

# Chapter 1

# Survey of Computer Graphics

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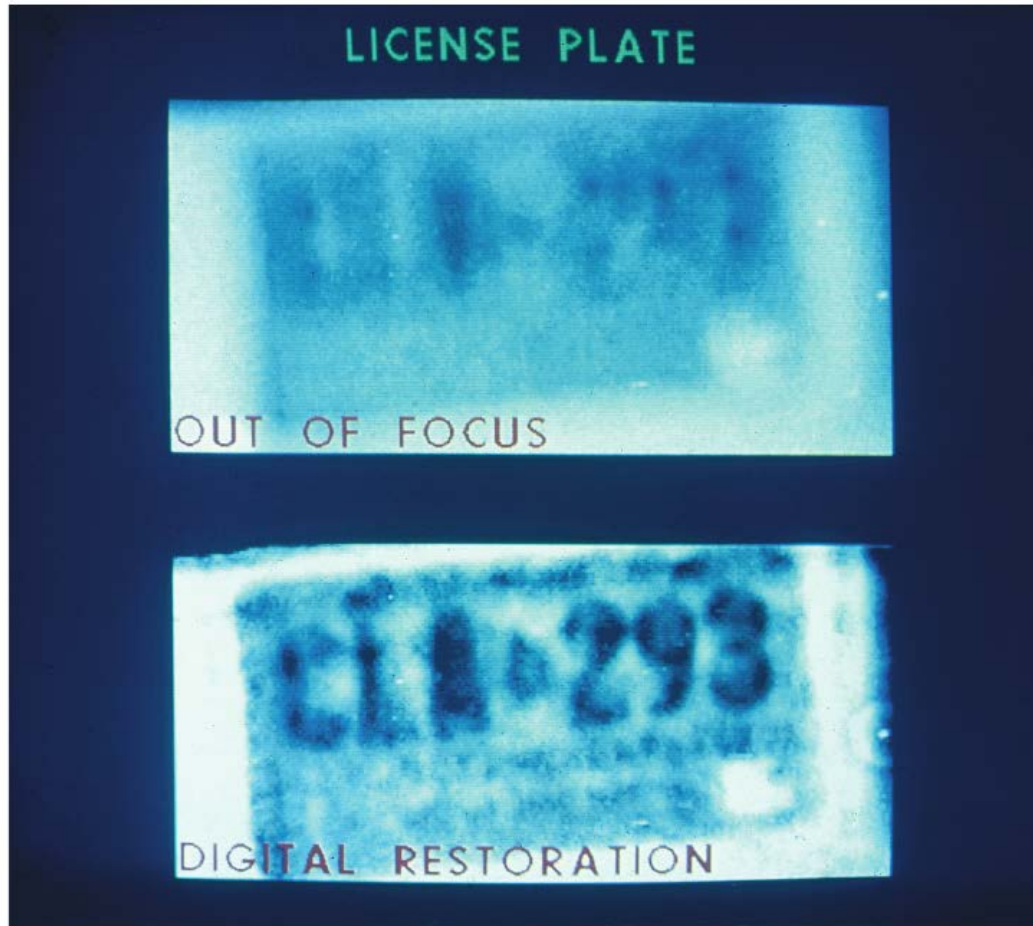
# Applications

- Business Graphics
- Computer–Aided Design
- Virtual–Reality
- Data/Information Visualizations
- Education and Training
- Computer Art
- Entertainment
- Graphical User Interface

# Image Processing

- Modify/Interpret existing images
- CG techniques synthesize images
- IP techniques improve/analyze images, and recognize visual patterns.
- IP methods are often used in CG, and CG methods are also applied in IP.
- IP and CG are often combined in many applications including medical apps.

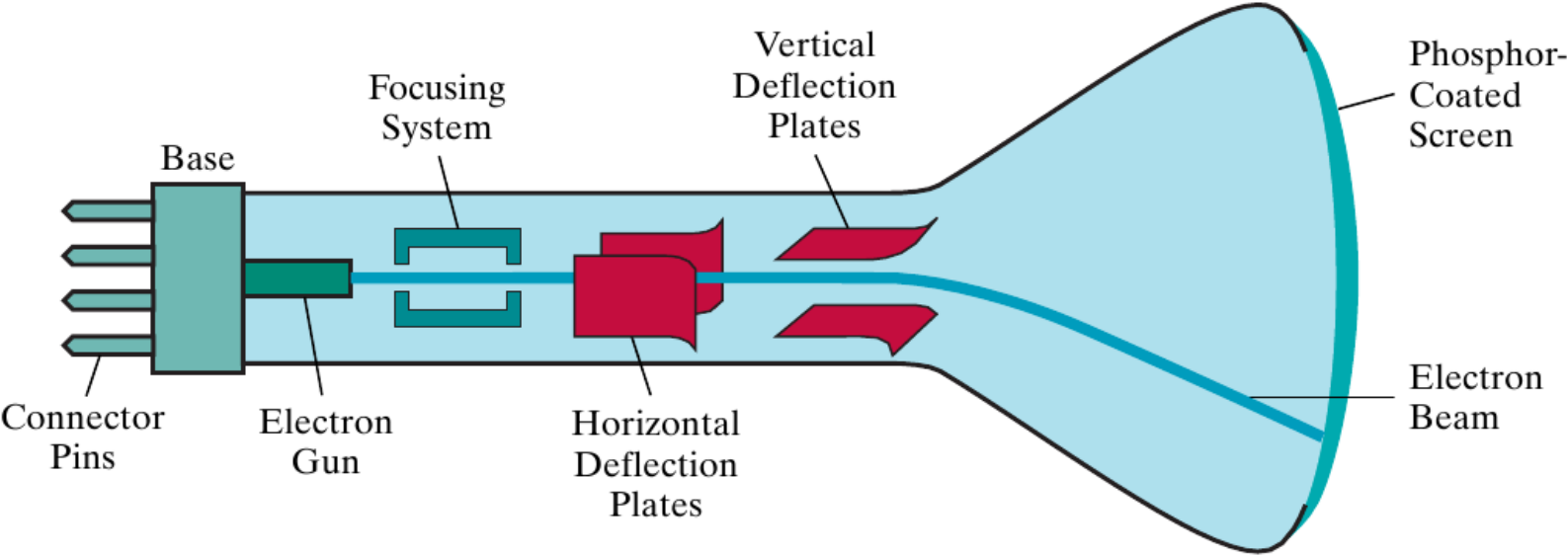
# Image Processing



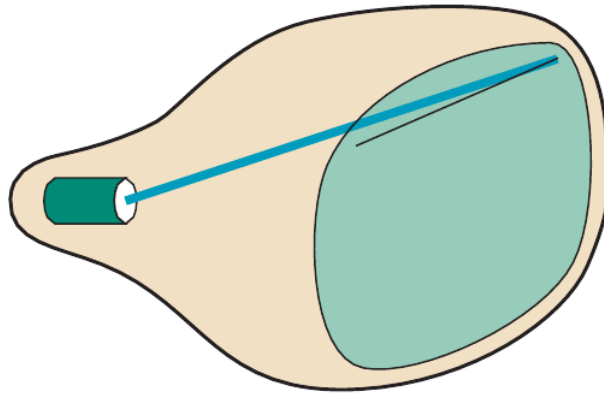
# Chapter 2

## Overview of Graphics Systems

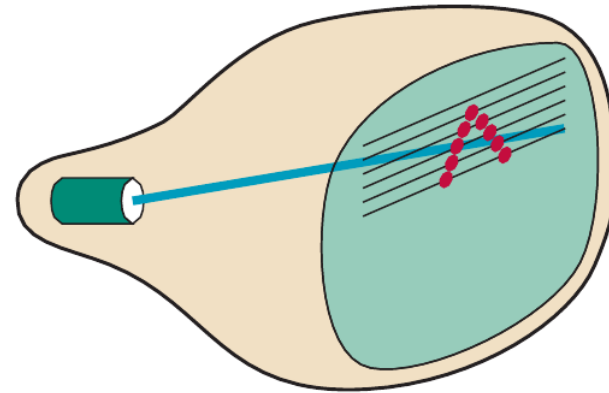
# Refresh Cathode-Ray Tube



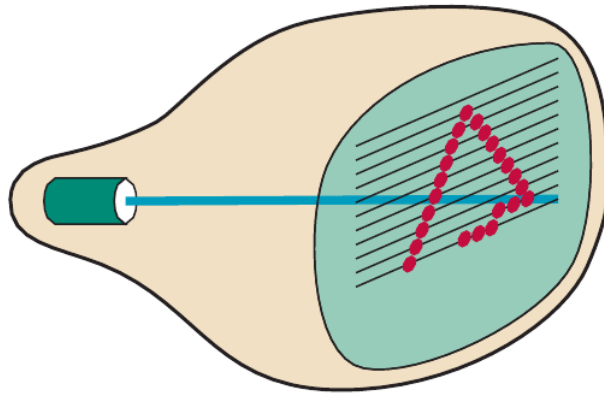
# Raster Scan Display



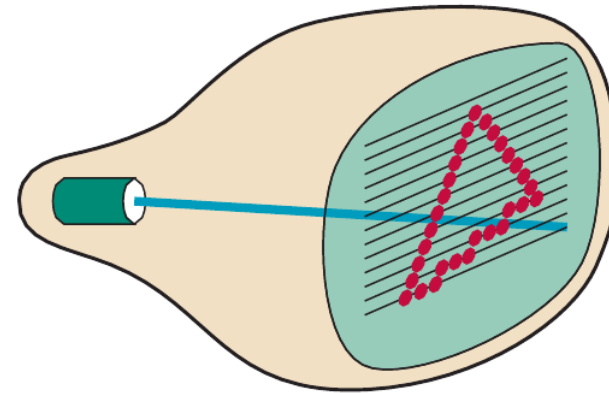
(a)



(b)

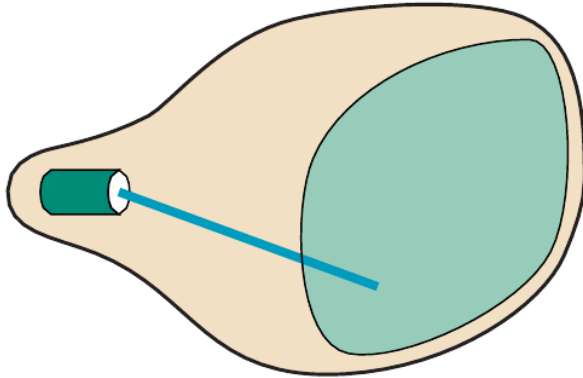


(c)

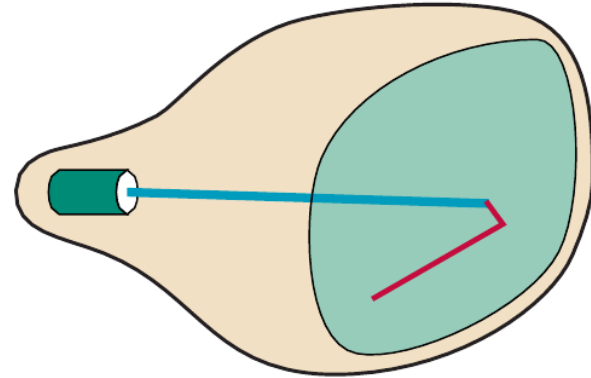


(d)

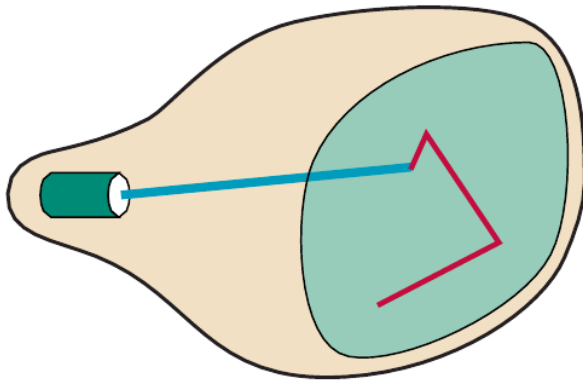
# Random Scan Display



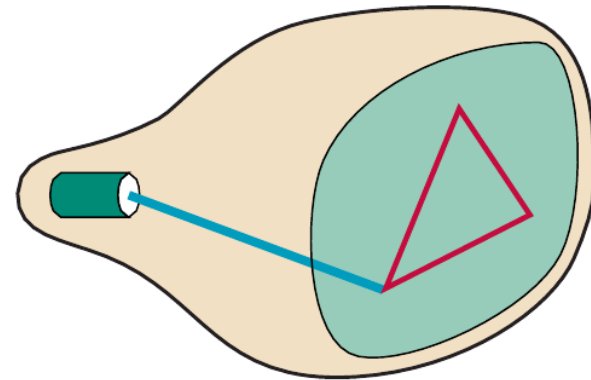
(a)



(b)



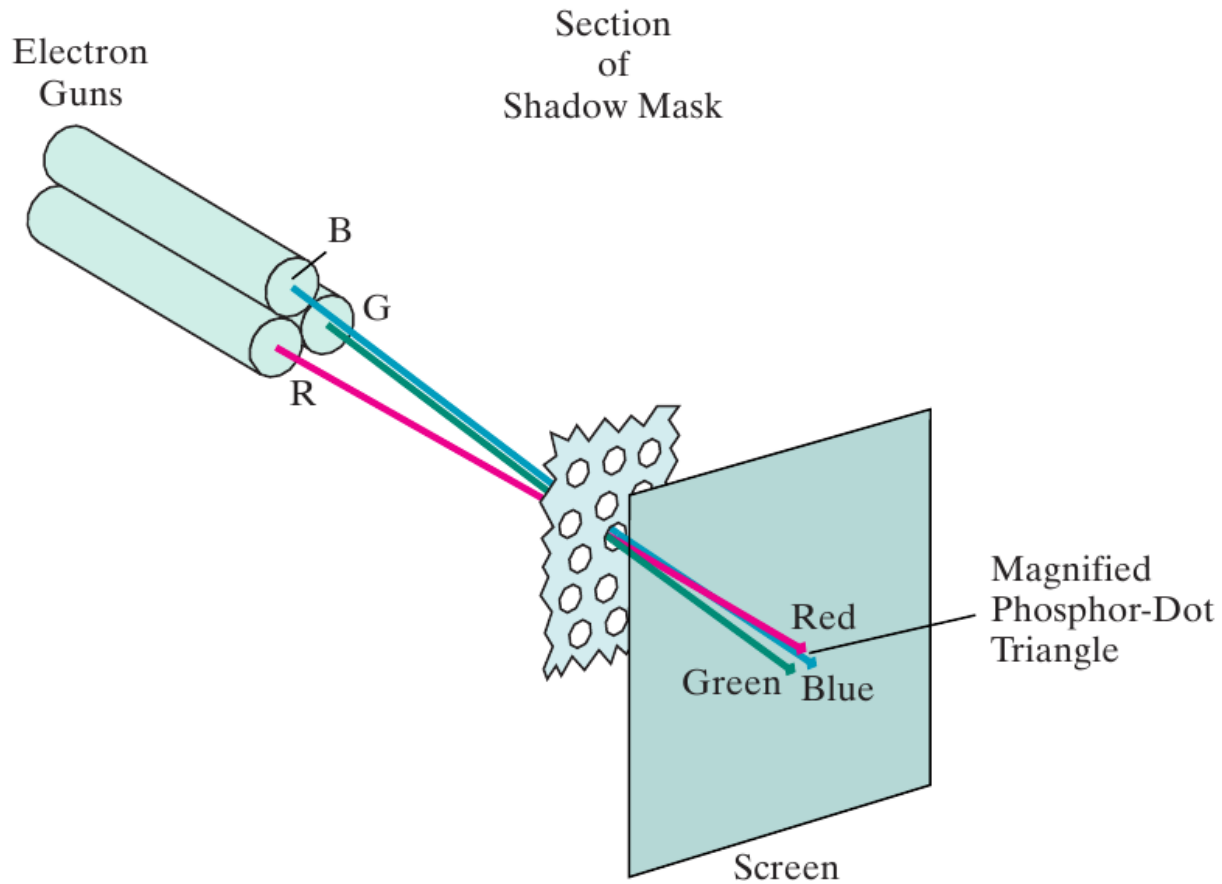
(c)



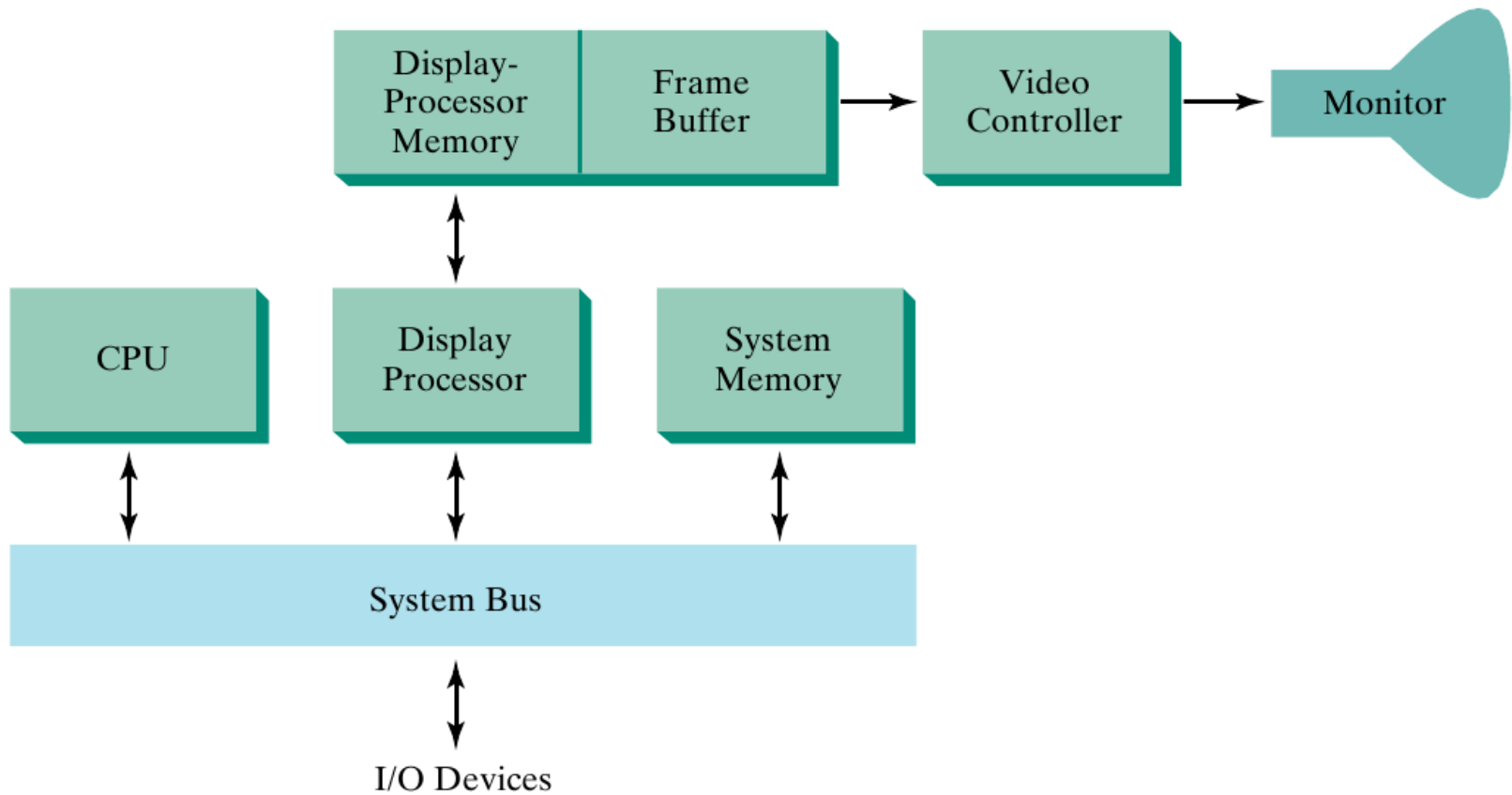
(d)



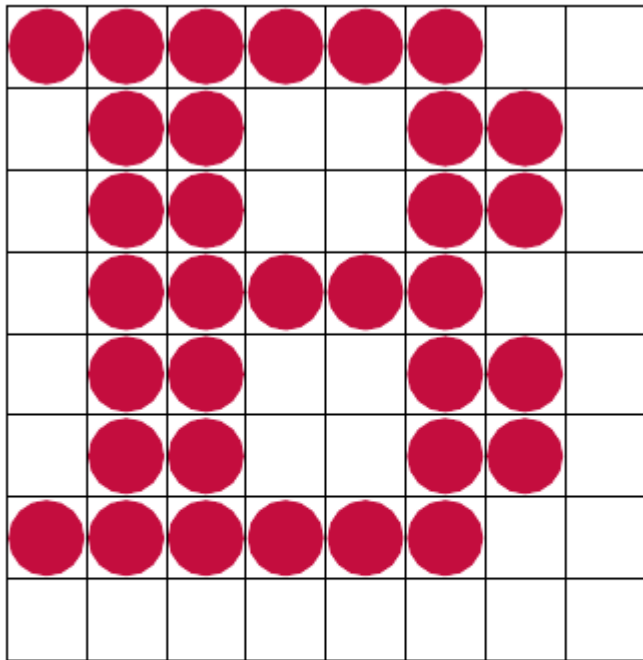
# Color Monitors



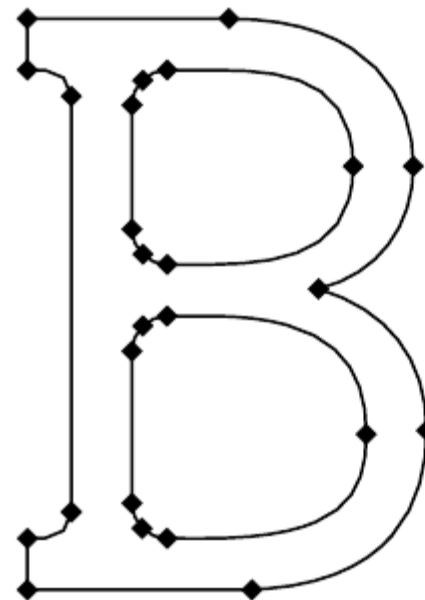
# Raster-Graphics System



# Character Representation



**FIGURE 2-29** A character defined as a rectangular grid of pixel positions.



**FIGURE 2-30** A character defined as an outline shape.

# Other Display Devices

- Flat Panel Displays
- 3D Viewing Devices
- Stereoscopic and VR Systems
- Large Screens and Wide Screens
- Multi-Panel Screens
- Large Curved Screens
- Semi-Circular Screens
- 360-degree Viewing Screen

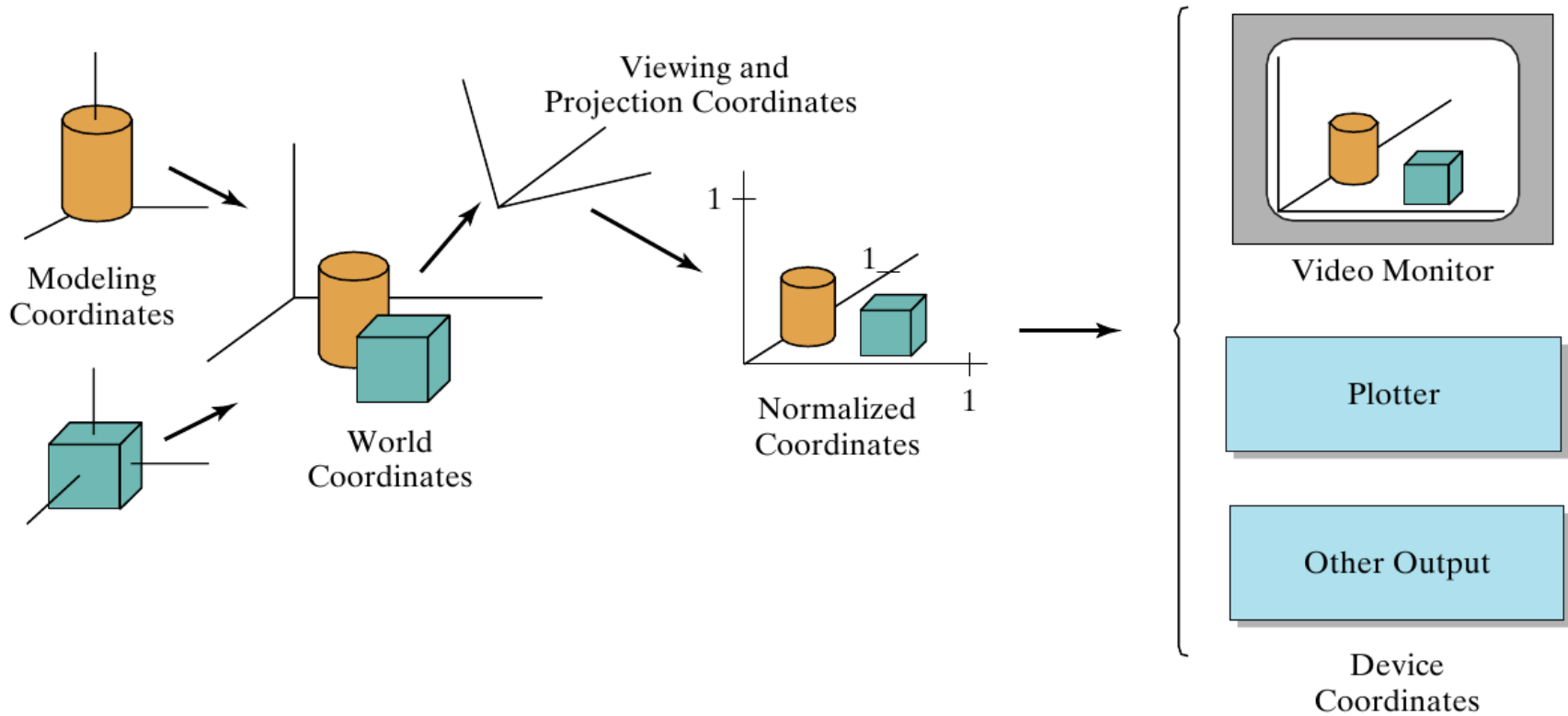
# Input Devices

- Keyboards, Button Boxes, and Dials
- Mouse Devices, Trackballs, Spaceballs
- Joysticks
- Data Gloves
- Digitizers
- 2D and 3D Scanners
- Touch Panels
- Light Pens

# Output Devices

- Printers
- Plotters
- 3D Printers

# Coordinate Representations



# Reading List

- Chapter 1
  - Section 1.8
- Chapter 2
  - Section 2.1
  - Section 2.2
  - Section 2.8