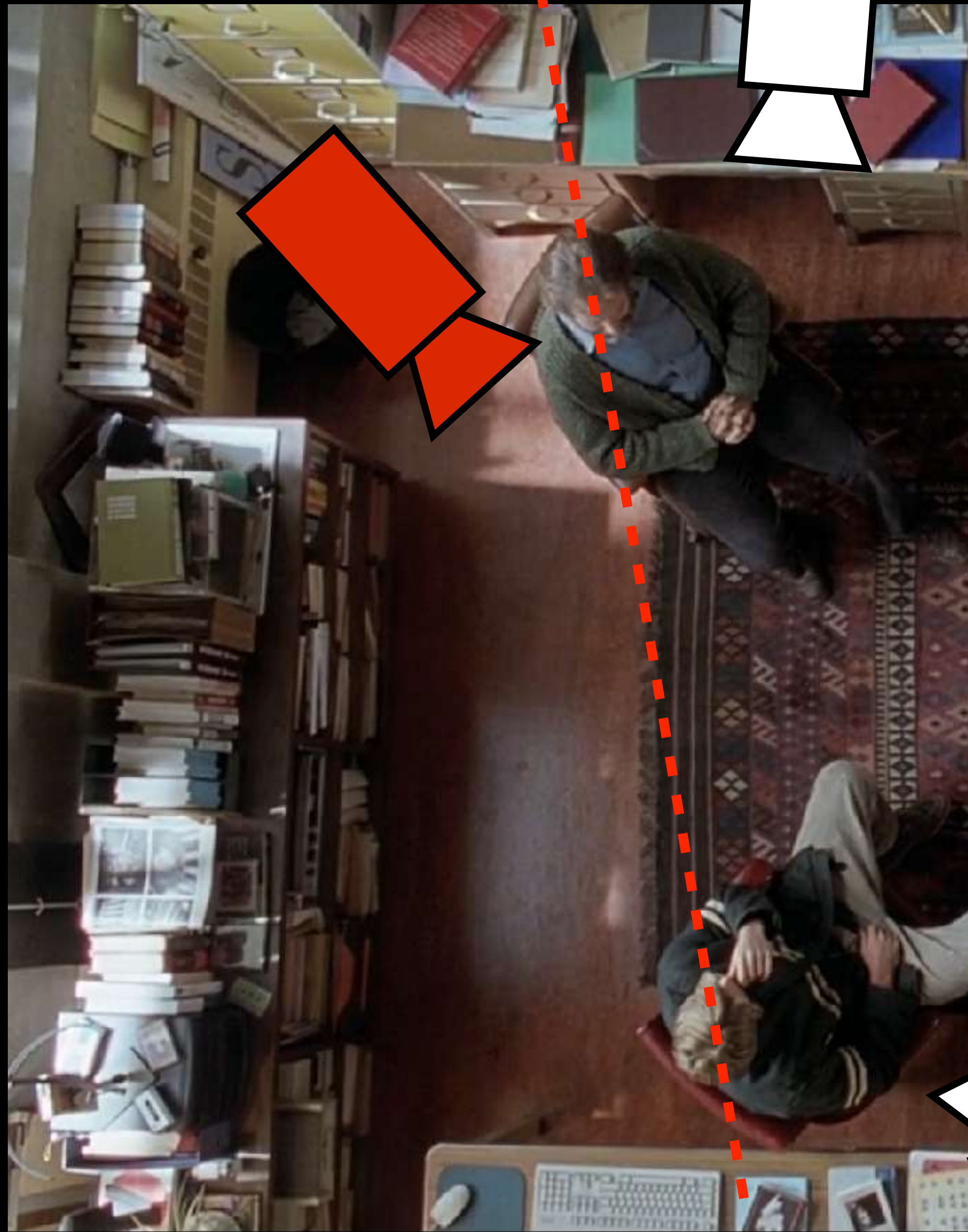
180 DEGREE RULE



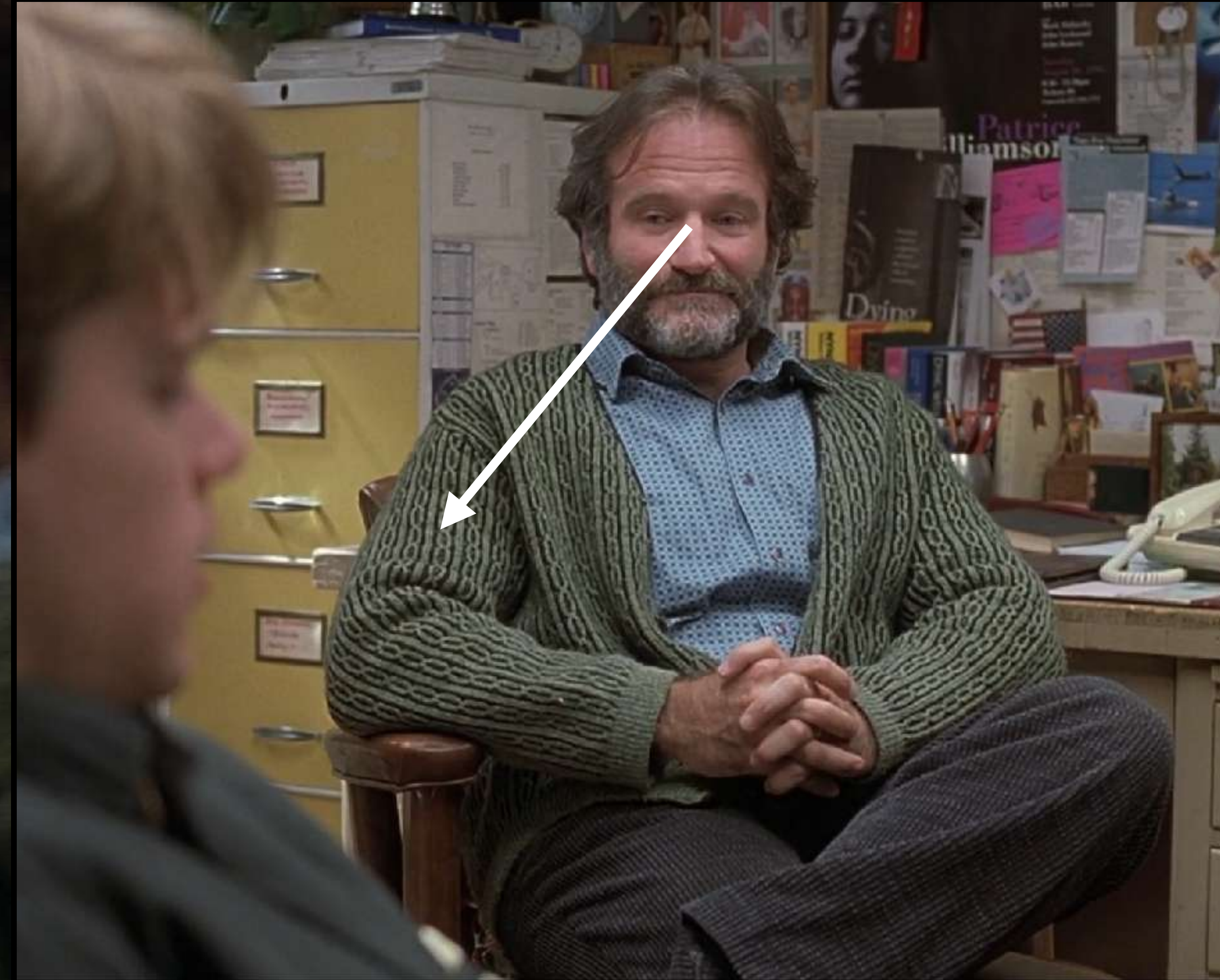
180 DEGREE RULE



180 DEGREE RULE



180 DEGREE RULE





180 DEGREE RULE

- can be broken to intentionally cause confusion or for purpose
- fundamental to understand in establishing relationships
- can change the line by showing the crossing or seeing a glance

20% (30%) RULE

When changing a from one shot to another within the same scene, change by a factor of at least 20%

- Focal length
- Degrees of camera axis (position)

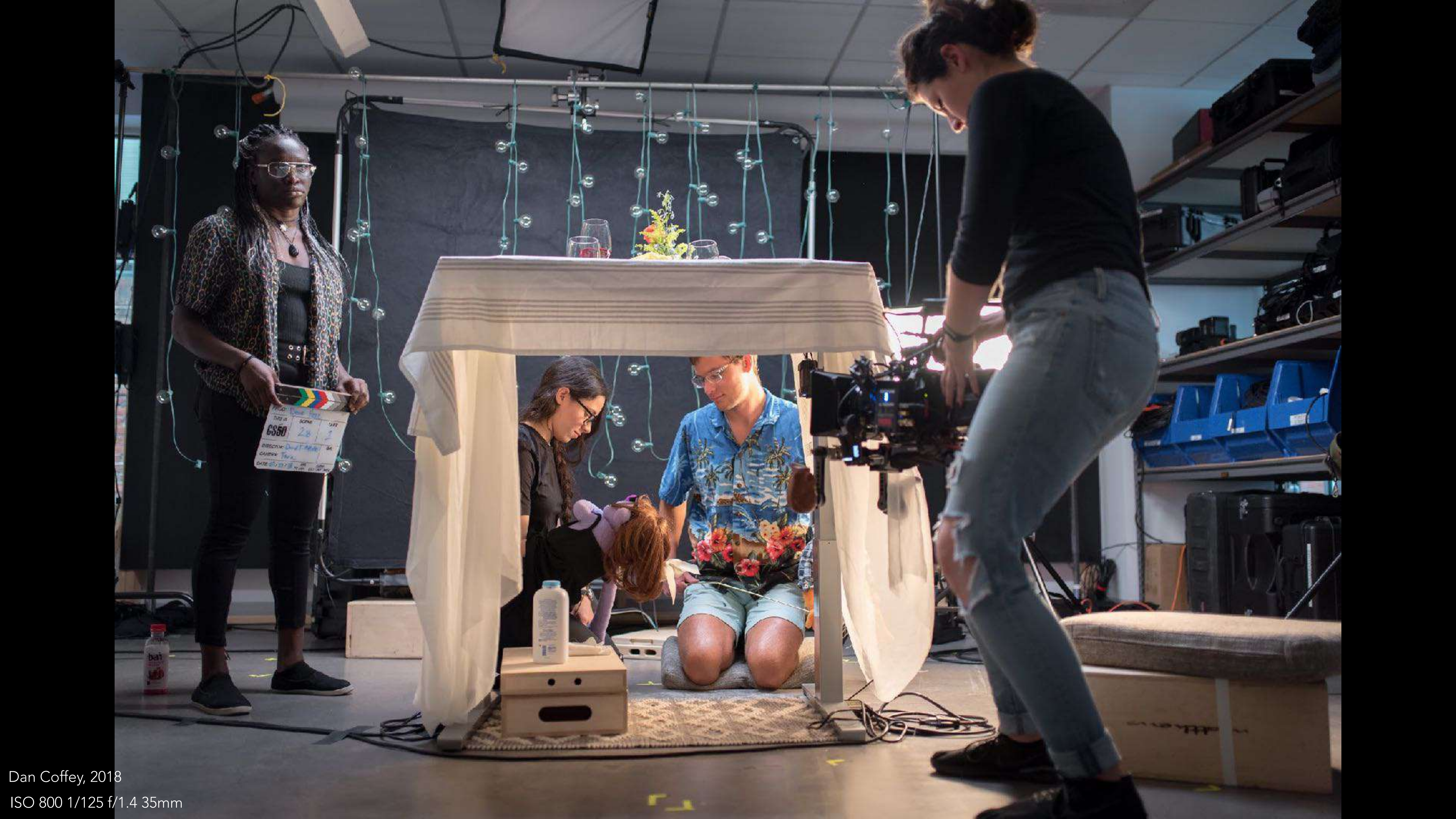
20% (30%) RULE



20% (30%) RULE



HOW TO COVER A SCENE



Dan Coffey, 2018
ISO 800 1/125 f/1.4 35mm

MASTER SHOT / COVERAGE

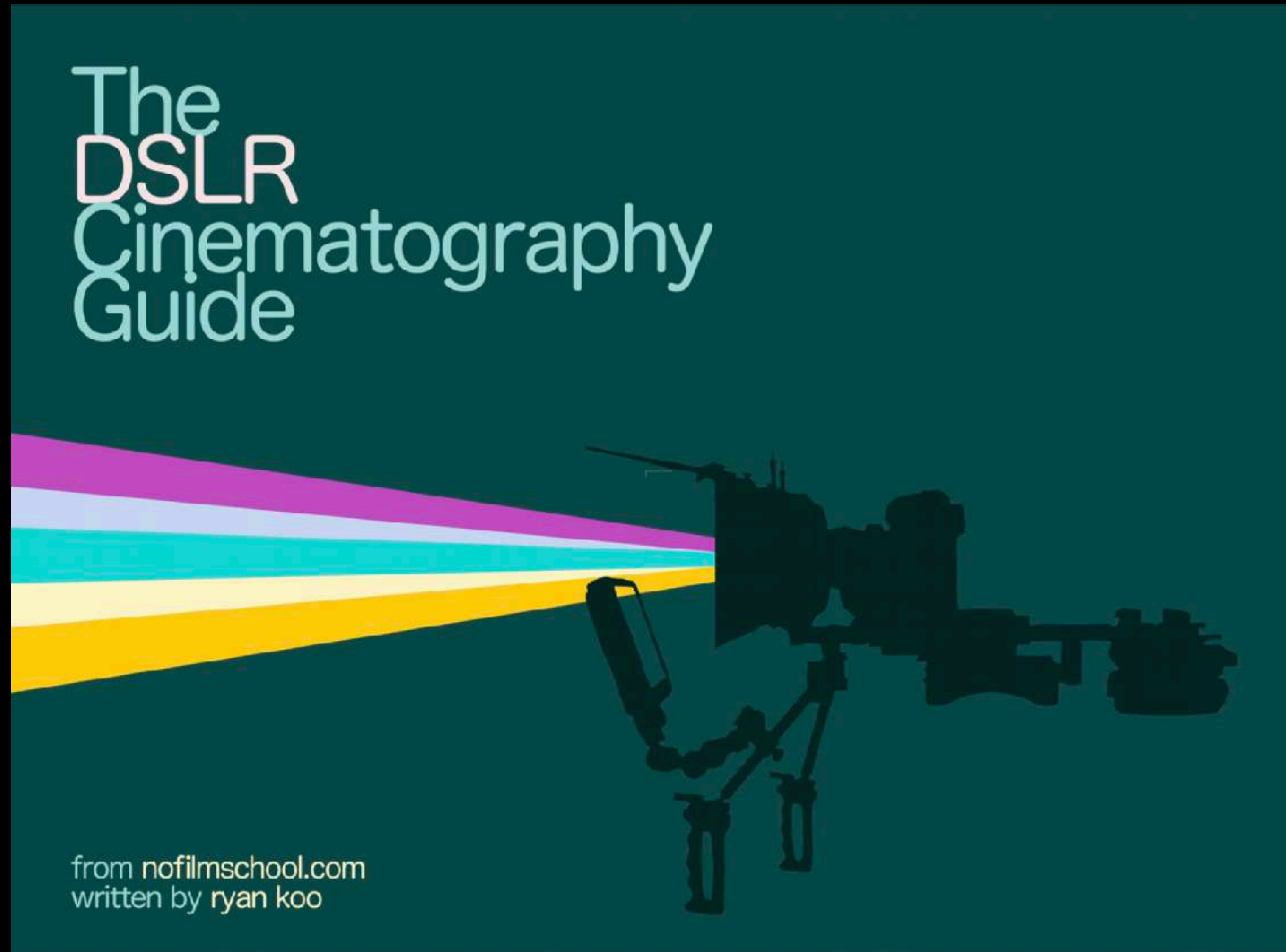
1. Shoot a wide shot that encompasses the whole scene
2. Work your way in on one side of your scene
3. Work your way in on the other side of your scene



OVERLAPPING METHOD

1. Start with establishing shot, but not whole scene
2. Change camera position and get next segment, overlapping some action from the previous shot
3. Repeat

FURTHER READING



PRE-PRODUCTION

BUDGET

	A	B	C	D	E	F	G	H
1		PRODUCTION EXPENSES						
25	20-15	Fitting / MPY / Wardrobe Allow			1		2	0
26	20-16	Mileage			1		2	0
27	21-00	Subtotal						0
28								
29	22-00	SET DESIGN	AMOUNT	UNIT	X	RATE	TAB	TOTAL
30	22-01	Production Designer			1		2	0
31	22-02	Art Director			1		2	0
32	22-03	Research			1		2	0
33	22-04	Expendables			1		2	0
34	22-05	Signage			1		2	0
35	22-06	Blueprints			1		2	0
36	22-07	Box Rentals			1		2	0
37	22-08	Car Allowance			1		2	0
38	22-00	Subtotal						0
39								
40	23-00	SET CONSTRUCTION	AMOUNT	UNIT	X	RATE	TAB	TOTAL
41	23-01	Construction Coordinator			1		2	0
42	23-02	Construction Labor			1		2	0
43	23-03	Construction Office Coordinator			1		2	0
44	23-04	Purchases			1		2	0
45	23-05	Rentals			1		2	0
46	23-06	Paint Disposal			1		2	0
47	23-07	Box Rentals			1		2	0
48	23-08	Shop Rentals			1		2	0
49	23-09	Loss & Damage			1		2	0
50	23-00	Subtotal						0
51								
52	24-00	SET PRE-RIG & STRIKE	AMOUNT	UNIT	X	RATE	TAB	TOTAL
53	24-01	Pre-rig & Strike Crews			1		2	0
54	24-02	Rentals			1		2	0

SHOT LISTS AND VISUAL
TRANSLATIONS

PRE-PRODUCTION

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
(now 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.

4 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.

5 INT. PETERS BEDROOM, DAY.

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

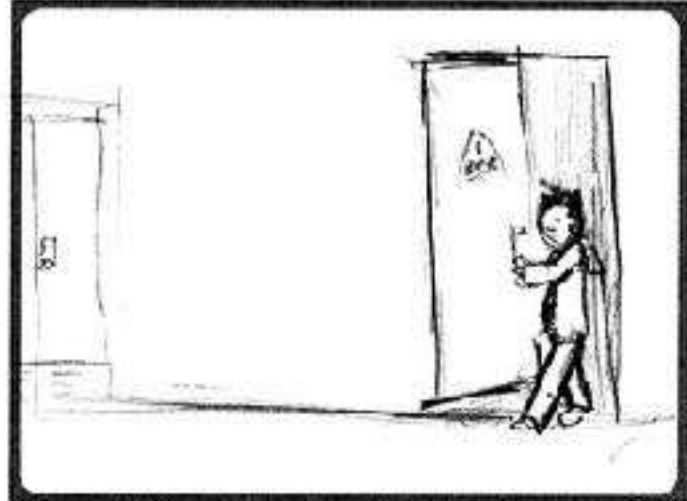
mark up script

PRE-PRODUCTION

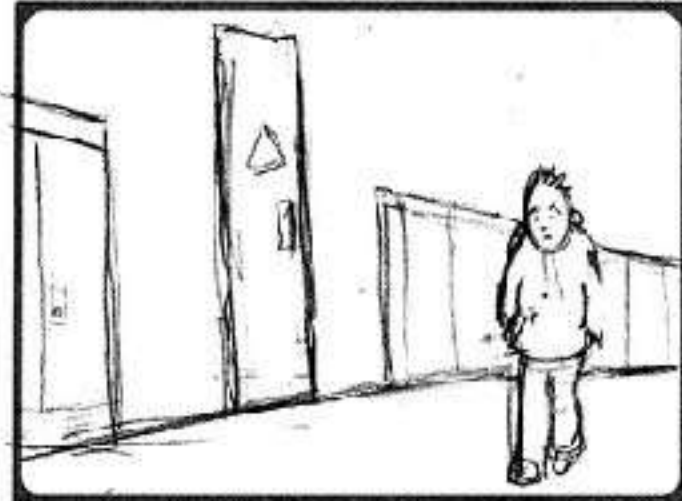
Page 1

Name of Project: Flashback 2 - Fat Noodle

Group Members: _____



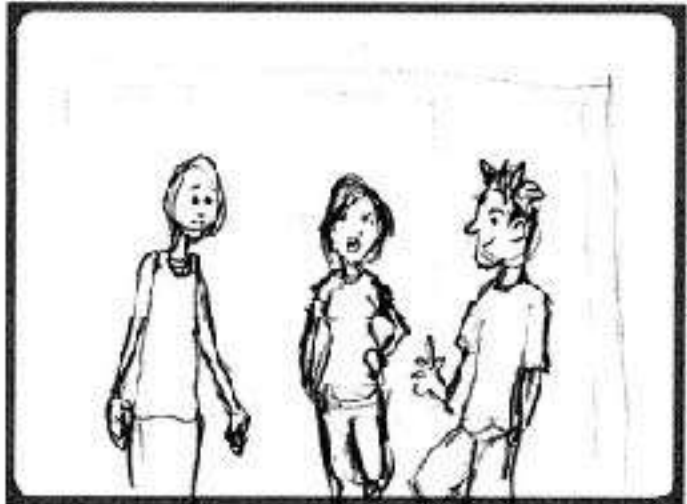
1 DAVE EXITS THE BOY'S BATHROOM



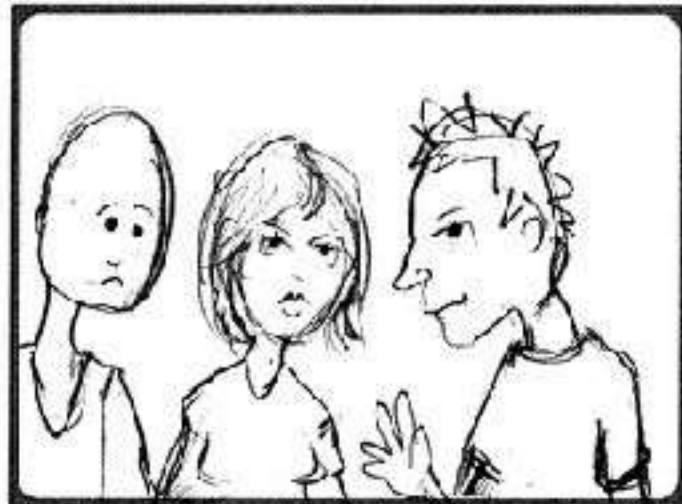
2 HE STARTS DOWN THE HALL WHEN HE HEARS LAUGHTER AT HIS SIDE. TRACK WITH DAVE.



3 HE GLANCES SIDELONG
CAMERA MOVES BACK WITH DAVE



4 DAVE POV - MATCH CUT TO:
TRACK BY THEM



5 CU OF GROUP OF KIDS.
CONT. TRACK MOVE



6 DAVE SHIFTS HIS GAZE BACK STRAIGHT
CAMERA MOVE FROM SHOT 3 CONT'D

Storyboard Title: ORWTC

Client: _____

Pg: 7 Sc: _____

Date: 1/30/15



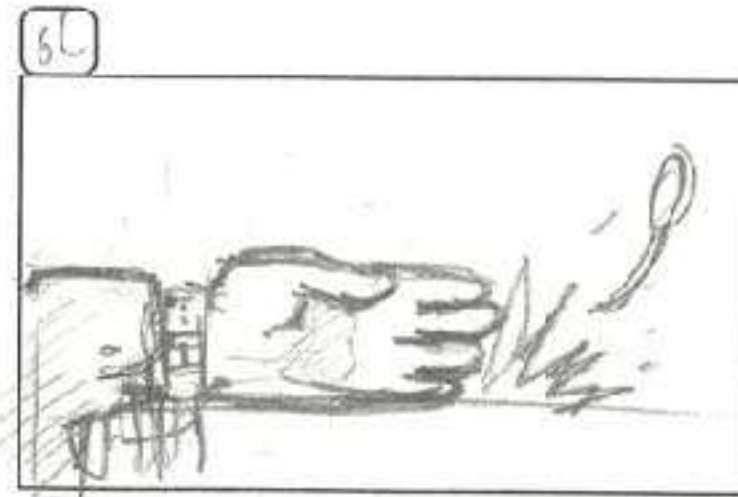
NOTES: PUSH IN ON JANE



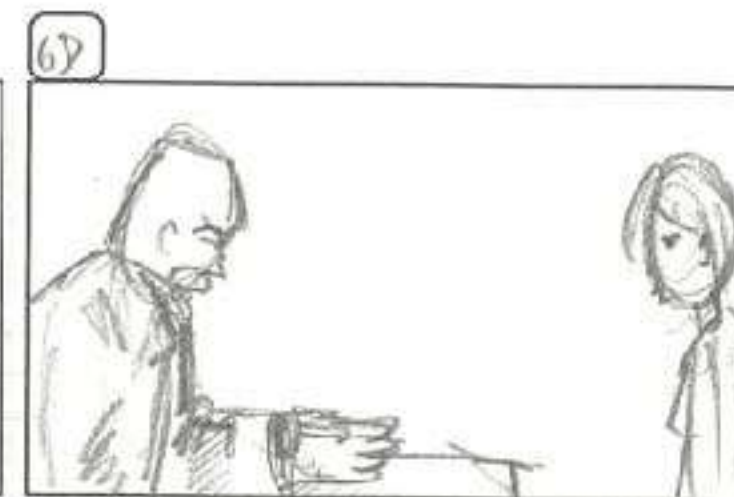
NOTES: PEDestal UP INTO HAND-HELD



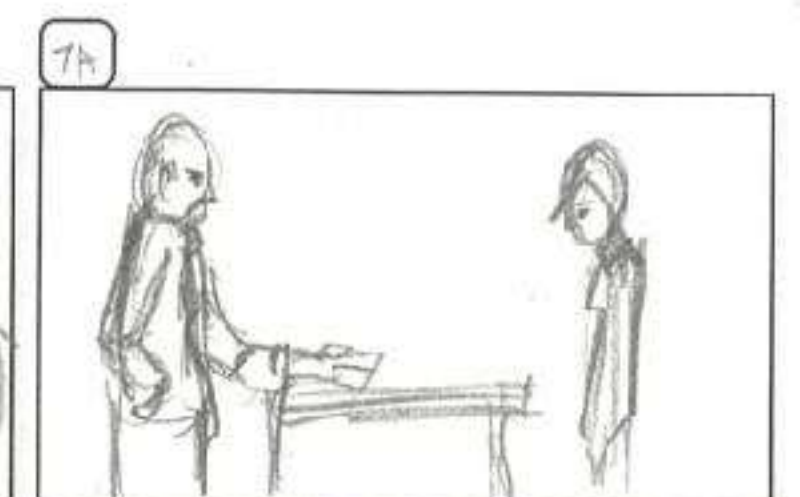
NOTES: ECU OF DEEFER



NOTES: WOOD-HAND HITS DESK



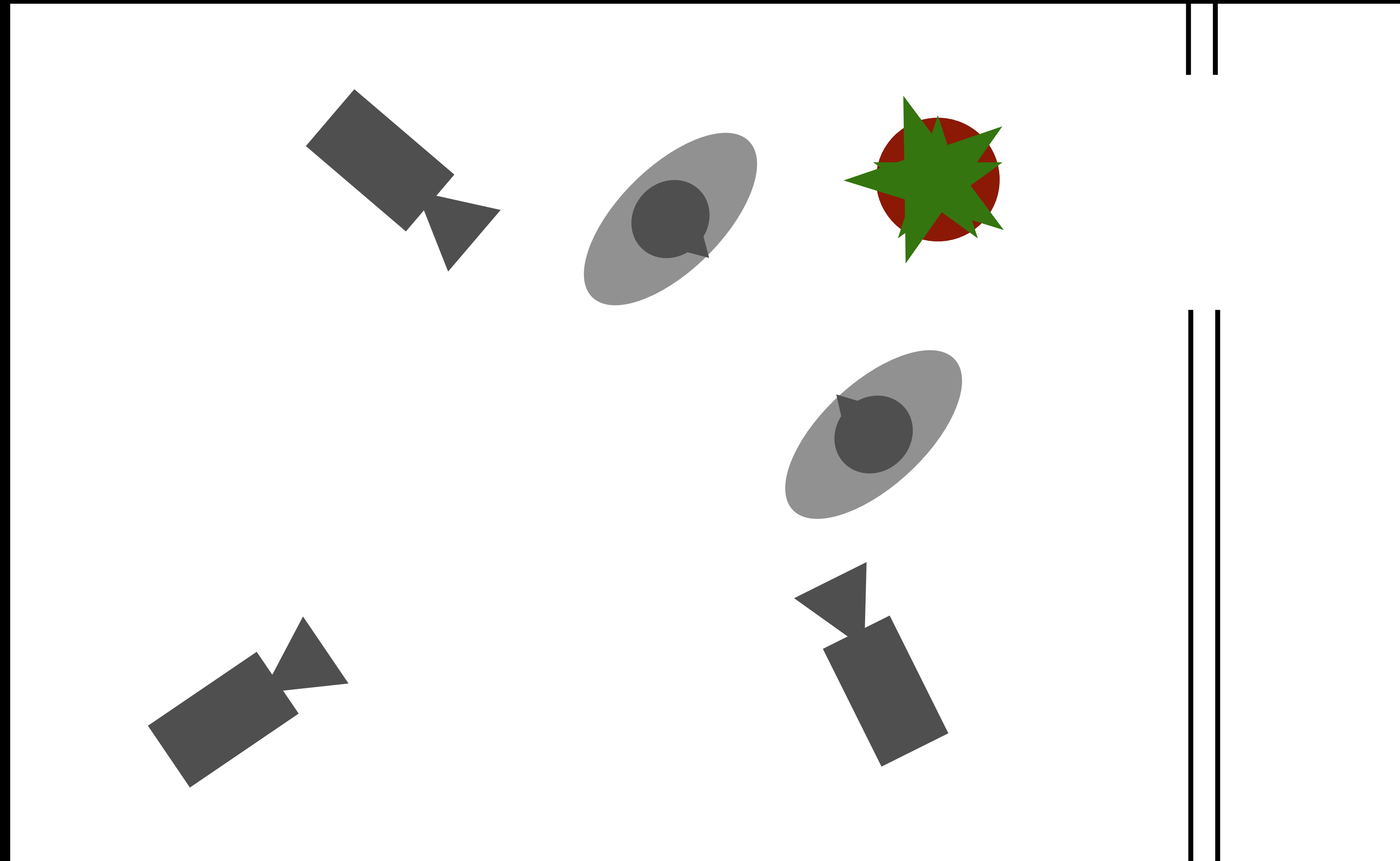
NOTES: 2-SHOT DIALOG



NOTES: WIDE 2-SHOT

storyboards

PRE-PRODUCTION



camera plot

LOCATIONS

LOCATION FACT SHEET

PROJECT-TITLE-HERE

PAGE 1 OF 2

PROD. # DIRECTOR PRODUCER LOCATION MANAGER

LOCATION INFO		SCENE
Script Location Name _____	Location _____	Number(s): _____
Contact Name _____	Address _____	<input type="checkbox"/> Day
Telephone _____	_____	<input type="checkbox"/> Night
		<input type="checkbox"/> Interior
		<input type="checkbox"/> Exterior

AVAILABILITY	DISTANCE FROM PRODUCTION OFFICE
No. of Days Needed _____	Minutes _____
Dates Needed _____	

FACILITIES	PARKING
<input type="checkbox"/> Restrooms	<input type="checkbox"/> Grip Truck
<input type="checkbox"/> Actor's Area	<input type="checkbox"/> Picture Cars
<input type="checkbox"/> Eating Area	<input type="checkbox"/> Camera Truck
<input type="checkbox"/> Secure Storage	<input type="checkbox"/> Generators
<input type="checkbox"/> Makeup	<input type="checkbox"/> Campers
<input type="checkbox"/> Production Staff	<input type="checkbox"/> Vans (Prop, Sound, etc.)
<input type="checkbox"/> Wardrobe	<input type="checkbox"/> Equipment
	<input type="checkbox"/> Cast & Crew Cars

LOCATION FACT SHEET

PROJECT-TITLE-HERE

PAGE 2 OF 2

DESCRIPTION OF LOCATION	ELECTRICAL DISTRIBUTION
Size of Access Door: _____	<input type="checkbox"/> Box Available Phase: _____ Circuits: _____
Ceiling Height: _____	Volts: _____ Amps: _____
Wall Finishes: _____	Distance from set: _____
Ceiling: _____	<input type="checkbox"/> Meter Loop Needed <input type="checkbox"/> Installed Phase: _____
Floor: _____	Volts: _____ Amps: _____
Natural Light: _____	Distance from set: _____
Practicals: _____	Distance from Loop to Transformer: _____
	Are Room Outlets Grounded?: <input type="checkbox"/> Yes <input type="checkbox"/> No

SOUND ENVIRONMENT	SPECIAL PROBLEMS

Room Plan Attached Route Map Attached

Location Manager

Location Scout

CALL SHEET TEMPLATE

Episode Title



Production Company Credit

Shoot Date

Day x of y

Producer	James Smith	(xxx) xxx-xxxx
Director	Jane Doe	(xxx) xxx-xxxx
UPM	Janet Smith	(xxx) xxx-xxxx
Nearest Hospital	(xxx) xxx-xxxx	
Address Line 1		
Address Line 2		

PRODUCTION TITLE/GRAPHIC

BREAKFAST	8:00 AM	CRAFT SERVICES
LUNCH	1:00 PM	Jim Doe (xxx) xxx-xxxx
SUNRISE		SUNSET 
6:15 AM		7:50 PM
WEATHER	70° AM	80° NOON 72° PM
Humidity	10%	Mostly Sunny

Sample Note 1: Individual call times may vary. ****NO SOCIAL MEDIA**CLOSED SET****
 Sample Note 2: Questions? Call Jack Doe (xxx) xxx-xxxx

CALL 9 AM

Sample Note 3: Walkie Assignments (5)
 Sample Note 4: Walkie Units: 5

SCENES	SET AND DESCRIPTION	CHARACTER #	D/N	PAGES	LOCATION/NOTES
	SET 1				
	Description 1				
	SET 2				
	Description 2				
	SET 3				
	Description 3				
	SET 4				
	Description 4				
	SET 5				
	Description 5				
				TOTAL PAGES	

#	CAST	CHARACTER	SWHF	MU	SET	MINOR?	SPECIAL INSTRUCTIONS
						Y/N	

PRODUCTION NOTES	
Production Note 1	[Sample] Allowed Guests

CONTACT SHEET TEMPLATE

Position	First	Last	Cell	Email	Paperwork	Notes	Phone 2	Website / IMDB	Prep Date	Shoot Date	Shoot Date	Wrap Date	Day Rate/ 14
PRODUCTION													
Executive Producer													
Producer													
Producer													
Associate Producer													
Unit Production Manager (UPM)													
Director													
Writer													
1st Assisant Director (1st AD)													
2nd AD													
2nd 2nd AD													
Script Supervisor													
Production Coordinator													
Asst. Production Coordinator													
Assistant to Producer													
Location Manager													
Technical Director													
Accountant													
CAMERA													
Director of Photography (DP)													
2nd Unit DP													
Camera Operator (CO)													
Camera Operator (B Cam)													
1st AC													
1st AC (B Cam)													
2nd AC													
Loader													
SOUND													
Sound Mixer													
Boom Operator													
Utility													

TALENT CONSENT AND RELEASE FORM

PRODUCTION COMPANY

Type the production info here...

LOCATION

Type the location info here...

PROJECT TITLE

Type the project title here...

I have participated as indicated on the above motion picture (the "Picture"). In consideration of my appearance in the Picture, and without any further consideration from you, I hereby grant permission to you to utilize my appearance in connection with the Picture in any and all manner and media and all rights of every kind and character whatsoever in perpetuity in and to my performance, appearance, name and/or voice and the results and proceeds thereof (the "Performance") in connection with the Picture, and I hereby authorize Production Company to photograph and record (on film, digital, video, tape, or otherwise), the Performance; to edit same at its discretion and to include it with the performance of others and with sound effects, special effects and music; to incorporate same into the Picture or other program or not; to use and to license others to use such recordings and photographs in any manner or media whatsoever, including without limitation unrestricted use for purposes of publicity, advertising and sales promotion; and to use my name, likeness, voice, biographic or other information concerning me in connection with the Picture, commercial tie-ups, merchandising, and for any other purpose. I further acknowledge that Production Company owns all rights to the results and proceeds of my services rendered in connection herewith.

I agree that my participation in the Picture may be edited in your sole discretion. I consent to use of my name, likeness, voice and biographical material about me in connection with Picture publicity and related institutional promotional purposes. I expressly release you, your agents, employees, licensees and assigns from and against any and all claims which I have or may have for invasion of privacy, defamation or any other cause of action arising out of production, distribution, broadcast or exhibition of the Picture.

Talent Signature

Print name

Phone

Date

IF TALENT IS UNDER 18:

I represent that I am a parent (guardian) of the minor who has signed the above release and I hereby agree that we shall both be bound thereby.

Signature

Print name

Date

GEAR CHECKLIST

1 CAMERA SHOOT WITH SYNC SOUND

VIDEO



CAMERA



LENS



MEDIA



POWER



TRIPOD

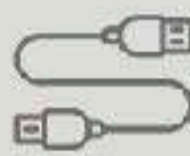
AUDIO



AUDIO
RECORDER



MIC



AUDIO
CABLE



HEADPHONES



POWER

LIGHT



LIGHTS



LIGHT STANDS



POWER



GELS AND
DIFFUSION



C47's AND
GAFF TAPE

OTHER



CARD
READER



USB CABLES



LAPTOP



LENS PEN



CAFFEINE

PRE-PRODUCTION: SCHEDULE CREW & SHOOTS

- 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 what a scene is trying to do
- 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)

WEEK 8: BASIC VIDEO PRODUCTION

DIGITAL MEDIA E-5

EXPLORING DIGITAL MEDIA

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