

## Display Technology

► Images stolen from various locations on the web...

## Cathode Ray Tube

A schematic diagram of a Cathode Ray Tube (CRT). It shows a vacuum tube with a conical shape. At the rear, there is a Cathode connected to a High Voltage source. An Anode is positioned further back, and a Control Grid is located between them. The tube is labeled 'Cathode Ray Tube'. A Fluorescent Screen is at the front. The diagram also shows the internal structure of the tube, including the neck and the main body.

## Cathode Ray Tube

A detailed cross-sectional diagram of a Cathode Ray Tube. The components are labeled as follows: Heater, Cathode, Control Grid, Anode, Deflecting coils, Focusing coil, Electron beam, and Fluorescent screen. The diagram shows the path of the electron beam from the cathode through the control grid and anode, and how it is deflected by the coils to hit the fluorescent screen.

## Raster Scanning

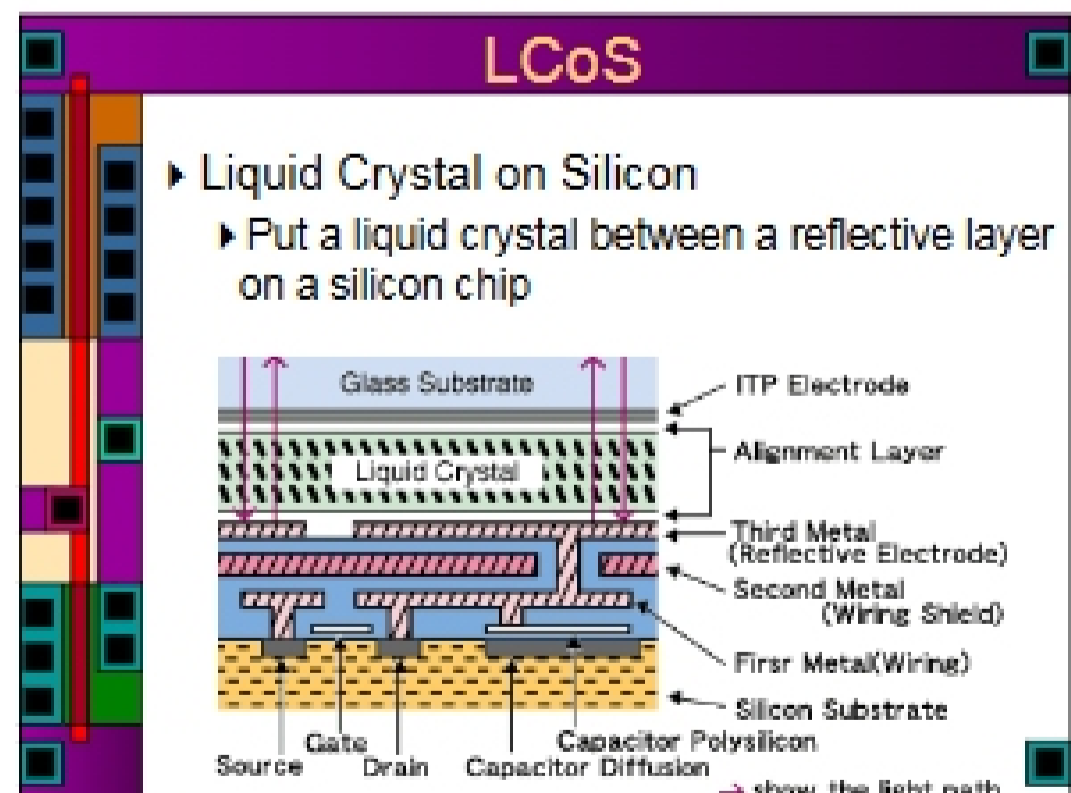
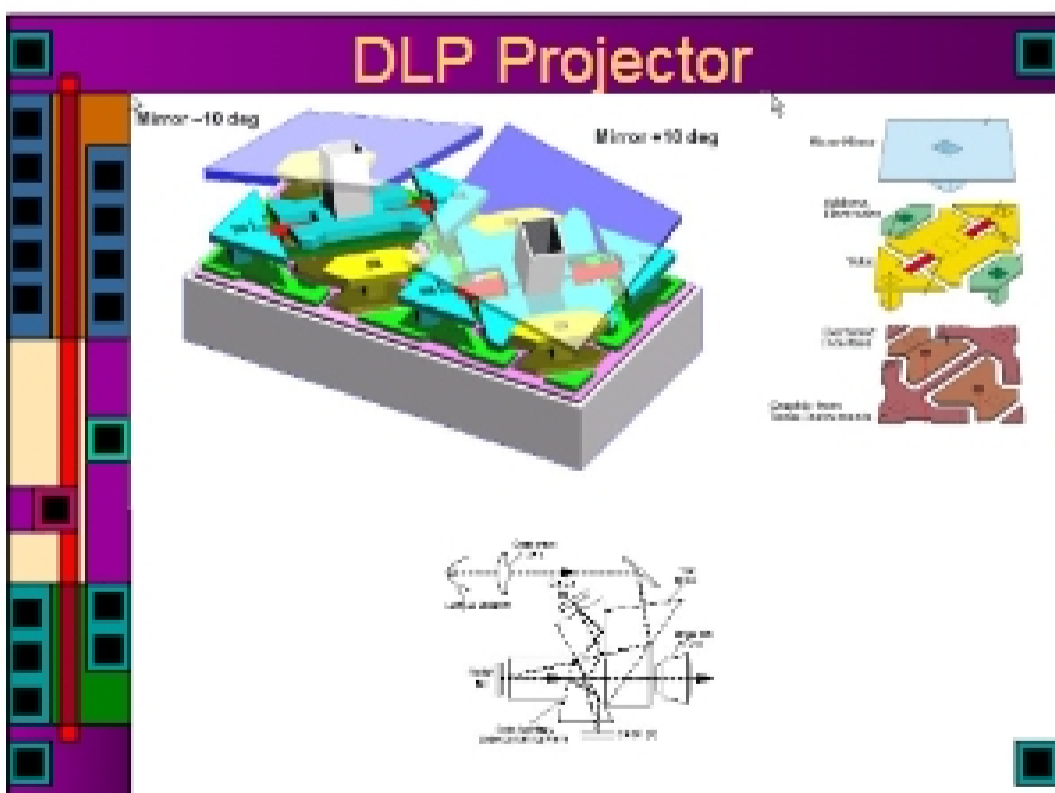
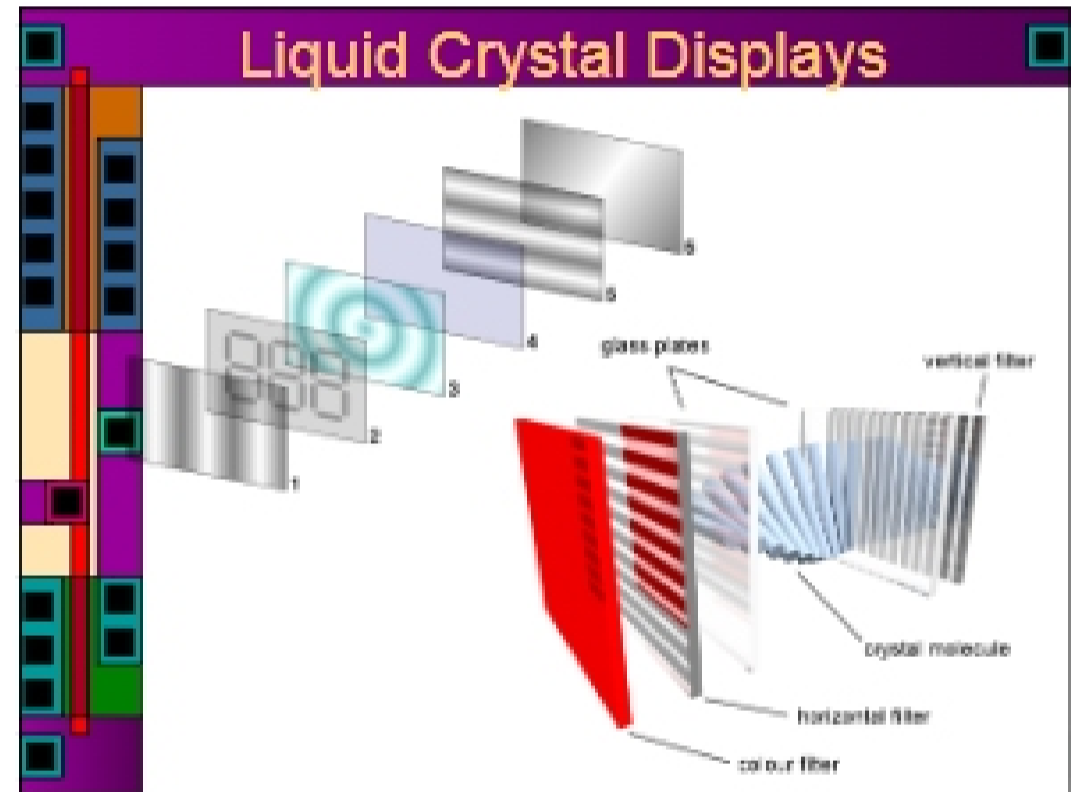
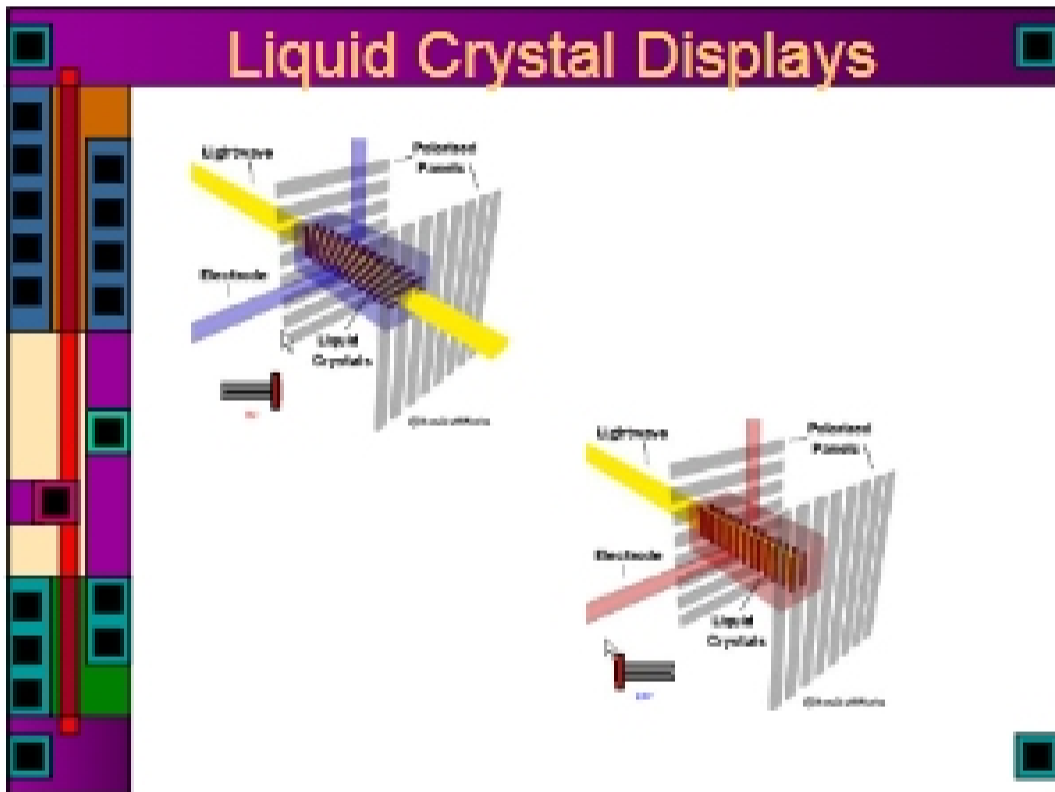
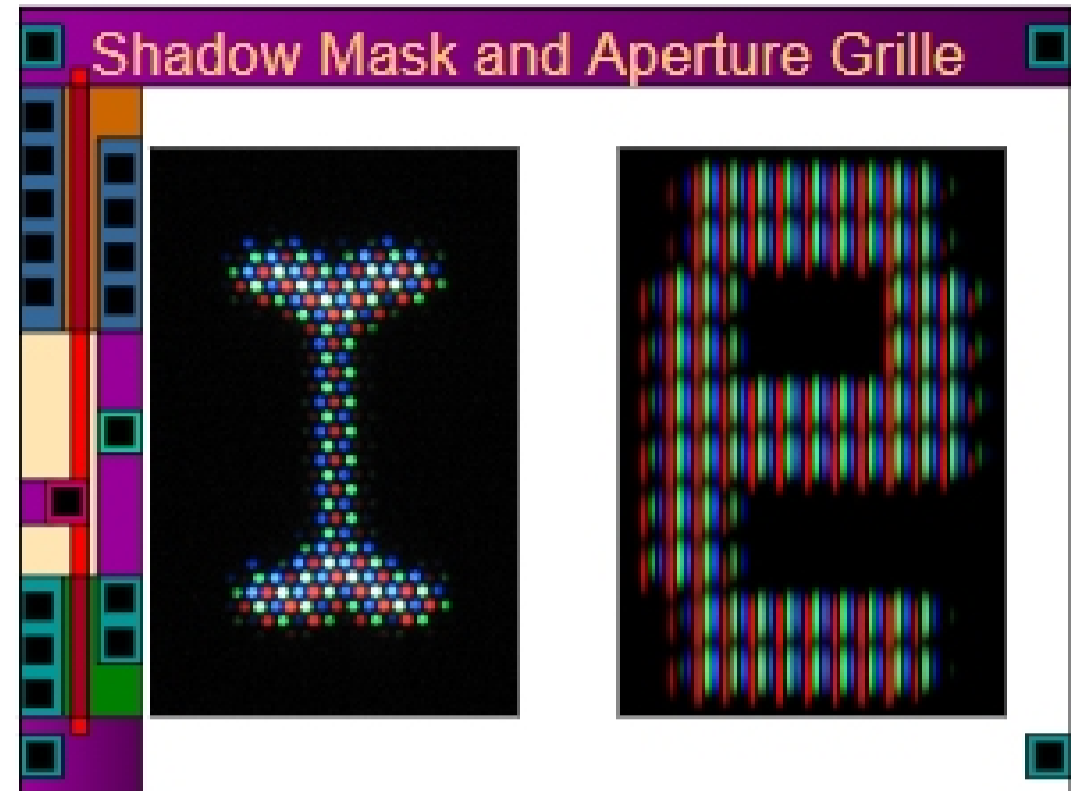
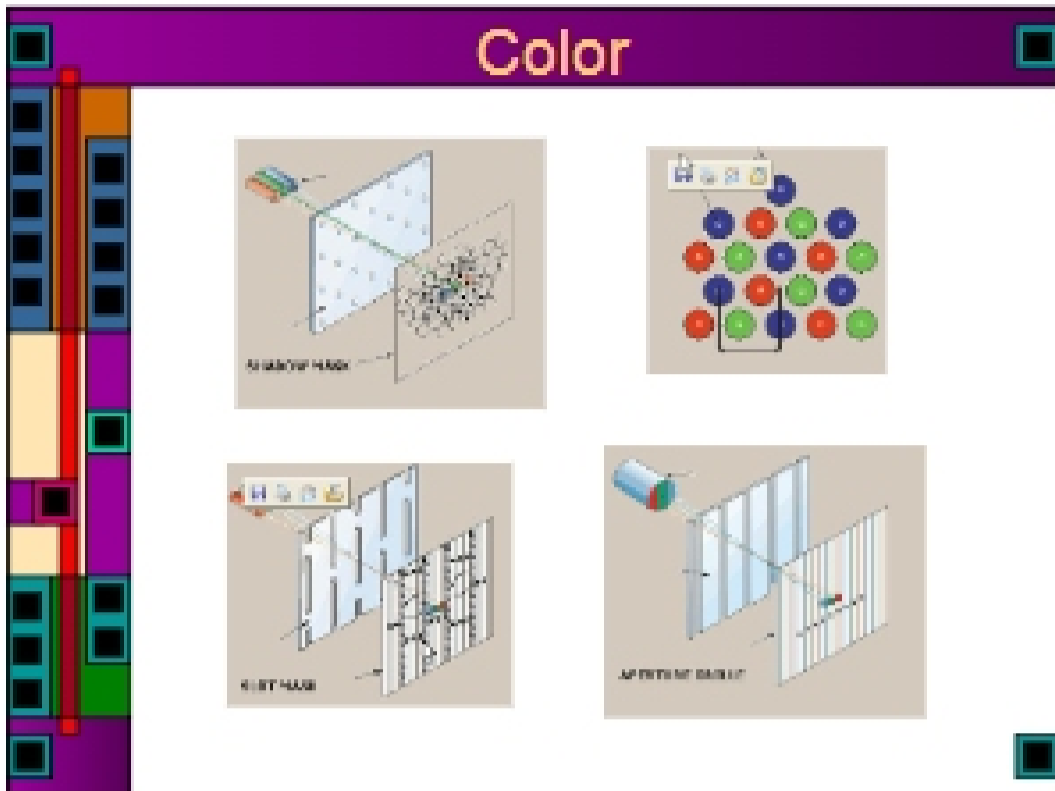
A diagram illustrating the raster scanning process. It shows a rectangular screen with a grid of horizontal lines. A green line represents the electron beam, which scans across the screen from left to right in a series of horizontal lines, moving down one line at a time. This process is called raster scanning.

## Electron Gun

Two photographs and a diagram of an electron gun. The top photograph shows a cylindrical metal assembly. The bottom photograph shows a similar assembly with a lens. The diagram shows the internal structure of the electron gun, including the cathode, control grid, and anode, and the path of the electron beam.

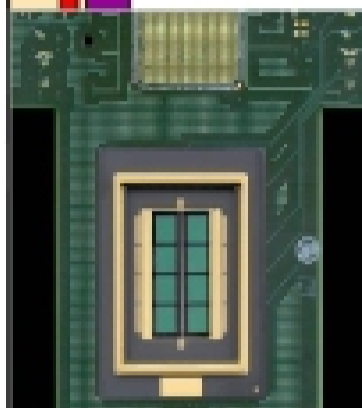
## Beam Steering Coils

Three photographs showing beam steering coils. The top photograph shows a large cylindrical coil with a label. The middle photograph shows a smaller cylindrical coil with a label. The bottom photograph shows a complex assembly of coils and other components.

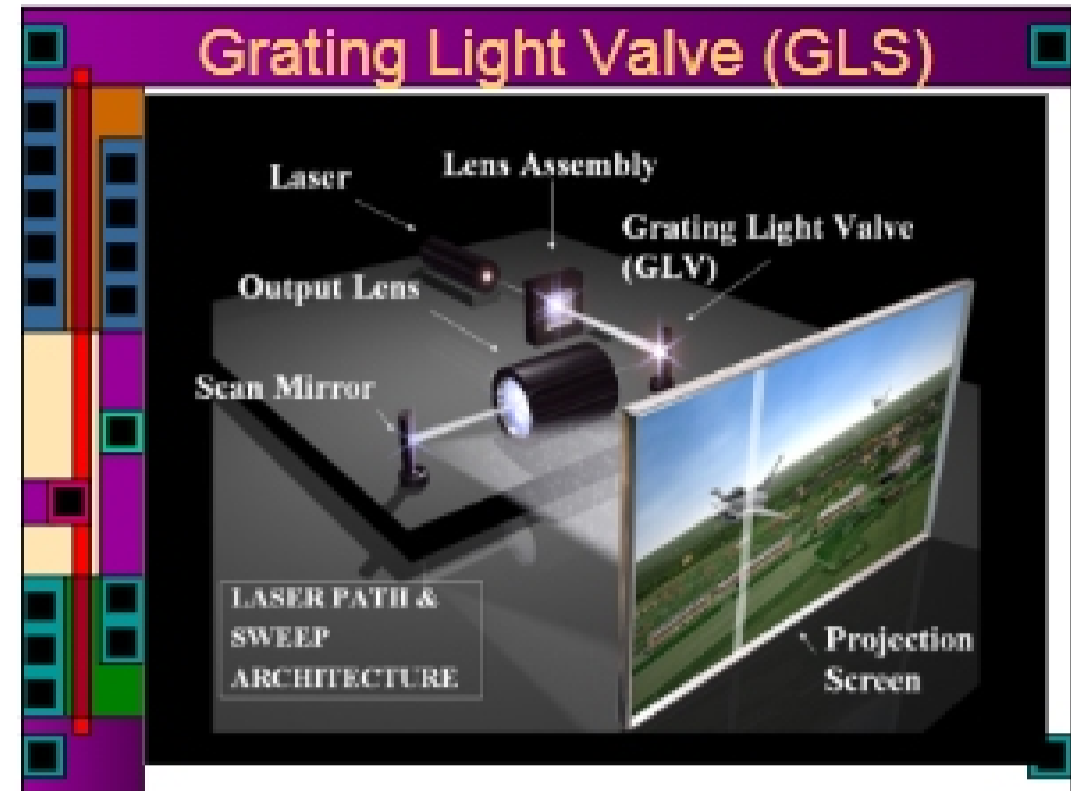


## Grating Light Valve (GLS)

- ▶ lots (8000 currently) of micro ribbons that can bend slightly
  - ▶ Make them reflective
  - ▶ The bends make a diffraction grating that controls how much light where
  - ▶ Scan it with a laser for high light output
  - ▶ 4000 pixel wide frame ever 60Hz



## Grating Light Valve (GLS)



LASER PATH & SWEEP ARCHITECTURE

## Digistar 3 Dome Projector



## VGA

- ▶ Stands for Video Graphics Array
- ▶ A standard defined by IBM back in 1987
  - ▶ 640 x 480 pixels
  - ▶ Now superseded by much higher resolution standards...
- ▶ Also means a specific analog connector
  - ▶ 15-pin D-subminiature VGA connector

## VGA Connector



1: Red out	8: Red return (ground)	11: Monitor ID 0 in
2: Green out	7: Green return (ground)	12: Monitor ID 1 in or data from display
3: Blue out	8: Blue return (ground)	13: Horizontal Sync
4: Unused	8: Unused	14: Vertical Sync
6: Ground	10: Sync return (ground)	15: Monitor ID 3 in or data clock

## Raster Scanning

