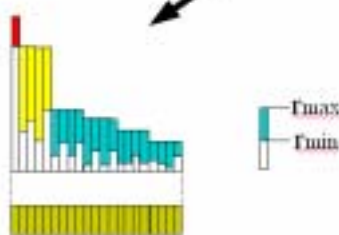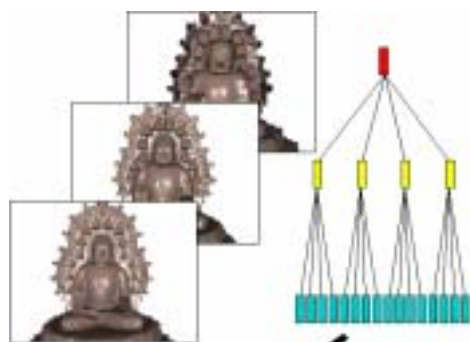# Sequential Point Clusters :

Efficient Point-based Rendering System for Huge models
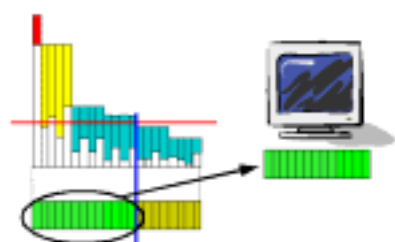
Yasuhide Okamoto   Shuntaro Yamazaki   Katsushi Ikeuchi

Advancement in modeling technologies has enabled us to obtain 3D models composed of an extremely large number of polygons. Unfortunately, however, the conventional polygon-based rendering method is not rapid enough for rendering such models interactively. We propose a system for effectively rendering such models based on using the Point-Based Rendering technique that considers multiresolution representations. Our system adopts the data structure, referred to as Sequential Point Trees, realizes the multi-resolution representations and the hardware accelerating rendering. In addition, we present the extension to Sequential Point Clusters, which is accomplished by using positional clustering, which can reduce the amount of data transfer. We have verified the efficiency of our proposed algorithms by rendering models with over ten million polygons. And we have searched the best level of clustering, and demonstrated the superiority of clustering over other methods.

the rendering method of Sequential Point Trees

the generation the hierarchy of multiresolution, and converting it into a sequential list. (Sequential Point Trees)
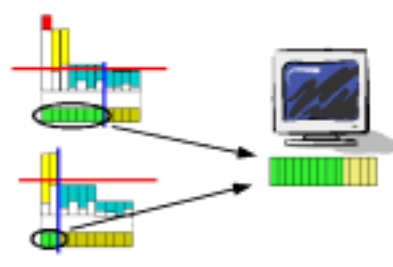
the our proposed method using clustering, by which we enhances efficiency of culling.

a rendering result (Bayon temple)
size   : ~13M polygons, 350MB
performance: 7.4fps