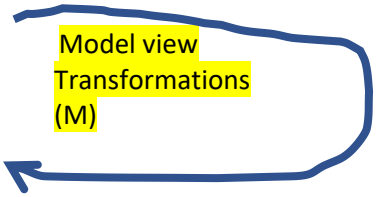
9/01/20

The CGI pipeline

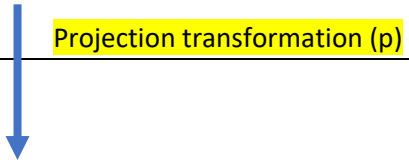
Phase 1 – Model
Model-view volume

Define Objects – using primitives ➔ library of objects (sphere)
Manipulate objects – duplicate; transform → translation, scaling, rotation



1) e.g., how to get an ellipse from a circle?
2) Egg from a sphere?

Uniform (in (x, y, z)) scale on circle/sphere ➔ sphere / circle
Non uniform ➔ 1, 2

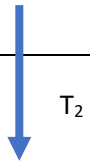


Phase 2

Camera volume, eye volume camera view volume
Define the camera

1) Parallel projection camera
2) Perspective projection - aperture

Phase 3
NDC - Normalized Device Coordinates - standard form (OGL concern)



Phase 4
Port, in a window, on the screen = defined by the user the transformation is OGL concern

Step 1 – define objects – create a library
Use OpenGl primitives

Other primitives
Points
Points and lines
Raster – digital images

OGL Primitives

- Raster
- Geometry primitives
  - Vertices – points in 3-d
  - Lines- connecting vertices
  - Polygons
    - Only a few of these exit in OGL 3 and above

```
glBegin(Primitive_type);
        define vertices using glVertex
glEnd();
```

```
glVertex{2,3},{f, d, i, v}(x, y, [z]);
```

```
glBegin(GL_POLYGON);
        glVertex2f(-0.5, -0.5);
        glVertex2f(-0.5, 0.5);
        glVertex2f(0.5, 0.5);
        glVertex2f(0.5, -0.5);
glEnd();
```

```
glBegin(GL_POLYGON);
        glVertex{2,3},{f, d, i, v}(x, y, [z]);
glEnd();
```