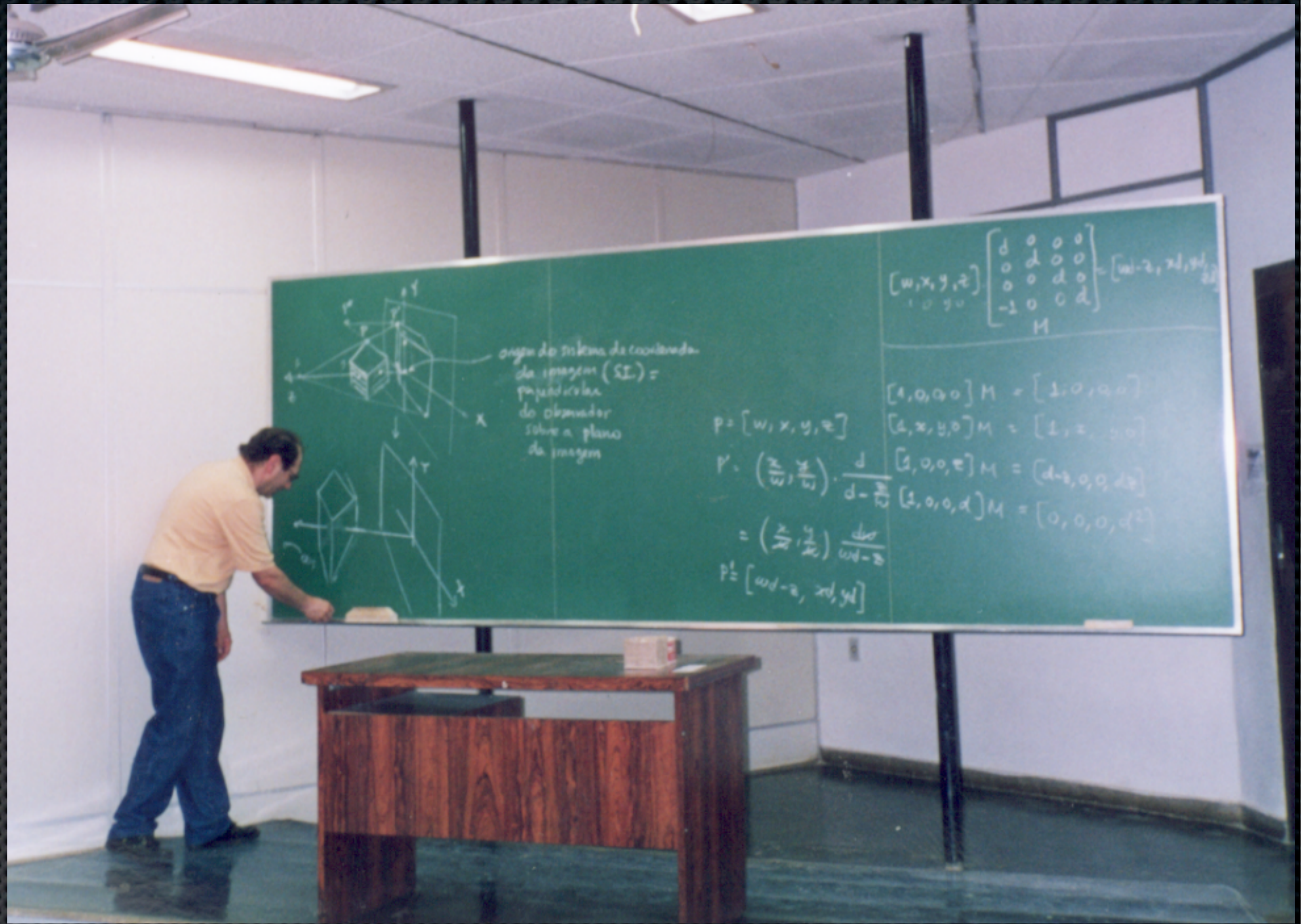


60 years of Jorge Stolfi

Research

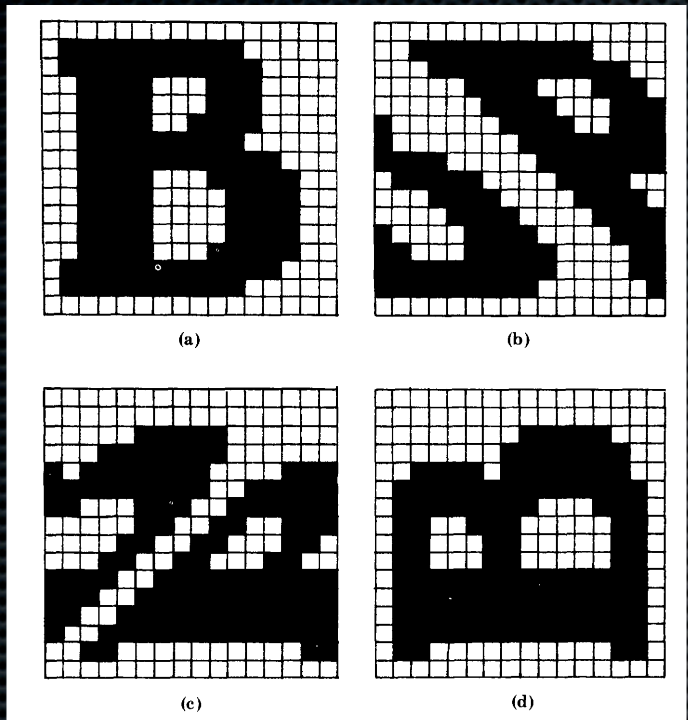
1973 - BSc Electrical Engineering USP São Paulo

1979 - MSc Applied Math USP São Paulo
Title: Métodos Automáticos de Gerência de Memória
Advisor: Tomasz Kovaltowski

1988 - PhD Computer Science Stanford University
Title: Primitives for Computational Geometry
Advisor: Leonidas J. Guibas

Today - Full Professor at DCC-Unicamp

Research



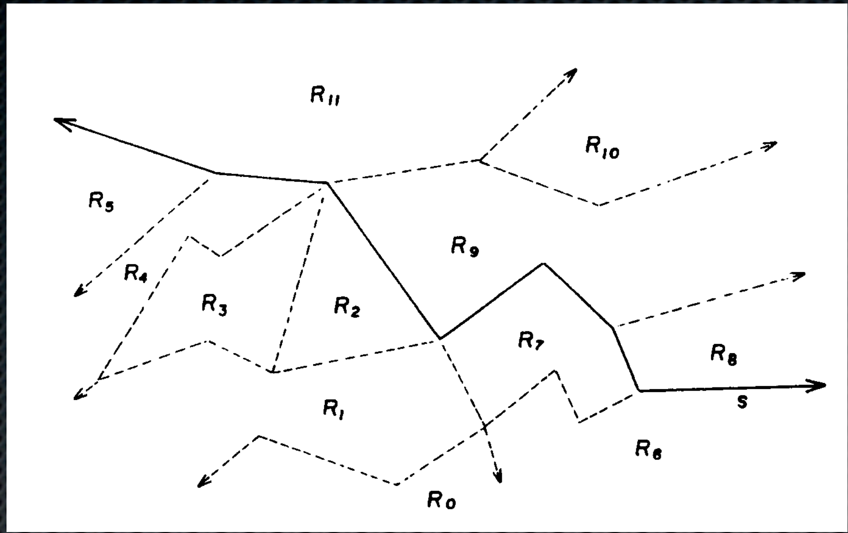
Bitmap rotation by shearing

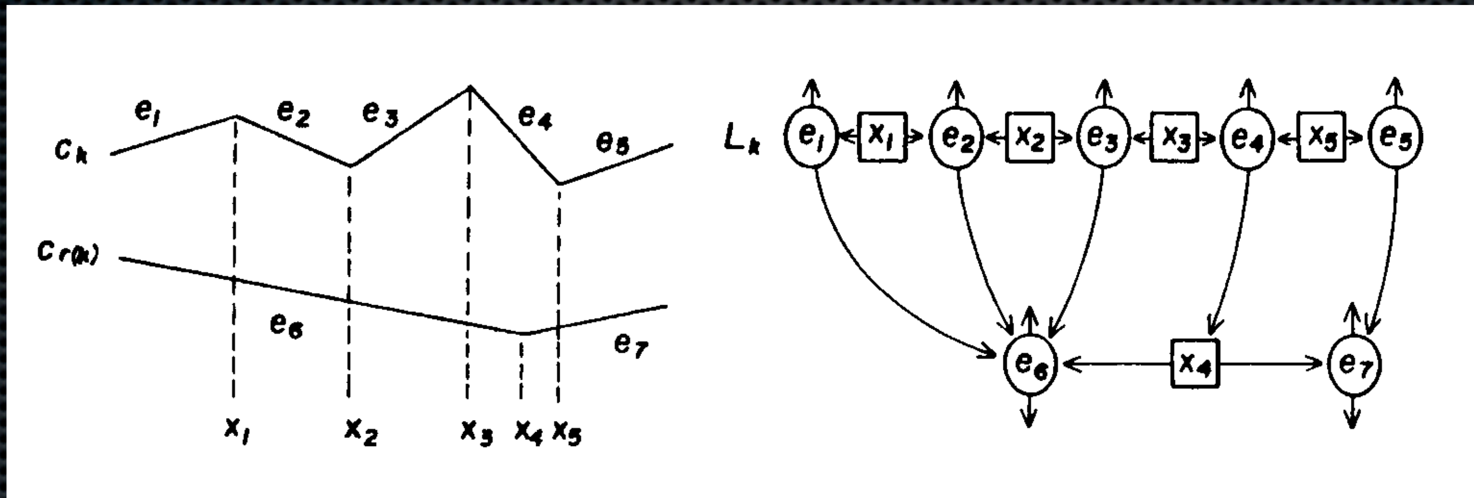
```
SRotate: PROC
  {M: BITMAP, N: INT |   — assume the bounds of M are [[0, 0], [N, N]]
    A: [[0, 0], [2*N − 1, 2*N − 1]] BITMAP OF DEPTH 1;
    — circularly rotate rows of M right by I (Figure 3b).
    FOR I IN [0. .N − 1] DO
      A CUT [[I, 0], [I + 1, 2*N − 1]] ← M CUT [[I, 0], [I + 1, N]] SHIFT [0, I])
    OD;
    M ← A CUT [[0, 0], [N, N]] + A CUT [[0, N], [N, 2*N − 1]];
    — circularly rotate columns of M down by N − 1 − J (Figure 3c).
    FOR J IN [0. .N − 1] DO
      A CUT [[0, J], [2*N − 1, J + 1]] ← M CUT [[0, J], [N, I + 1]] SHIFT [N − J −
      1, 0]
    OD;
    M ← A CUT [[0, 0], [N, N]] + A CUT [[N, 0], [2*N − 1, N]];
    — circularly rotate rows of M left by N − 1 − I (Figure 3d).
    FOR I IN [0. .N − 1] DO
      A CUT [[I, 0], [I + 1, 2*N − 1]] ← M CUT [[I, 0], [I + 1, N]] SHIFT [0, I + 1]
    OD;
    M ← A CUT [[0, 0], [N, N]] + A CUT [[0, N], [N, 2*N − 1]]
  }
```

MUMBLE language

A Language for Bitmap Manipulation
(Guibas, Stolfi 1982) Xerox Parc

Research





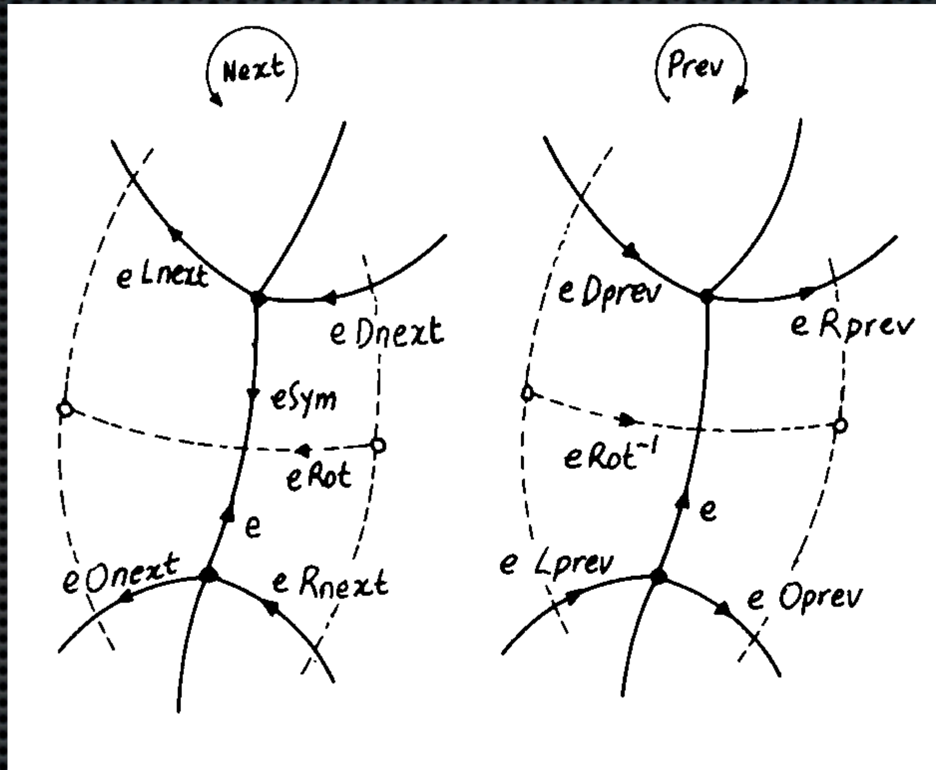
Optimal Point Location in a Monotone Subdivision (Edelsbrunner, Guibas, Stolfi 84)

DEC Scientific Research Center (TR 02)

Research

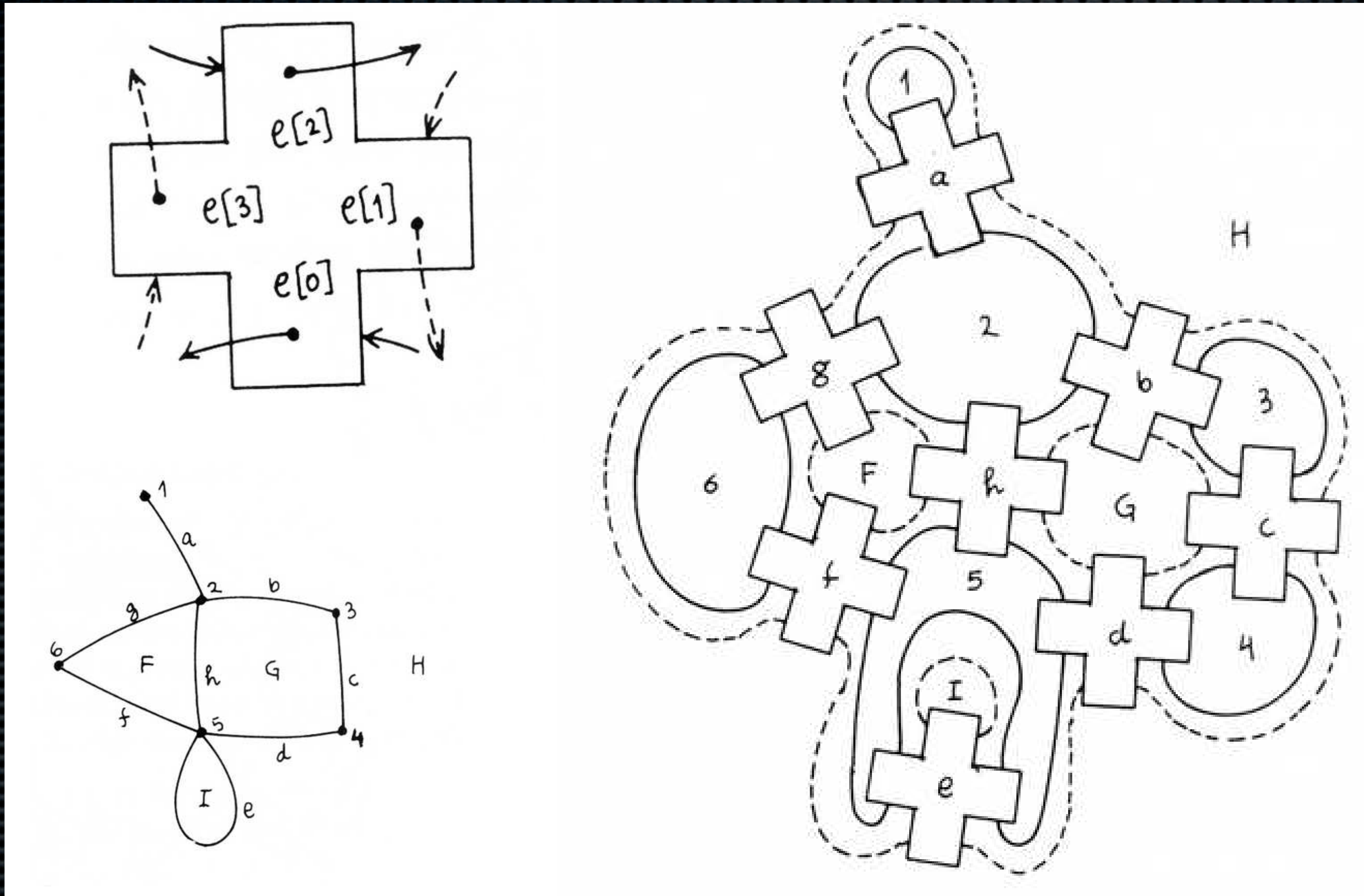
$$\text{D1.}\quad (e\ \mathit{Dual})\ \mathit{Dual} = e.$$
$$\text{D2.}\quad (e\ \mathit{Sym})\ \mathit{Dual} = (e\ \mathit{Dual})\ \mathit{Sym}.$$
$$\text{D3.}\quad (e\ \mathit{Flip})\ \mathit{Dual} = (e\ \mathit{Dual})\ \mathit{Flip}\ \mathit{Sym}.$$
$$\text{D4.}\quad (e\ \mathit{Lnext})\ \mathit{Dual} = (e\ \mathit{Dual})\ \mathit{Onext}^{-1}.$$

$$\text{E1.}\quad e\ \mathit{Rot}^4 = e.$$
$$\text{E2.}\quad e\ \mathit{Rot}\ \mathit{Onext}\ \mathit{Rot}\ \mathit{Onext} = e.$$
$$\text{E3.}\quad e\ \mathit{Rot}^2 \neq e.$$
$$\text{E4.}\quad e \in \mathscr{E}S \text{ iff } e\ \mathit{Rot} \in \mathscr{E}S^*.$$
$$\text{E5.}\quad e \in \mathscr{E}S \text{ iff } e\ \mathit{Onext} \in \mathscr{E}S.$$
$$\text{F1.}\quad e\ \mathit{Flip}^2 = e.$$
$$\text{F2.}\quad e\ \mathit{Flip}\ \mathit{Onext}\ \mathit{Flip}\ \mathit{Onext} = e.$$
$$\text{F3.}\quad e\ \mathit{Flip}\ \mathit{Onext}^n \neq e \text{ for any } n.$$
$$\text{F4.}\quad e\ \mathit{Flip}\ \mathit{Rot}\ \mathit{Flip}\ \mathit{Rot} = e.$$
$$\text{F5.}\quad e \in \mathscr{E}S \text{ iff } e\ \mathit{Flip} \in \mathscr{E}S.$$



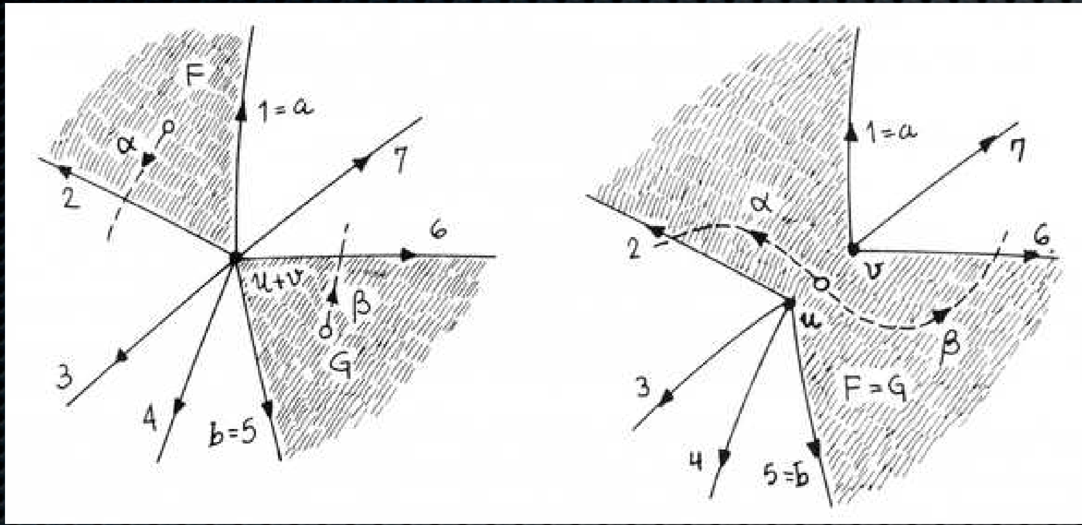
Quad-edge and Voronoi (Guibas, Stolfi 85)

Research

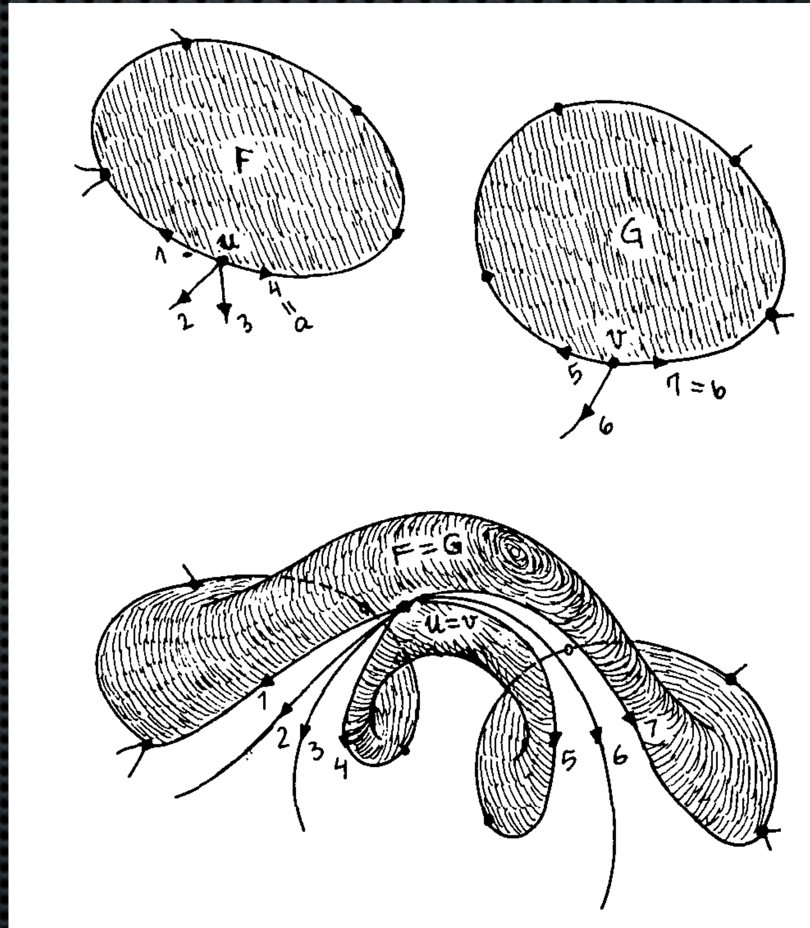


Quad-edge and Voronoi (Guibas, Stolfi 85)

Research

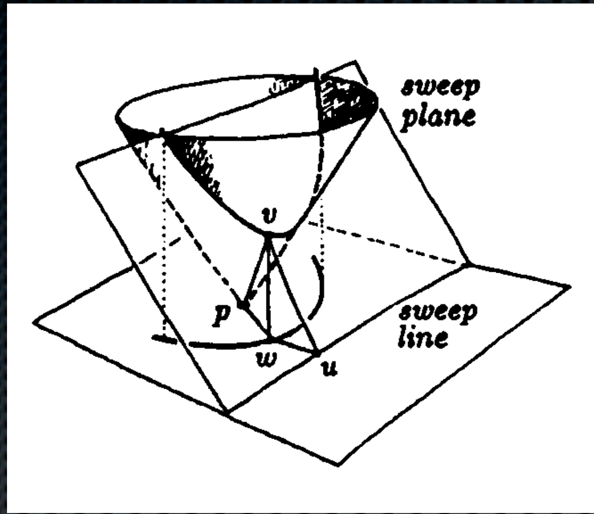


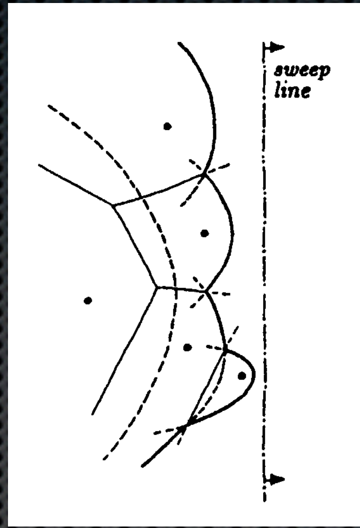
splice operator

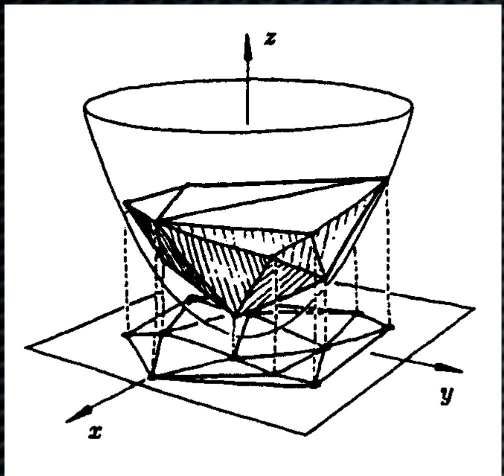


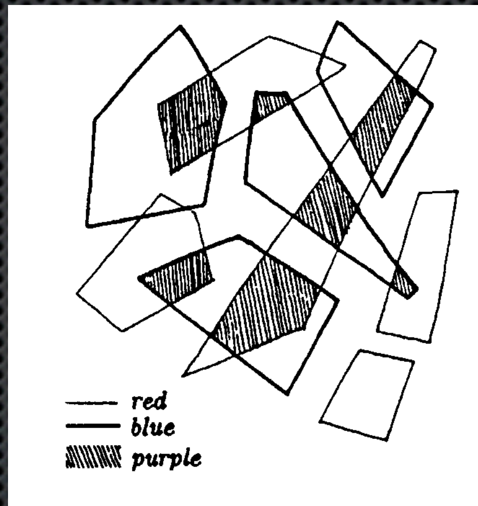
Quad-edge and Voronoi (Guibas, Stolfi 85)

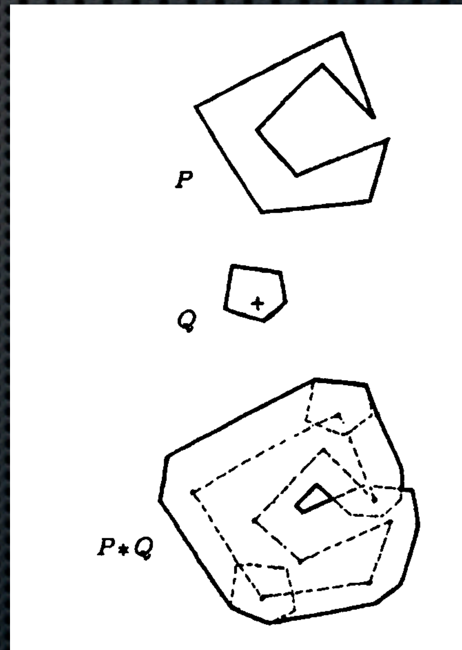
Research





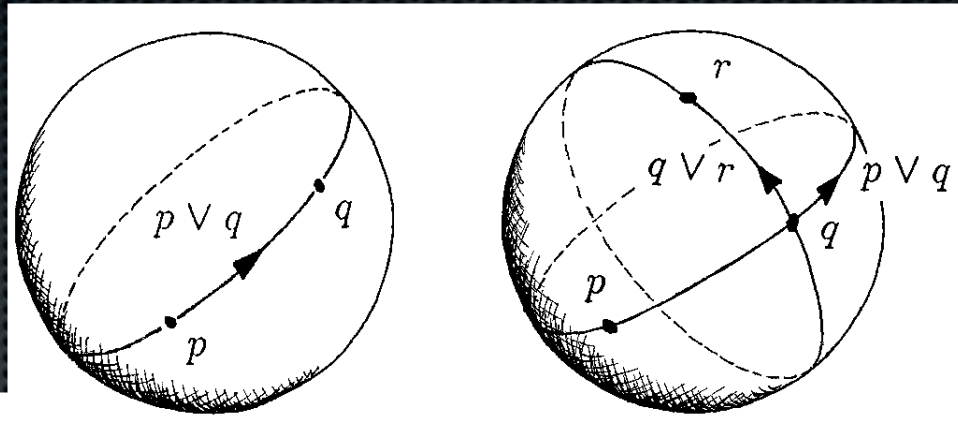


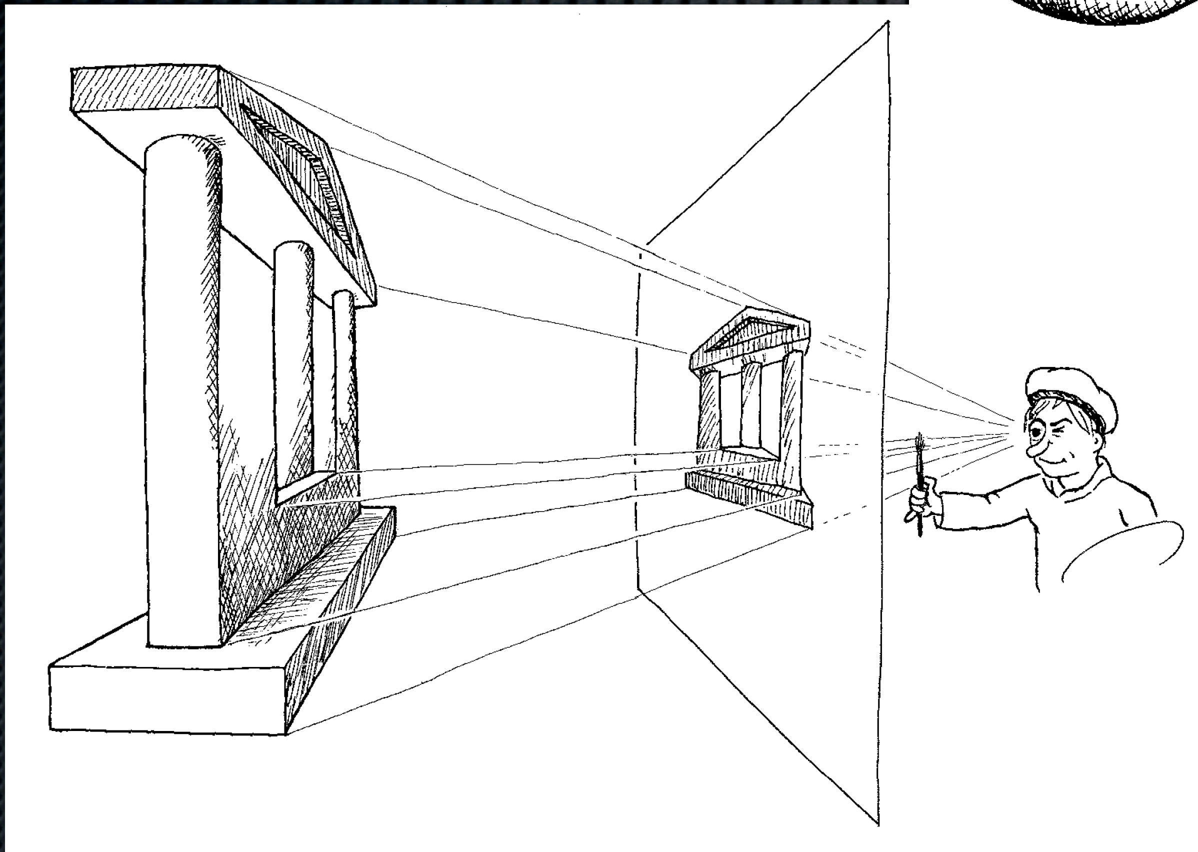




Ruler, Compass, and Computer: The Design and Analysis of Geometric Algorithms (Guibas, Stolfi1989)

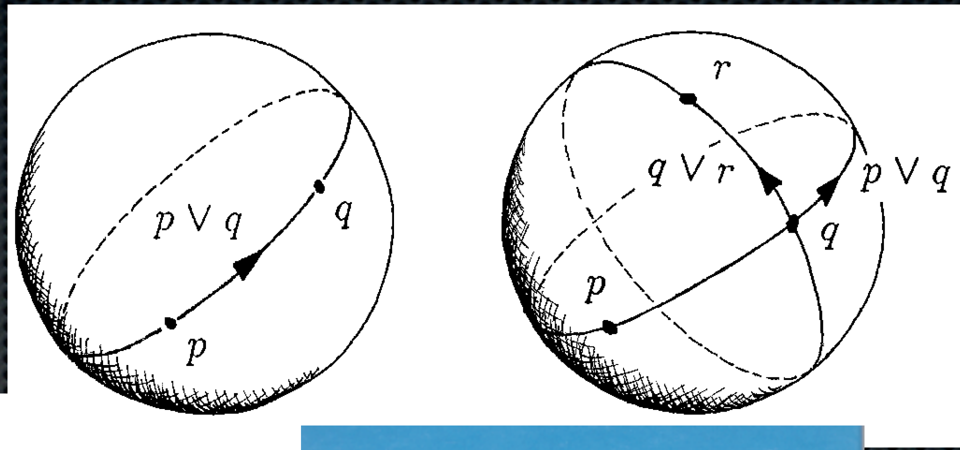
Research

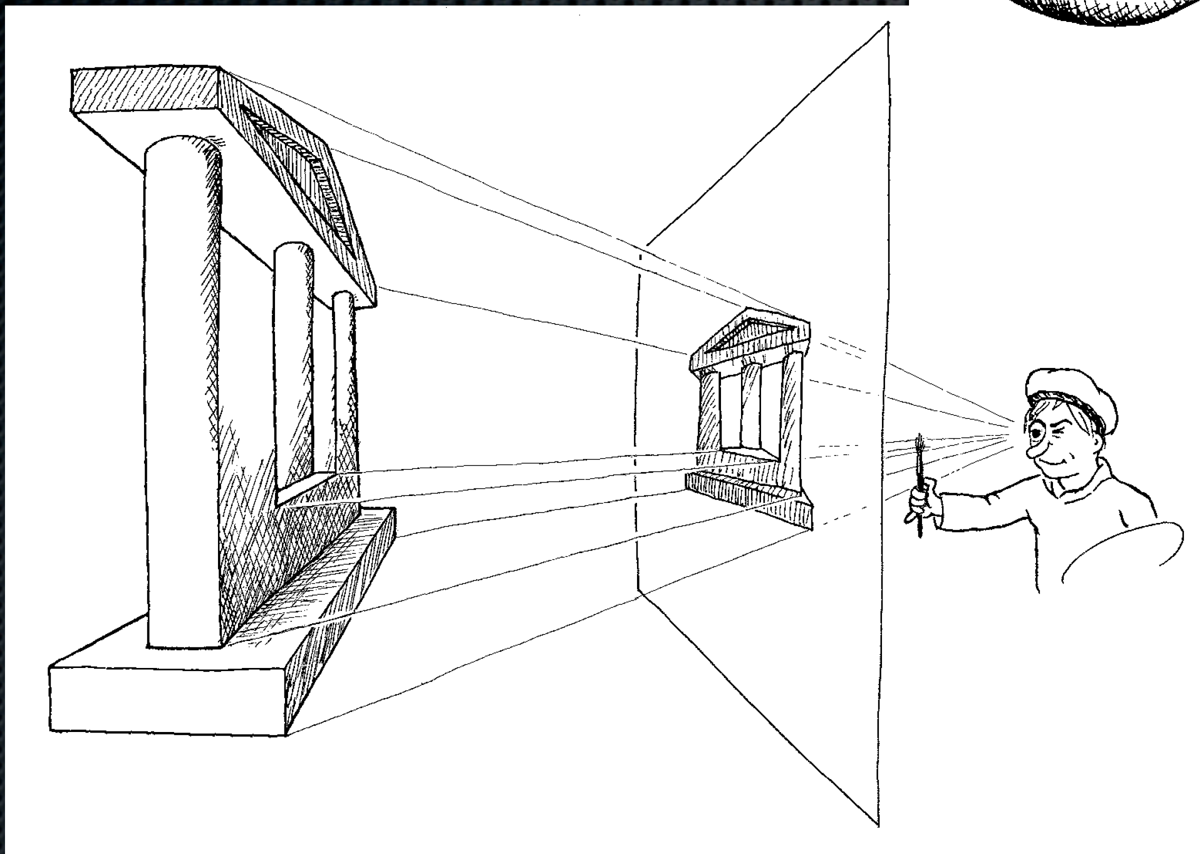


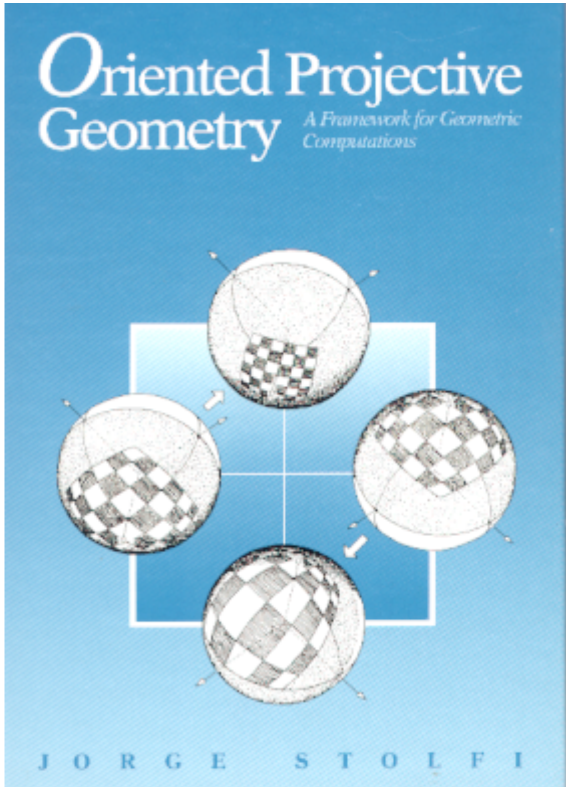


Primitives for Computational Geometry - 1988
(PhD Thesis - Stanford Univ Advisor Guibas)

Research

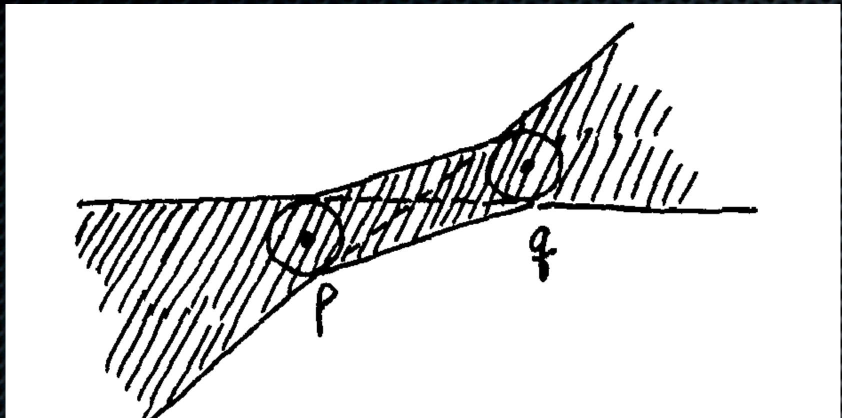




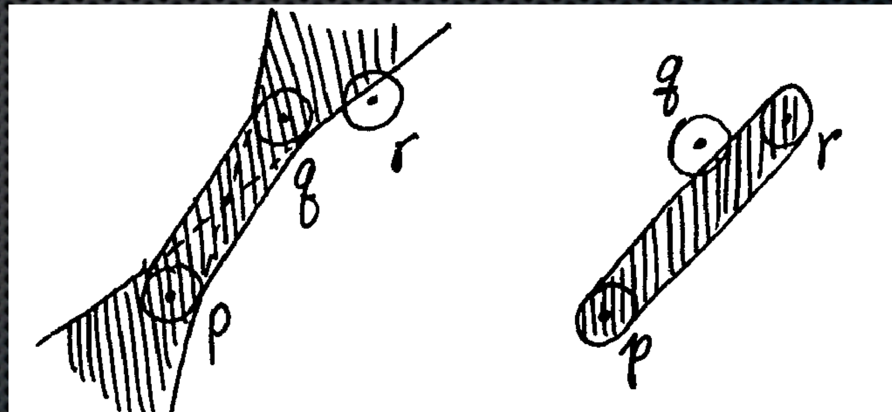


Oriented Projected Geometry - 1991

Research



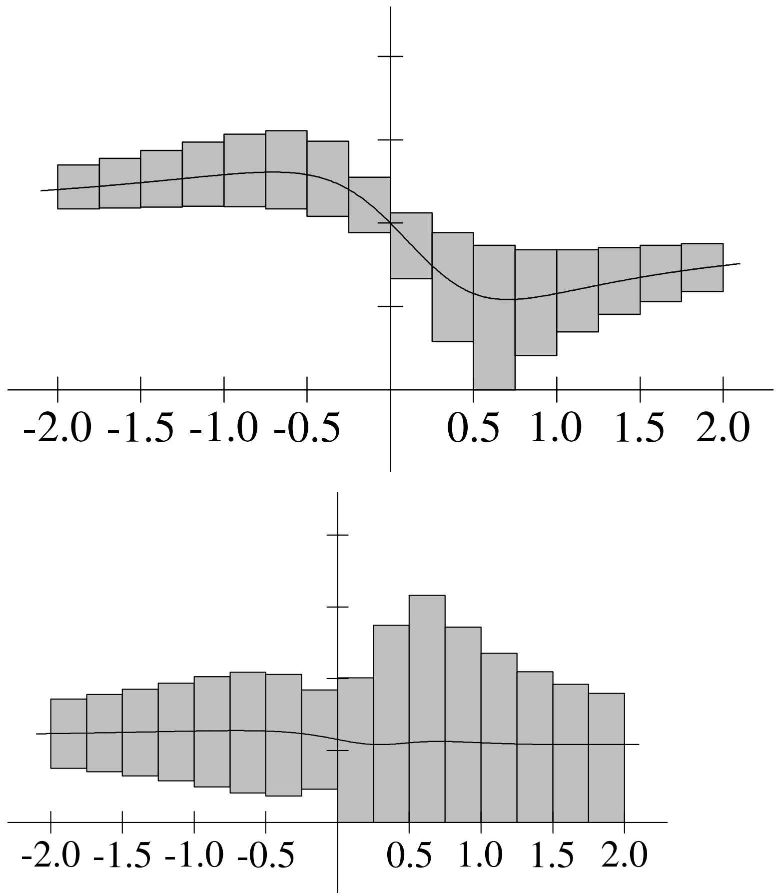
ε-butterfly of p and q



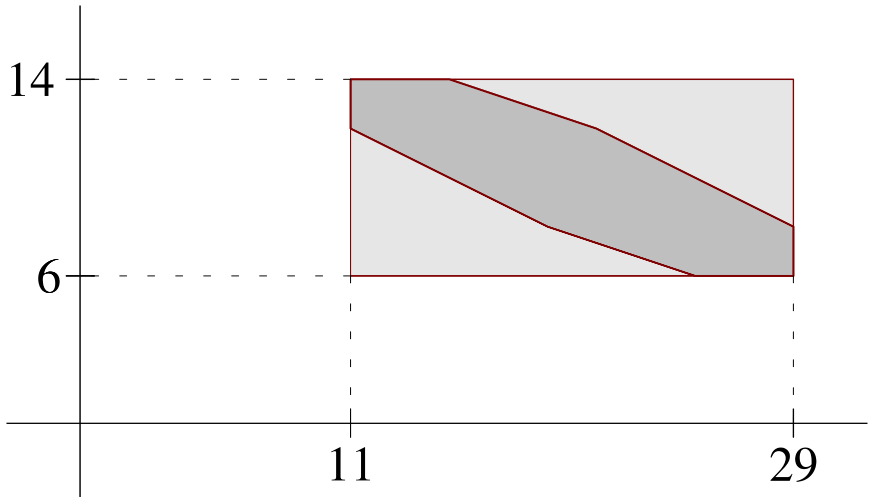
ε-colinearity

Epsilon Geometry (Guibas, Salesin, Stolfi 1989)

Research



$$\hat{x} = 20 - 4\varepsilon_1 \qquad + 2\varepsilon_3 + 3\varepsilon_4$$
$$\hat{y} = 10 - 2\varepsilon_1 + 1\varepsilon_2 \qquad - 1\varepsilon_4$$

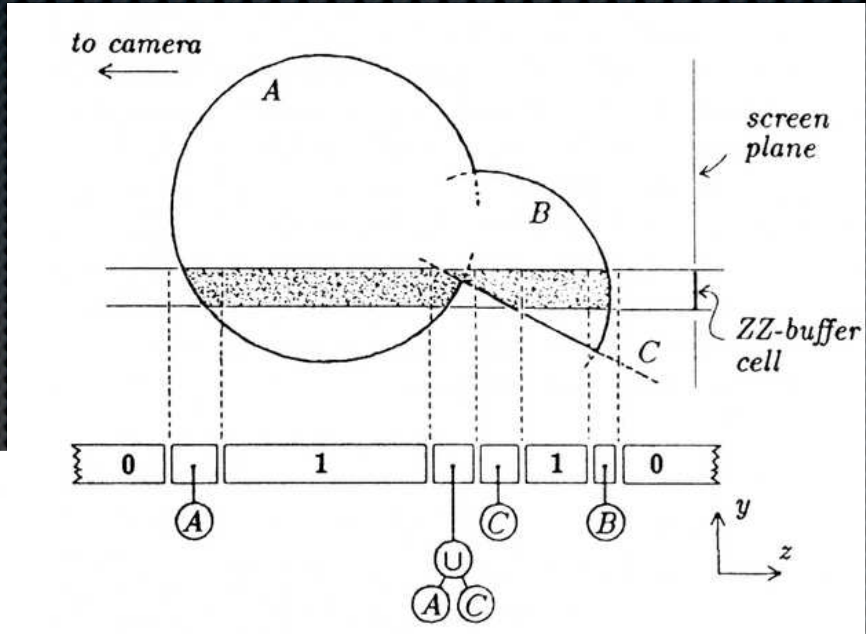


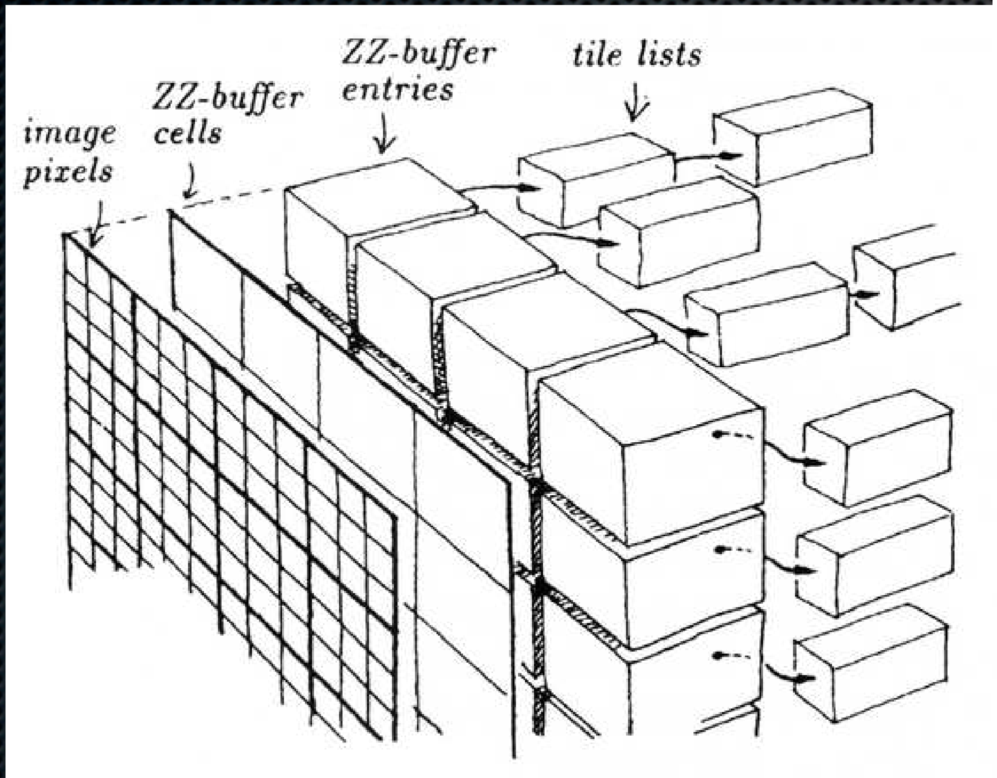
Affine Arithmetic (Comba, Stolfi 1993)

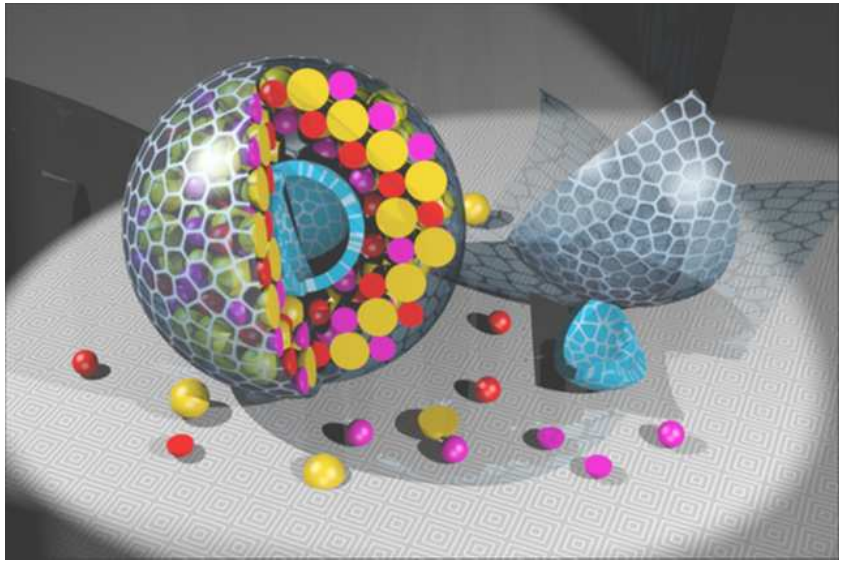
Research

Separability
[Snoeyink, Stolfi 1993]

Other Research Topics

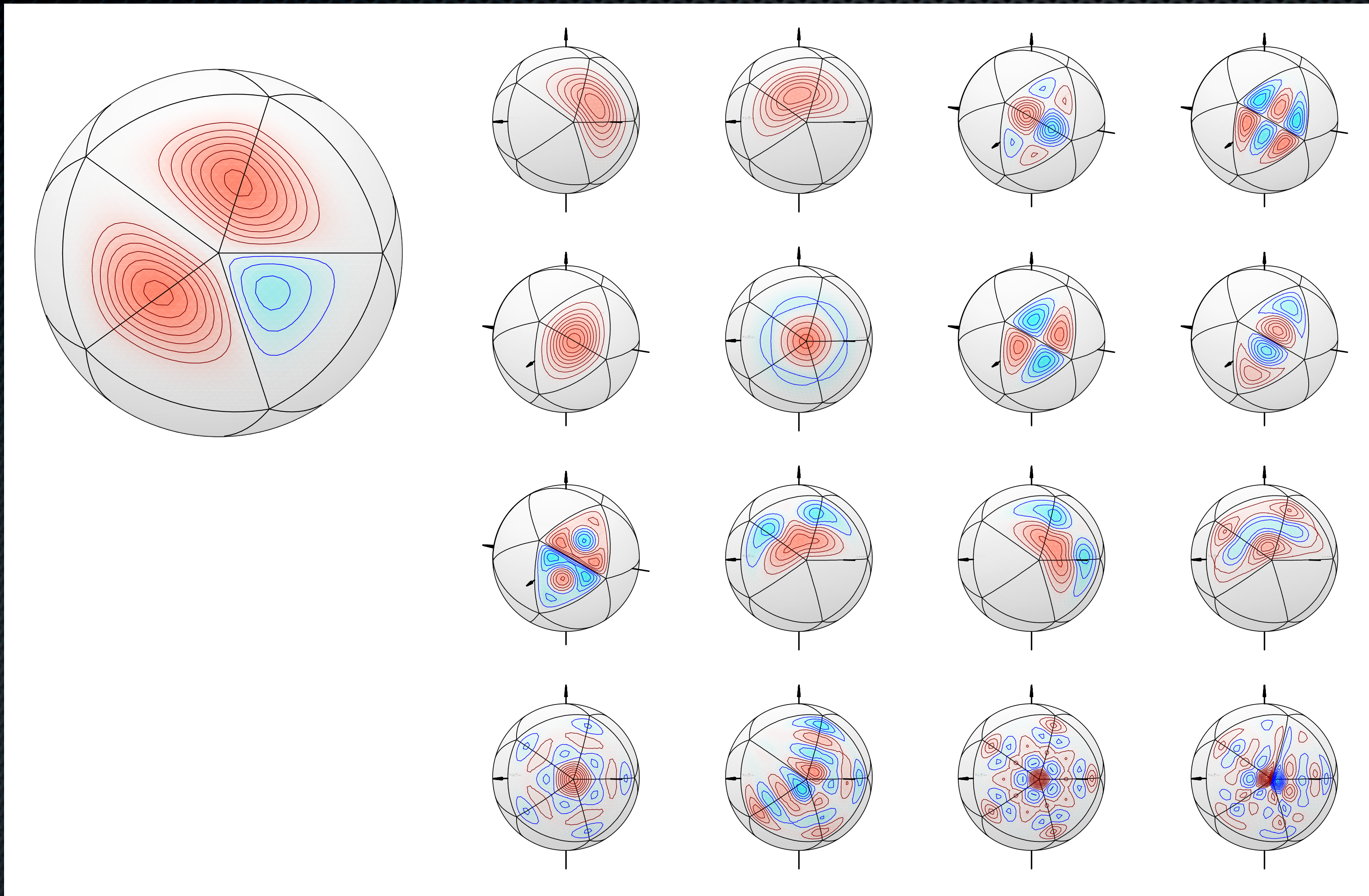






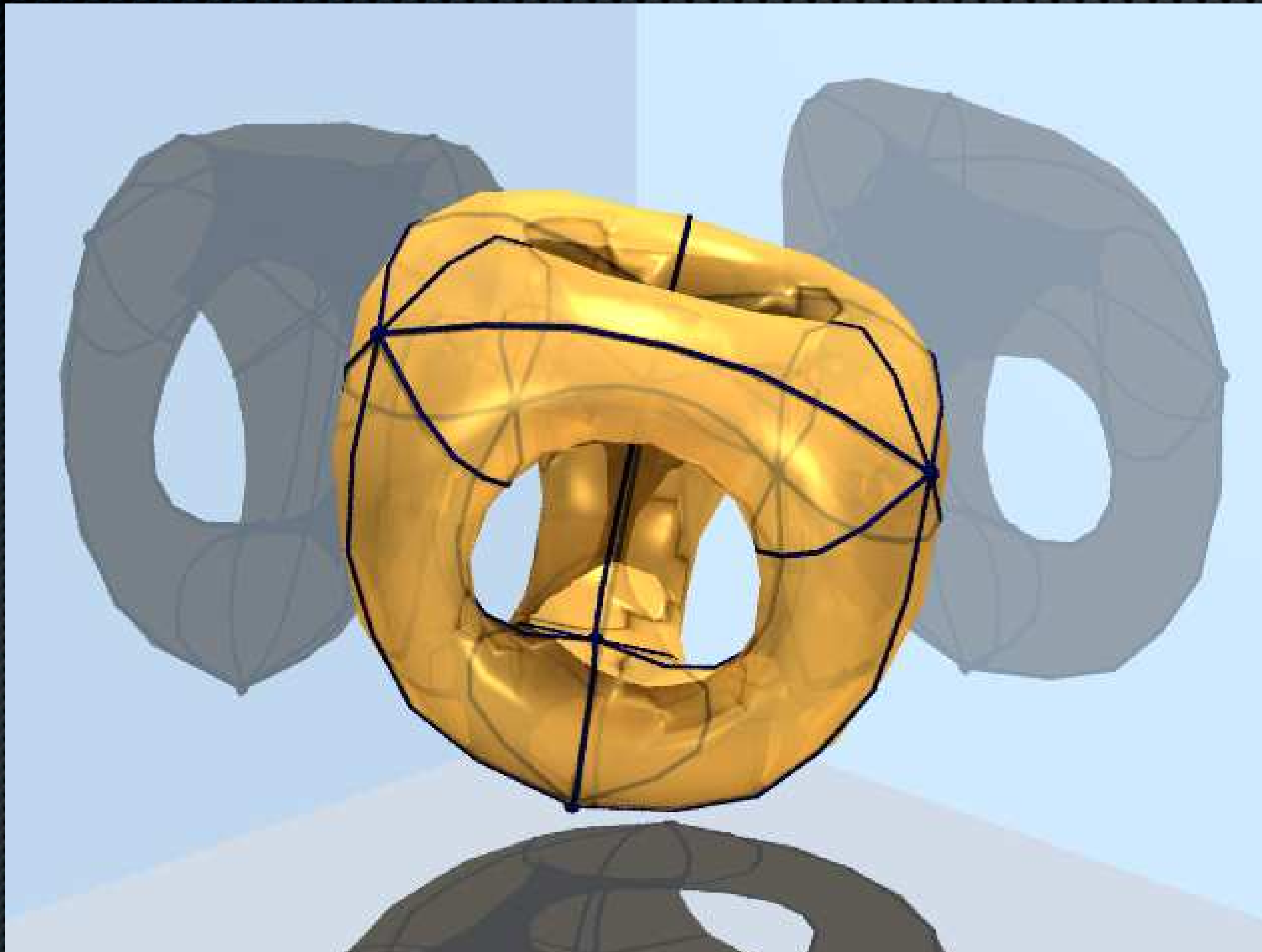
ZZ-buffer (Salesin, Stolfi 1990)

Other Research Topics



Spherical Splines

Other Research Topics



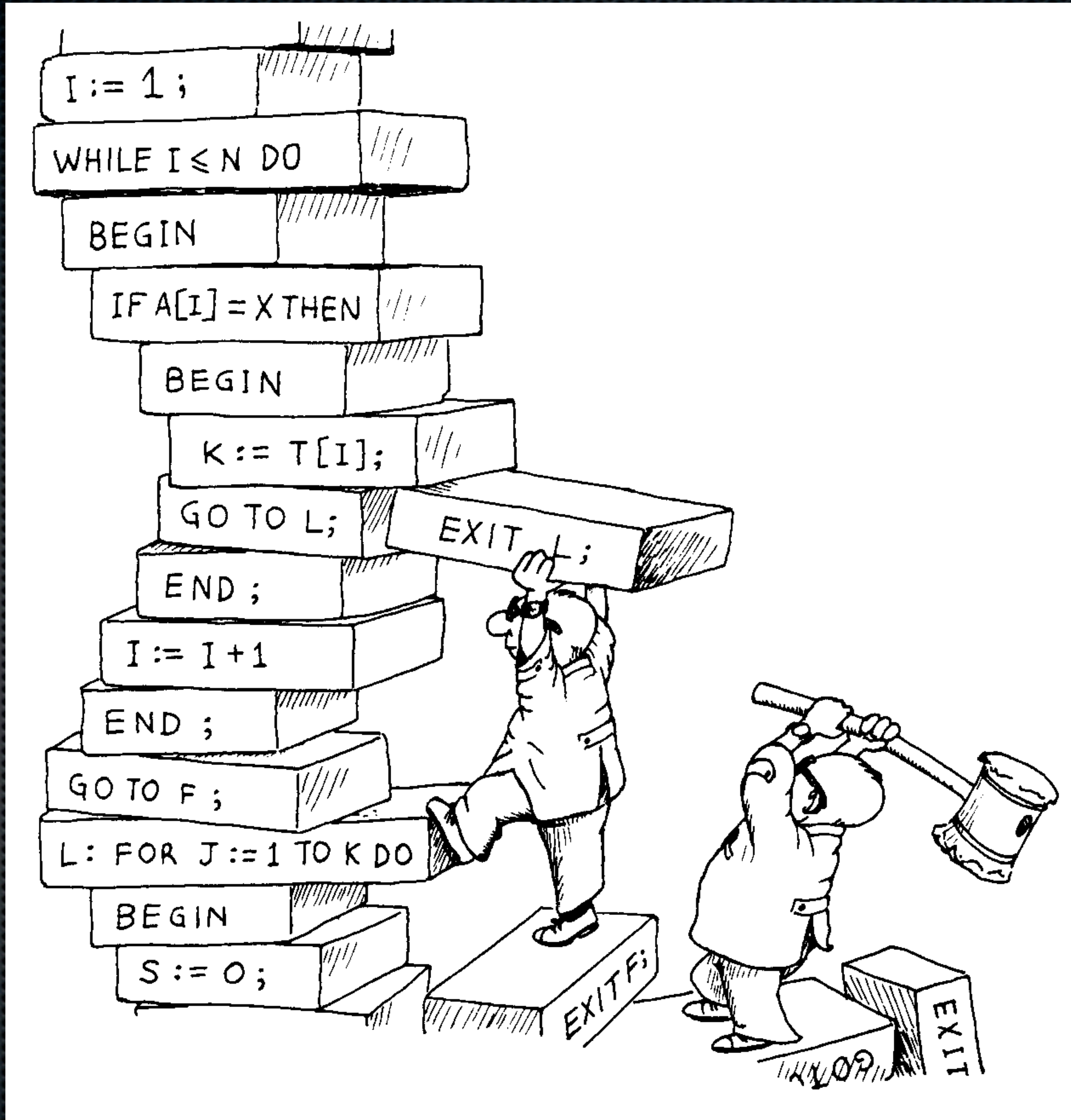
Toposcope

Other Research Topics

Fragment Reassembly

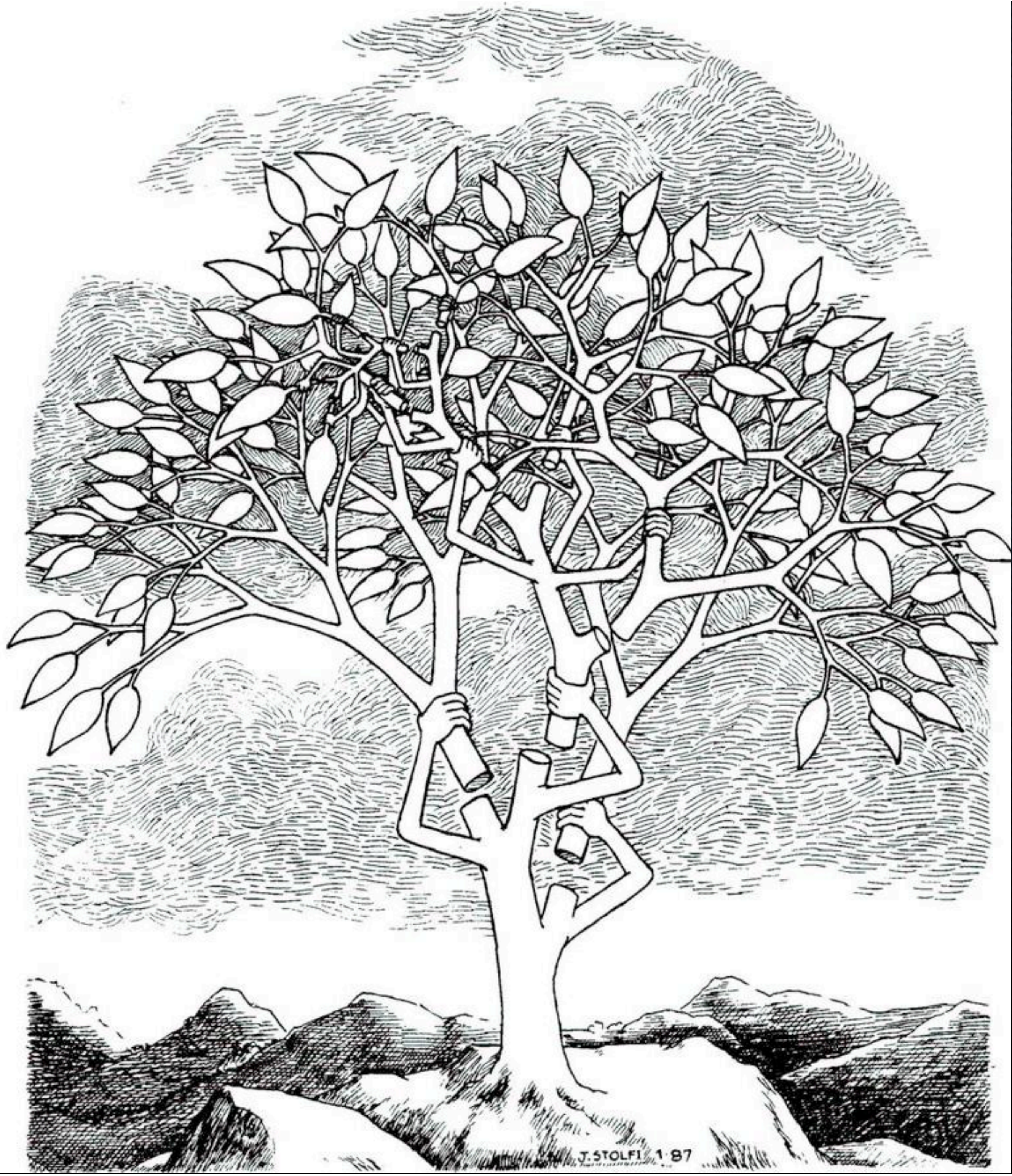
Artist

Artist



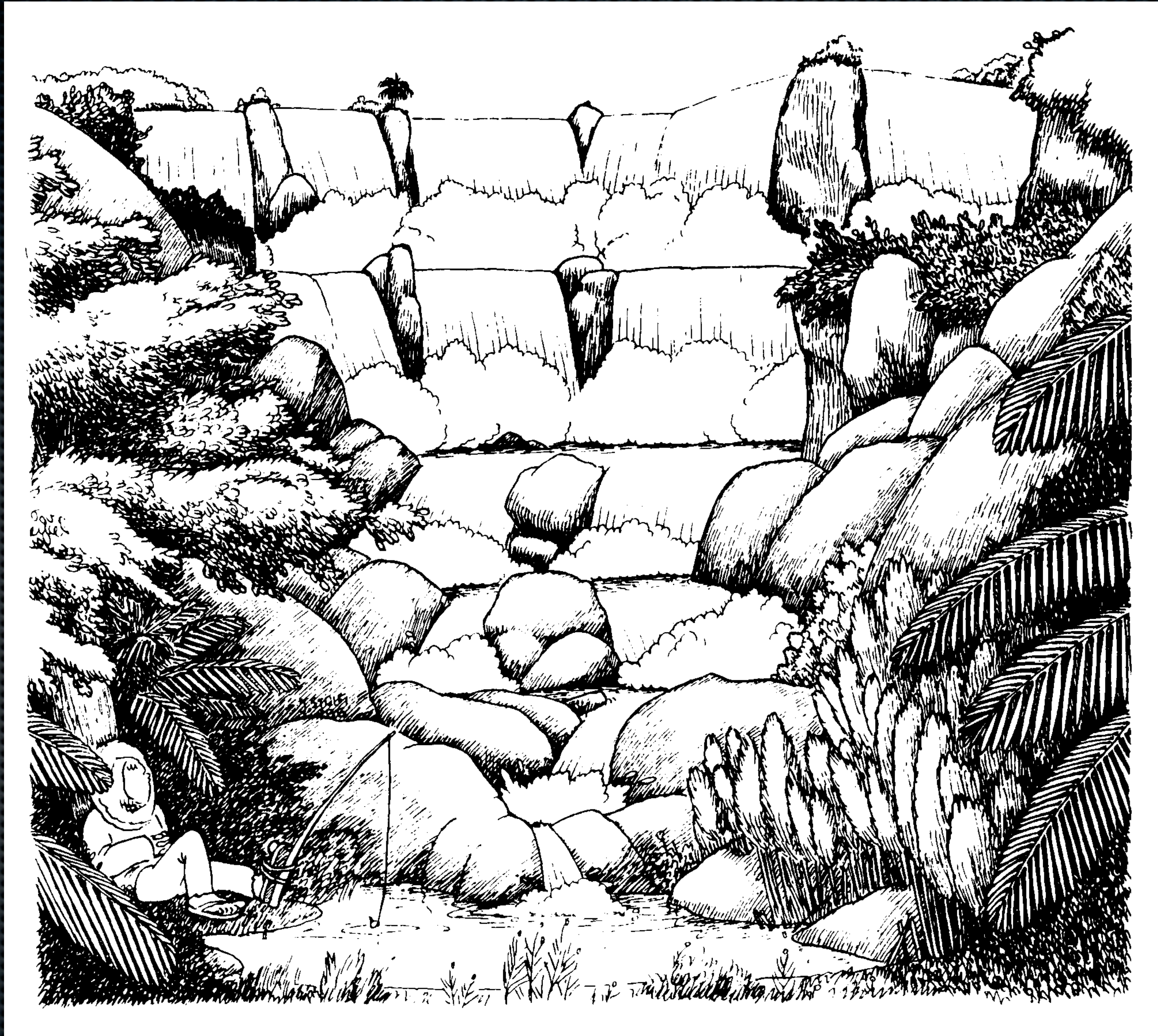
Eliminating GoTo's

Artist



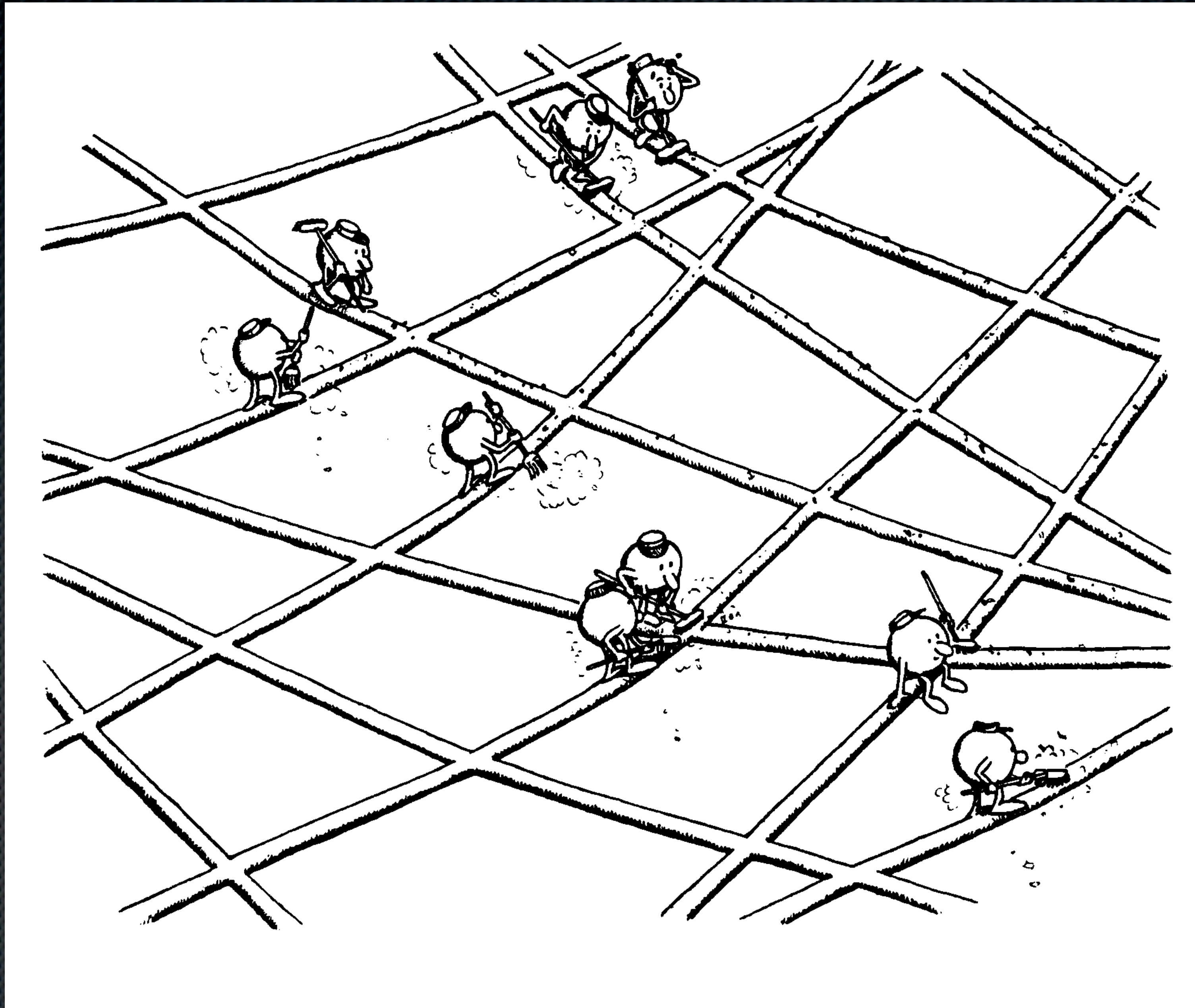
Self Adjusting Trees

Artist



Fractional Cascading

Artist



Topologically Sweeping an Arrangement

Parabéns Jorge !