

Chap 1. Introduction

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Notations used in this Book

Type	Notation	Examples
angle	lowercase Greek	$\alpha_i, \phi, \rho, \eta, \gamma_{242}, \theta$
scalar	lowercase italic	a, b, t, u_k, v, w_{ij}
vector or point	lowercase bold	$\mathbf{a}, \mathbf{u}, \mathbf{v}_s, \mathbf{h}(\rho), \mathbf{h}_z$
matrix	capital bold	$\mathbf{T}(\mathbf{t}), \mathbf{X}, \mathbf{R}_x(\rho)$
plane	π : a vector and a scalar	$\pi : \mathbf{n} \cdot \mathbf{x} + d = 0,$ $\pi_1 : \mathbf{n}_1 \cdot \mathbf{x} + d_1 = 0$
triangle	$\triangle$ 3 points	$\triangle \mathbf{v}_0 \mathbf{v}_1 \mathbf{v}_2, \triangle \mathbf{cba}$
line segment	two points	$\mathbf{uv}, \mathbf{a}_i \mathbf{b}_j$
geometric entity	capital italic	A_{OBB}, T, B_{AABB}

Notations for Math Operators

	Operator	Description
1:	$\cdot$	dot product
2:	$\times$	cross product
3:	$\mathbf{v}^T$	transpose of the vector $\mathbf{v}$
4:	$\otimes$	piecewise vector multiplication
5:	$\perp$	the unary, perp dot product operator
6:	$ \cdot $	determinant of a matrix
7:	$ \cdot $	absolute value of a scalar
8:	$\ \cdot\ $	length (or norm) of argument
9:	$n!$	factorial
10:	$\binom{n}{k}$	binomial coefficients

Matrix Notations

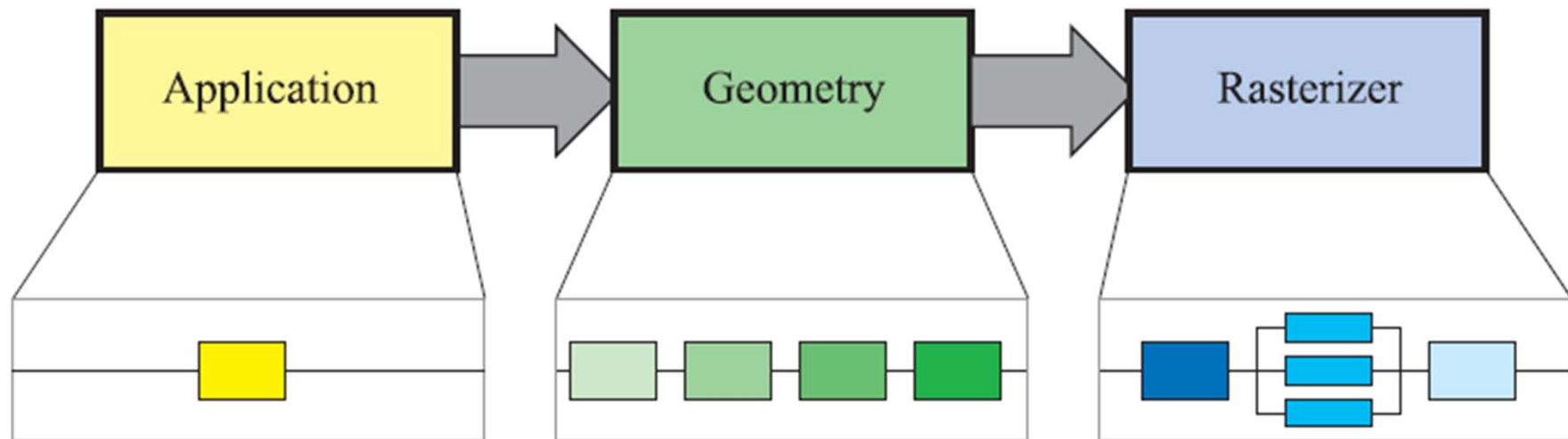
$$\mathbf{M} = \begin{pmatrix} m_{00} & m_{01} & m_{02} \\ m_{10} & m_{11} & m_{12} \\ m_{20} & m_{21} & m_{22} \end{pmatrix}$$

$$\mathbf{M} = \begin{pmatrix} \mathbf{m}_{,0} & \mathbf{m}_{,1} & \mathbf{m}_{,2} \end{pmatrix} = \begin{pmatrix} \mathbf{m}_x & \mathbf{m}_y & \mathbf{m}_z \end{pmatrix} = \begin{pmatrix} \mathbf{m}_{0,}^T \\ \mathbf{m}_{1,}^T \\ \mathbf{m}_{2,}^T \end{pmatrix}$$

Chap 2.

The Graphics Rendering Pipeline

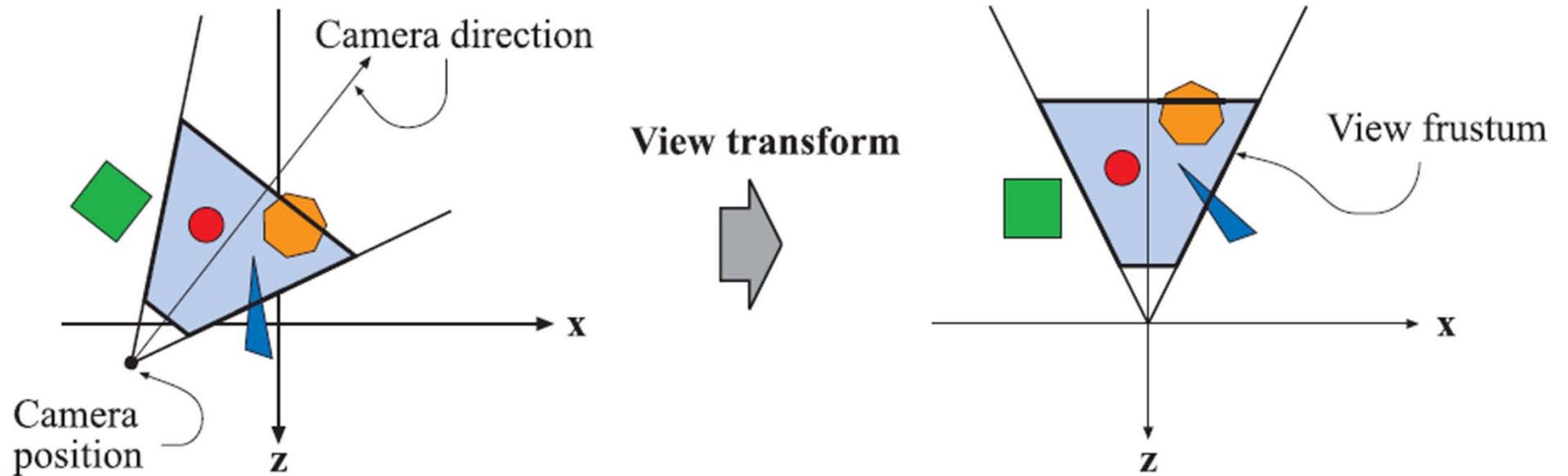
Graphics Rendering Pipeline



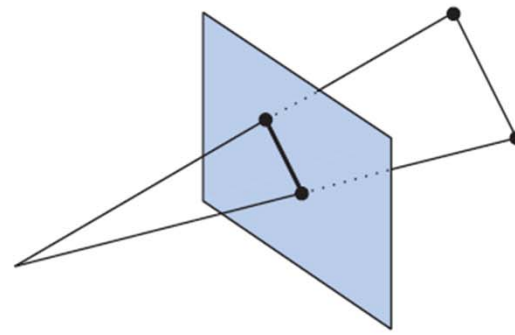
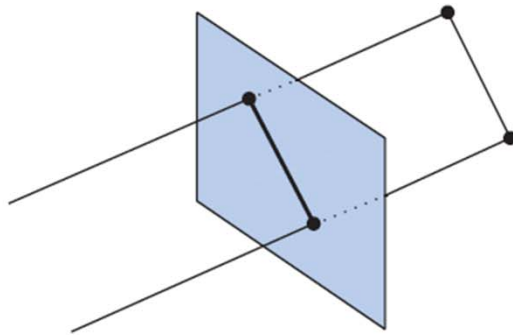
Geometry Stage



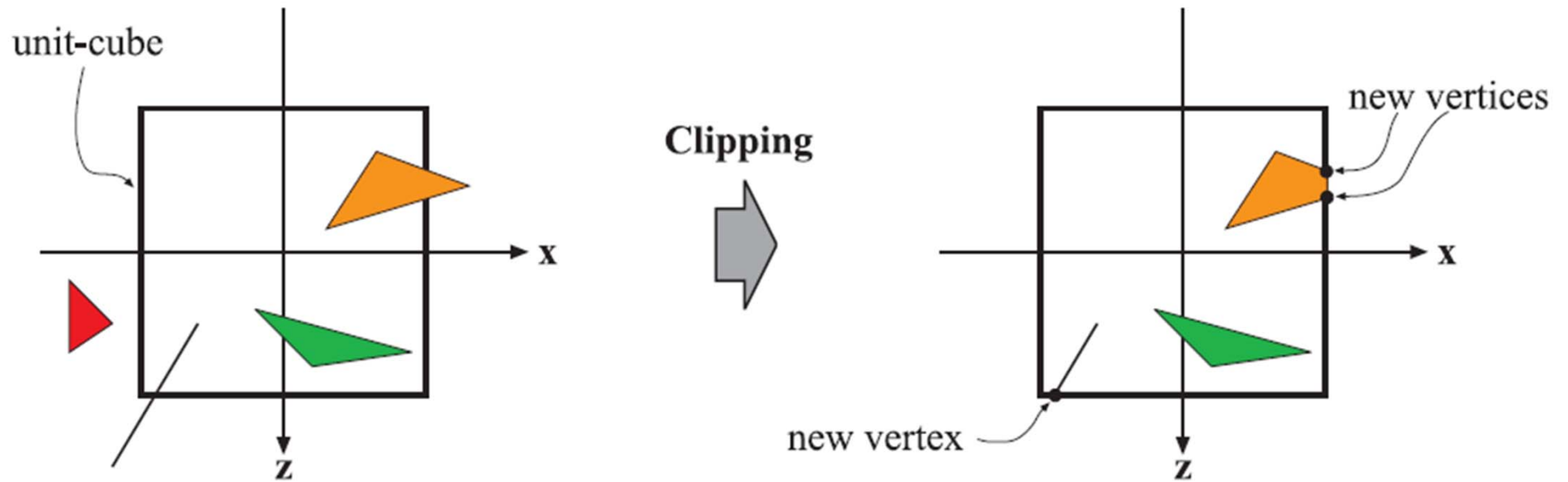
View Transformation



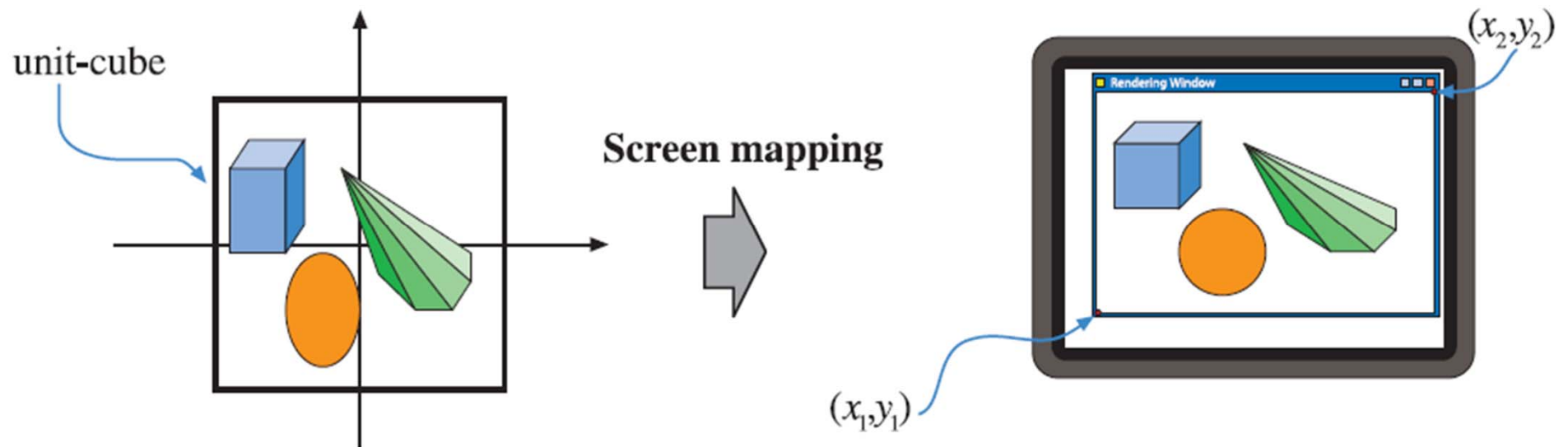
Projection



Clipping



Screen Mapping



Rasterizer Stage

