

Introduction to 3D Graphics

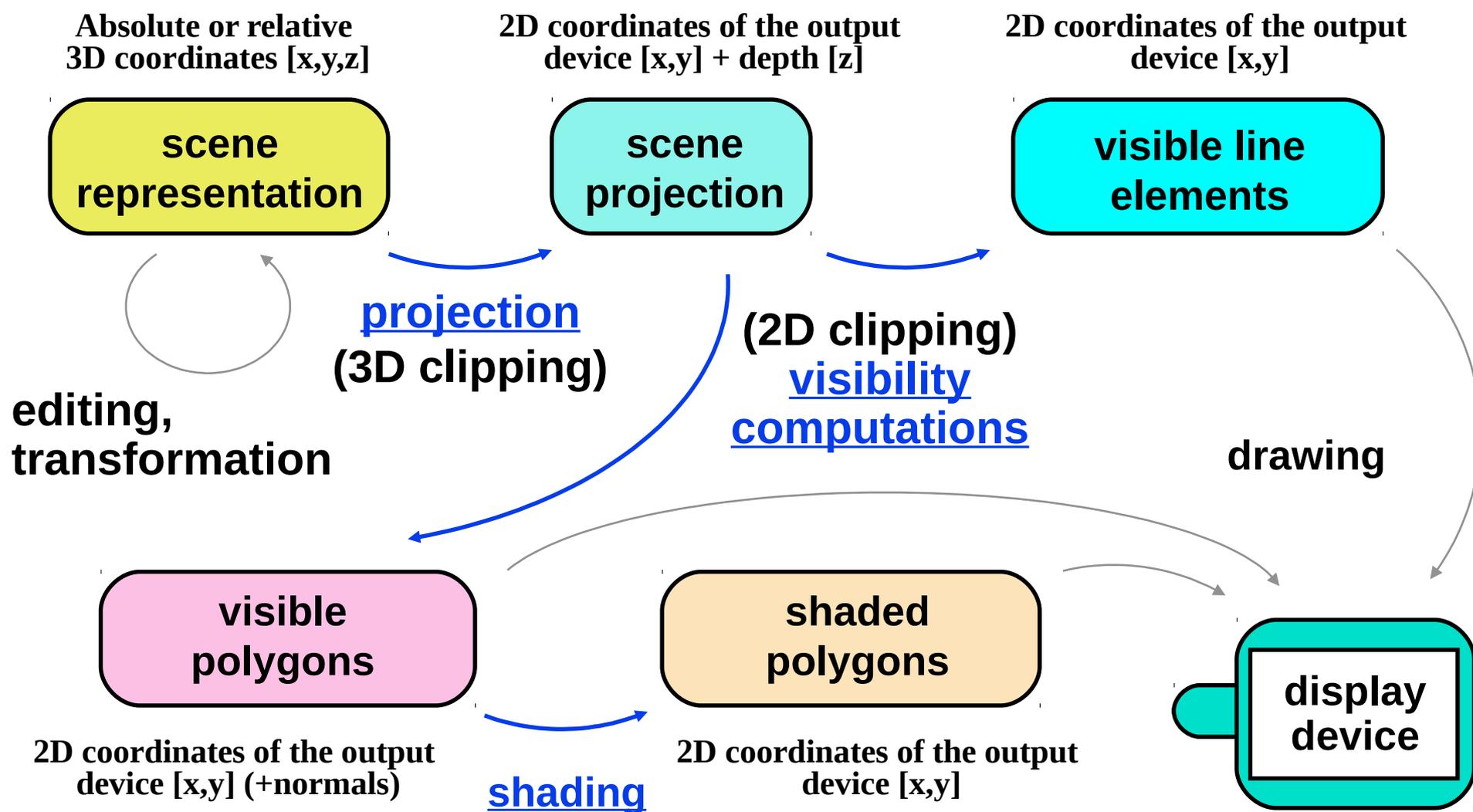
© 1995-2015 Josef Pelikán & Alexander Wilkie
CGG MFF UK Praha

pepca@cgg.mff.cuni.cz

<http://cgg.mff.cuni.cz/~pepca/>



3D Graphics Systems





Phases of Rendering a Scene

- **Editing, transformations (working with 3D data)**
 - Using the functions of a modelling application (CAD, animation system, ...)
 - This step can be missing or hidden in pure rendering and interaction systems (simulations, games, ...)
- **Projection** (possibly including 3D cropping)
 - Transformation 3D \rightarrow 2D (while retaining depth information for visibility computations)
 - Different angles, perspective



Phases of Rendering a Scene

- **2D Clipping** (not present in all systems)
 - Removal of objects that lie outside the visible area
- **Visibility Computations**
 - Removal of hidden objects (or parts of objects)
 - **Line drawing** (only the outlines are drawn)
 - **Polygon drawing** (solid shapes are drawn)
- **Shading**
 - Improved spatial perception by inclusion of light-surface interactions (sometimes even with shadows)