
New Ways of Story Telling: 3D Animation Con't.

Visual Imaging in the Electronic Age

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Lecture # 23

Film Making

Past and Present

- Building stage sets
- Compositing
- Static simulations
- Dynamic simulations
- Character modeling
- Dynamic LED displays
- Virtual Reality

The Old Way

Hollywood East



Hollywood East



Reducing the cost of Content Creation

Expensive Stage Sets

Cleopatra

1963



\$330M

Titanic

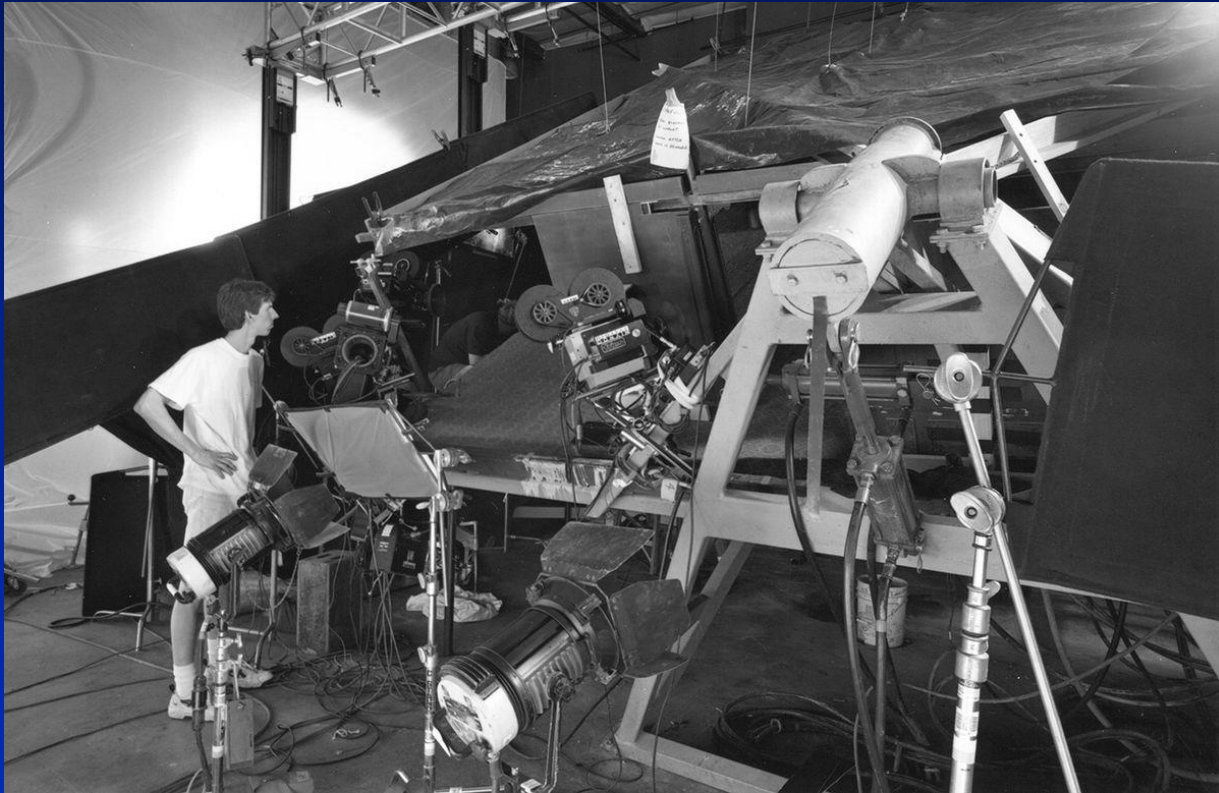
1997



\$180M

Titanic

1997



180M

Star Wars Props

1983



Expensive Filming

Modern Studio



Compositing

$$C_{\text{pixel}} = \alpha C_{\text{foreground}} + (1-\alpha) C_{\text{background}}$$

A Perfect Storm



Compositing: Putting it all together, “A Perfect Storm”

These simple techniques are used in production situations, only on a much larger scale. “The Perfect Storm” is an excellent example.



“The Perfect Storm” (2000)

Is this a real image, or a composite?

Compositing: the green screen

Advanced green screen algorithm can produce fantastic results. Observe in the image below that important details, such as the reflections in the window, and the fine edges of the hair are maintained.



"The Saint" (1997)

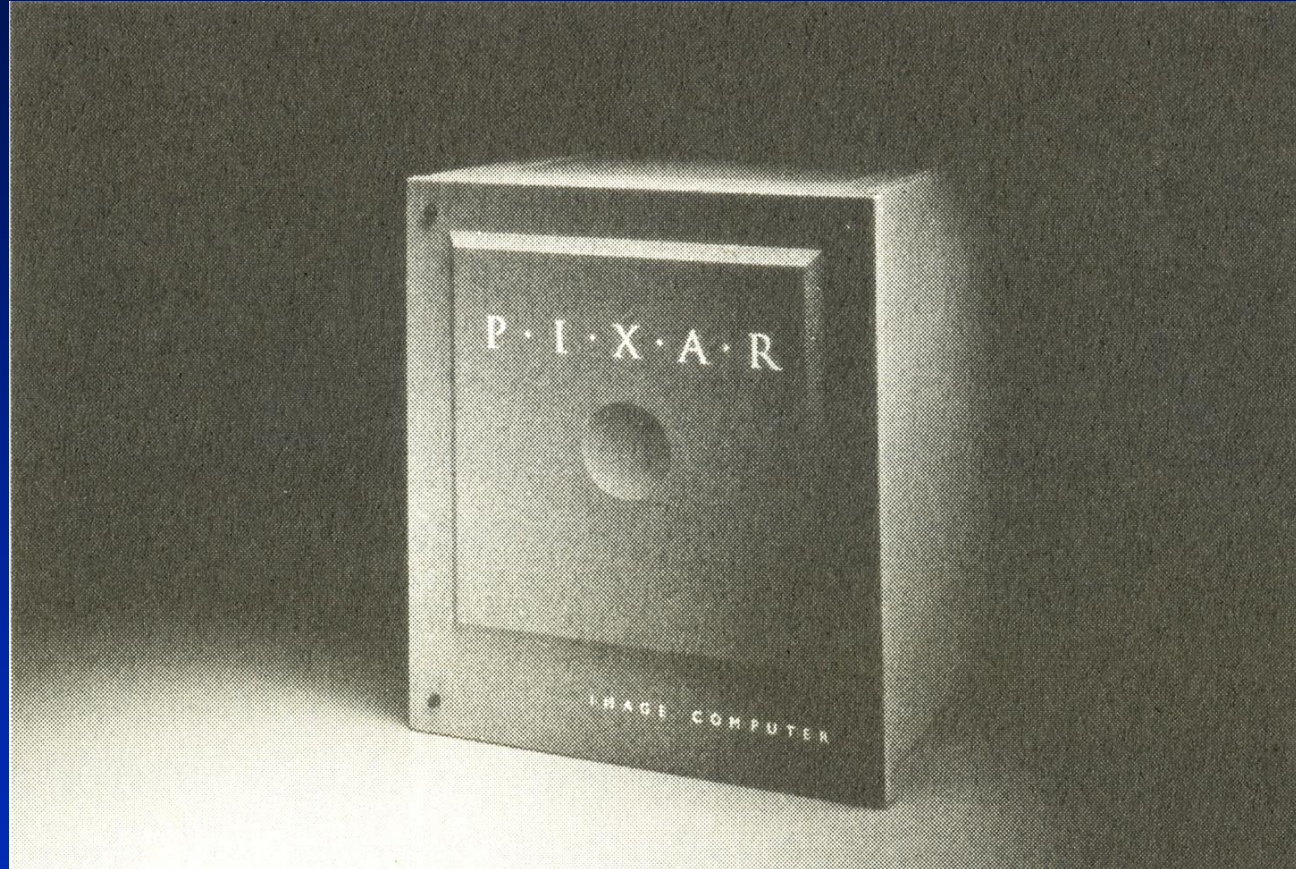
A naïve observer would have a hard time identifying that the above image was not an original photograph.

Compositing



Pixar Image Computer

mid-1986



Pixar's first production, the ill-fated Pixar Image Computer.

Special Effects

Life of Pi

2012



War for the Planet of the Apes

2017



War for the Planet of the Apes

2017



Future Ways of Film Creation, Production, and Distribution

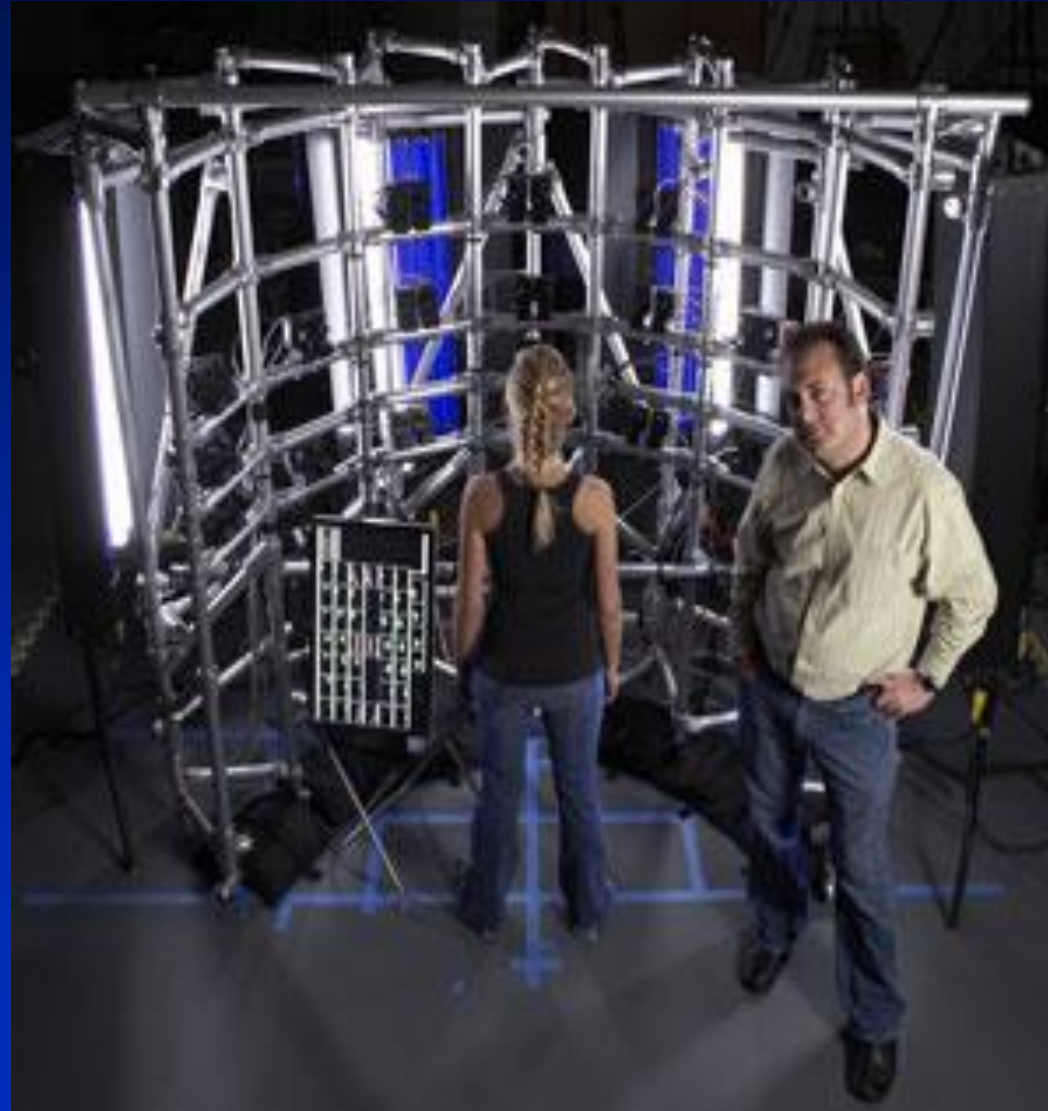
Capturing Motion and Emotions

The Curious Case of Benjamin Button 2008



Cinefex 116, January 2009

Markerless Motion Capture



The Curious Case of Benjamin Button 2008

Ed Ulbrich: How Benjamin Button got his face



BenButton2.wmv

http://www.ted.com/index.php/talks/ed_ulbrich_shows_how_benjamin_button_got_his_face.html

The Curious Case of Benjamin Button 2008



82 □ CINEFEX 116

The Curious Case of Benjamin Button 2008



Cinefex 116, January 2009

War for the Planet of the Apes



Dawn of the Planet of the Apes



War for the Planet of the Apes



Performance Capture

Guy Henry



Grand Moff Tarkin

Peter Cushing



Grand Moff Tarkin

Rogue One 2049



Weta Digital's Face Pipeline

Geometry based on Skull X-rays and Muscle behavior.

Geometry, Skin, and Pore motion based on deep learning.

Dental impressions.

Iris simulations with Fibro Vascular Pupillary strands.

BRDF's based on the actors sleep, hydration, blood flow, and weather temperature and humidity.

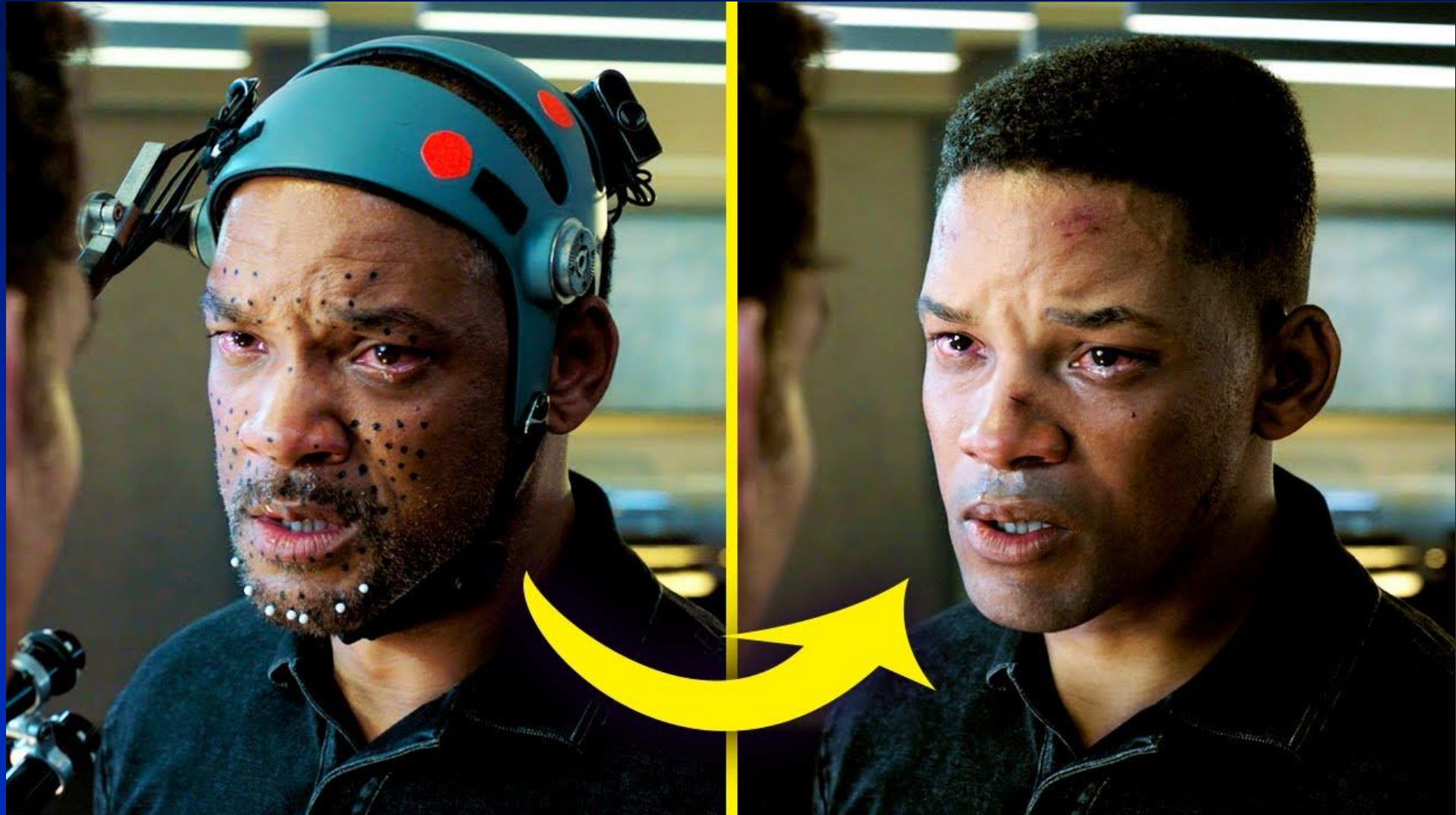
Gemini Man

2019



Gemini Man

2019



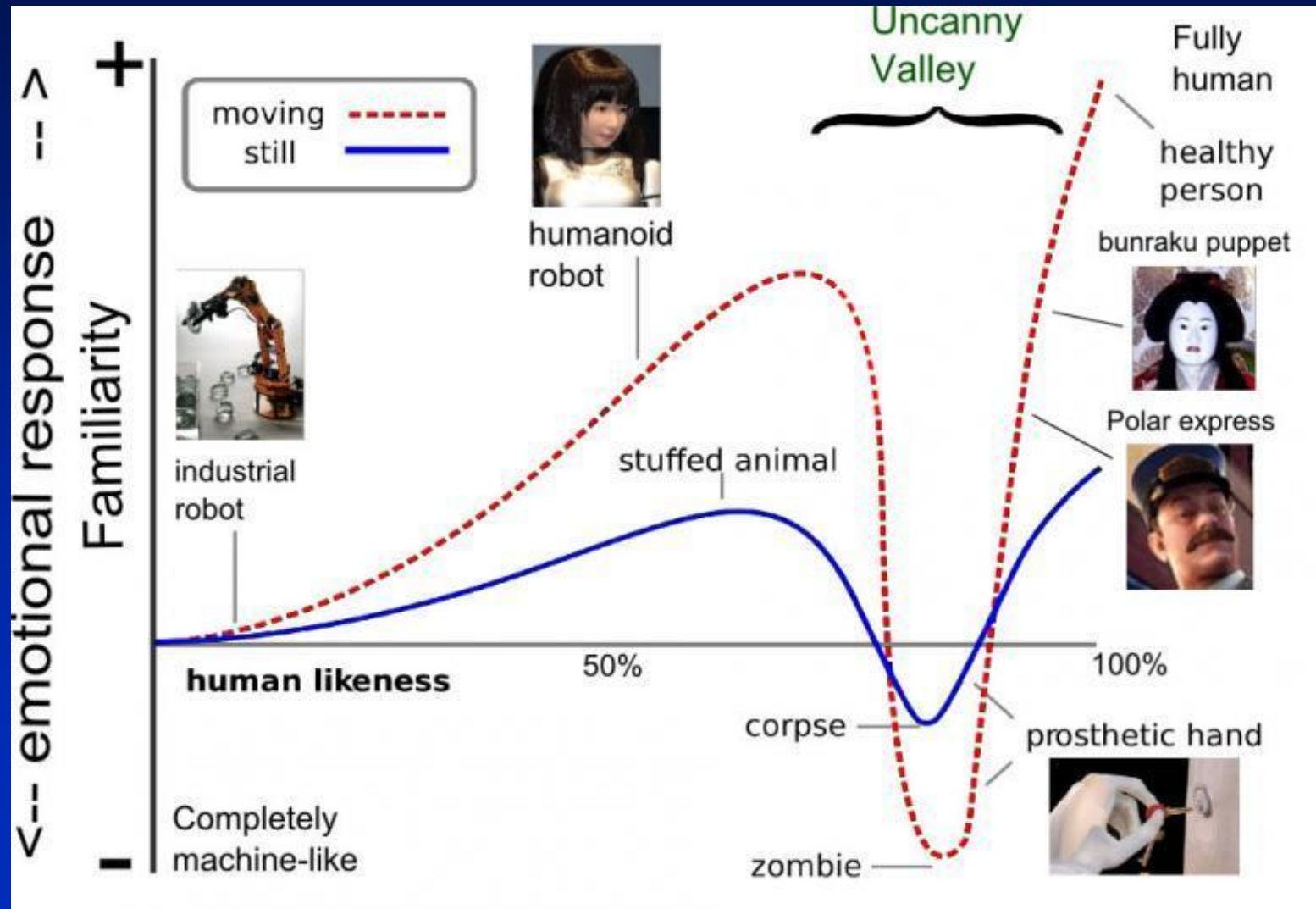
Gemini Man

2019



Uncanny Valley

Mori



Who Framed Roger Rabbit?

1988



Industrial Light and Magic Stagecraft

- 20 feet tall
- 270 degrees around
- Diameter equals 75 feet



Mandalorian

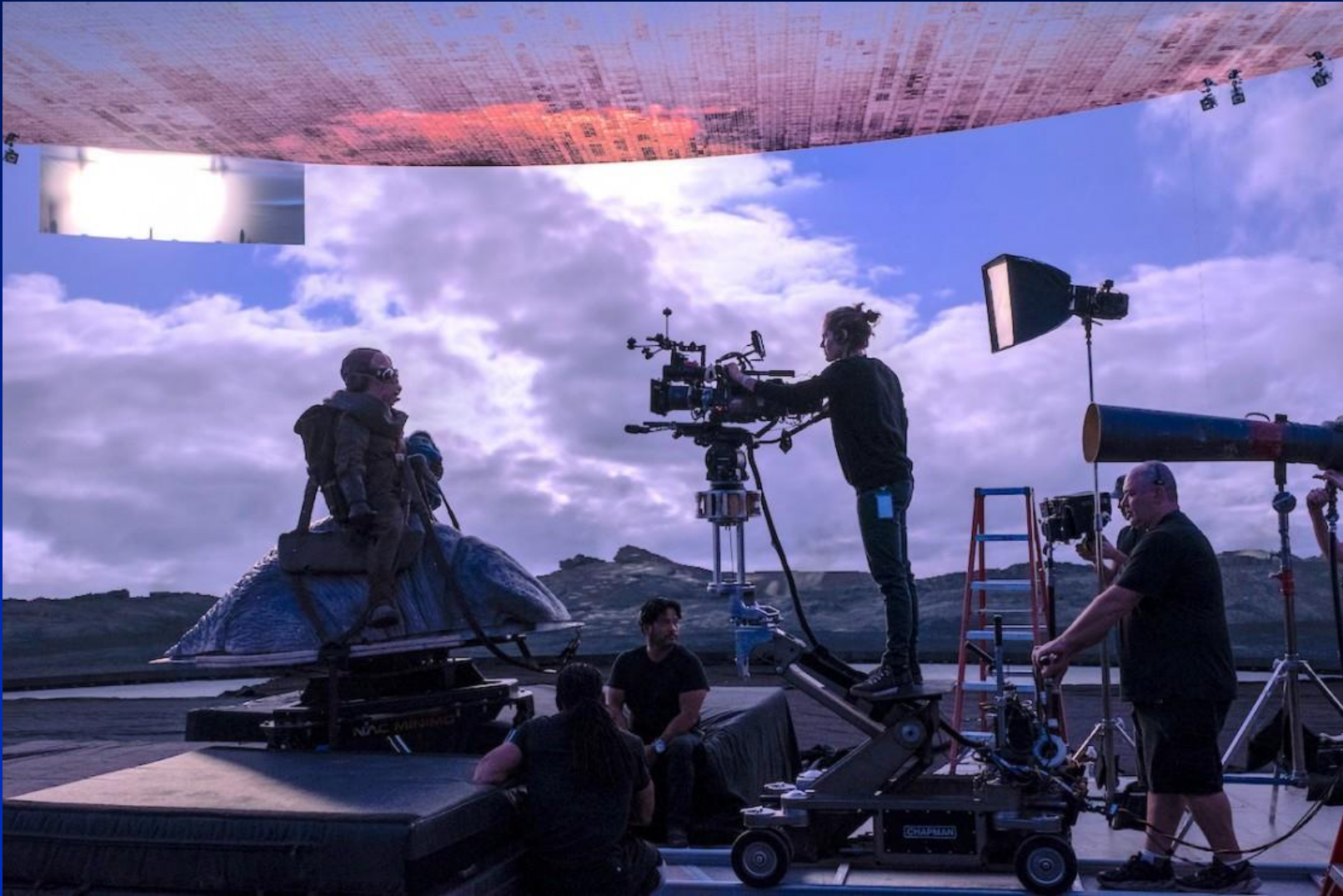
2020



Mandalorian

2020





ILM Stagecraft

2020



Mandalorian

2020



Mandalorian

2020



Mandalorian

2020

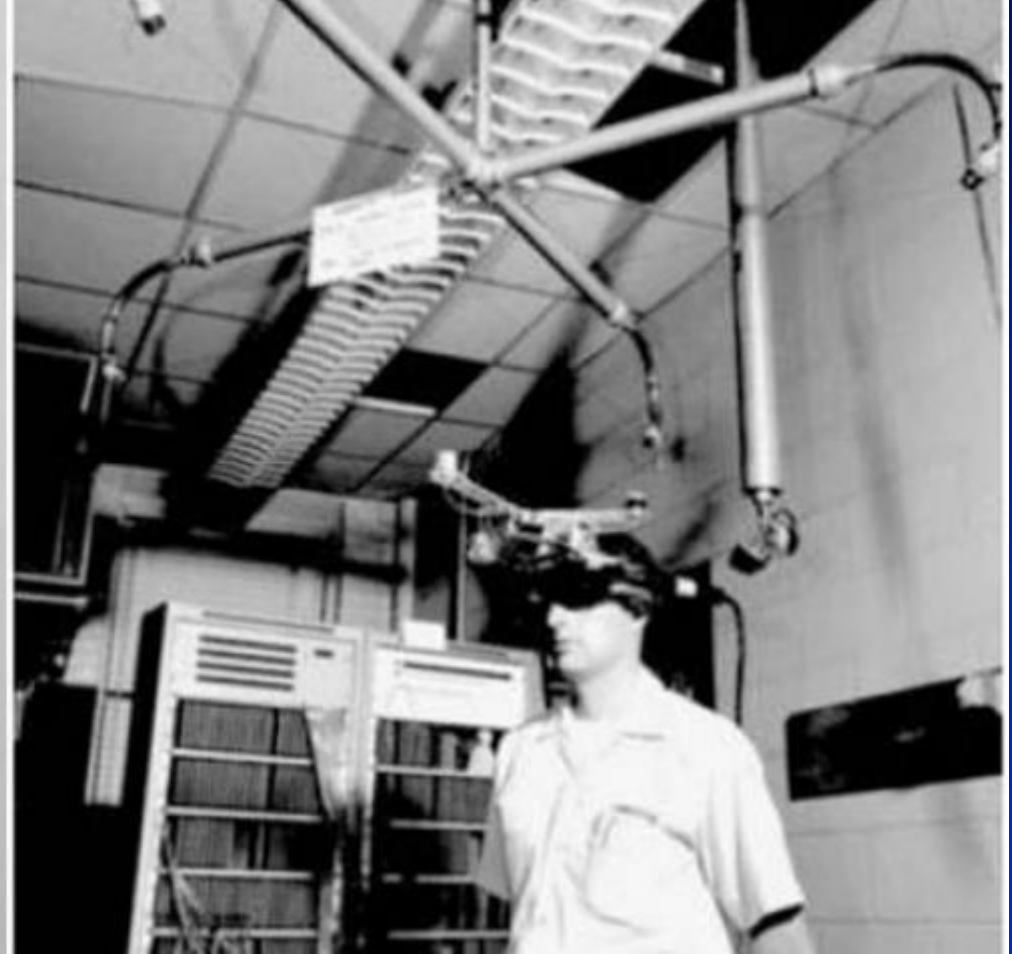


Mandalorian

2020



The Sword of Damocles 1965



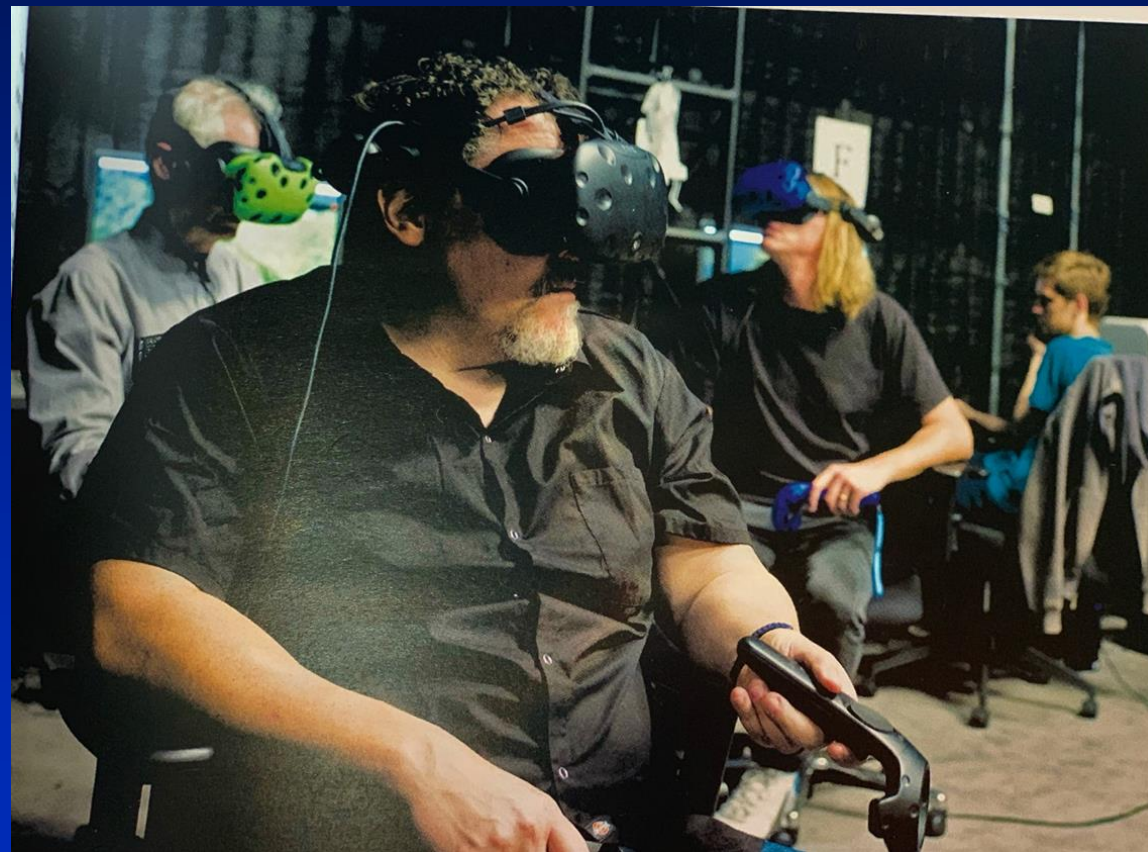
Virtual Reality



Virtual Reality



Virtual Reality



Simba and Nala

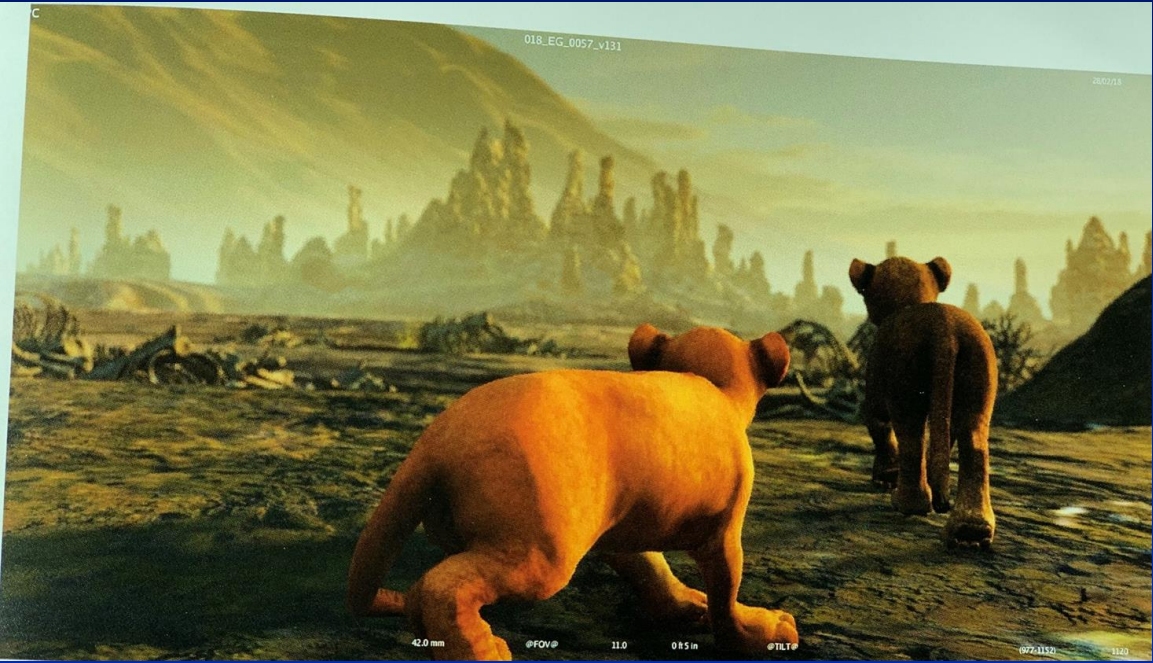
2019



Simba and Nala

2019





Zazu and Simba

2019



MPC Film



END
