

Advanced Geometry

Features beyond direct-manipulation
modeling of geometry.

Advanced Geometry Options

Symbols linked (e.g. Autocad XREFs) or included (e.g. Autocad BLOCKS) in data file

Smart Polygons (SKP “face me” components)

Parametric geometry (Dynamo, Grasshopper)

Proxies (V-Ray “replace me” elements)

Procedural geometry (V-Ray “Fur”)

Particle Systems (3DSMax snow, smoke)

Fractal objects ala *Vol Libre* & *Wrath of Khan*

Symbols, Components & Blocks

been there, done that

Within a file: Select geometry, define block, provide insertion point, then insert instances.

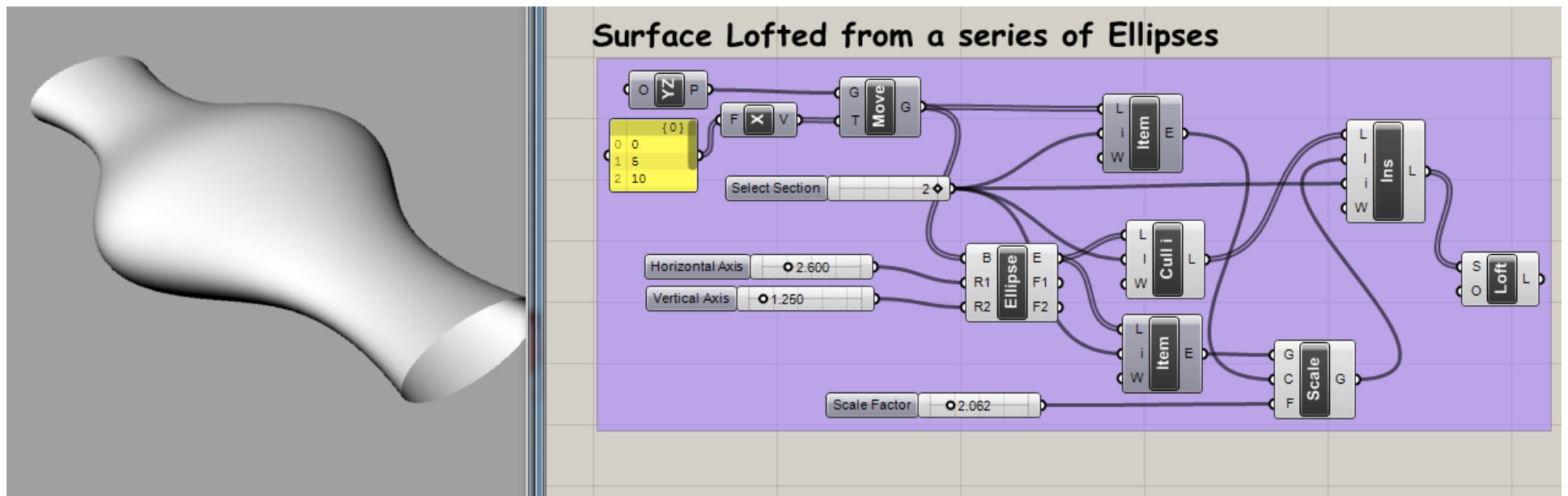
Inserted files: Insert entire files, creating a block and one or more discrete instances.

Linked files: Same as above, but the filename is stored and file may be reloaded (updated).

Parametric Geometry

Grasshopper, Dynamo, et al.

Beyond simple scaling of blocks—variable or computed values that determine shape.



The subject of ARCH 486 in Spring Quarter

Proxies: Trees, Cars, People, etc.

Complete render-ready mesh, vertex, & texture data in a stand-alone *.vrmesh* file.

Saves space in primary Rhino file.

Saves time saving, loading, and starting renders.

Isolates complex geometries in their own files.

Create/Insert from Vray “objects” submenu.

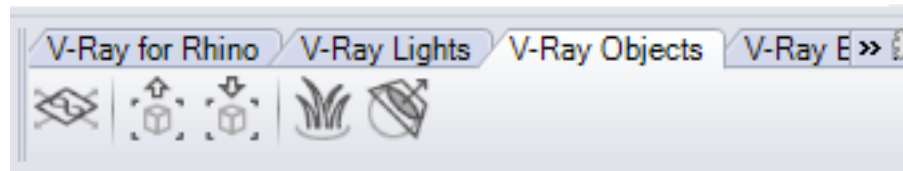
Be sure to keep *.vrmesh* files with *.3dm* file.

Procedural Geometry:

Fur/Grass

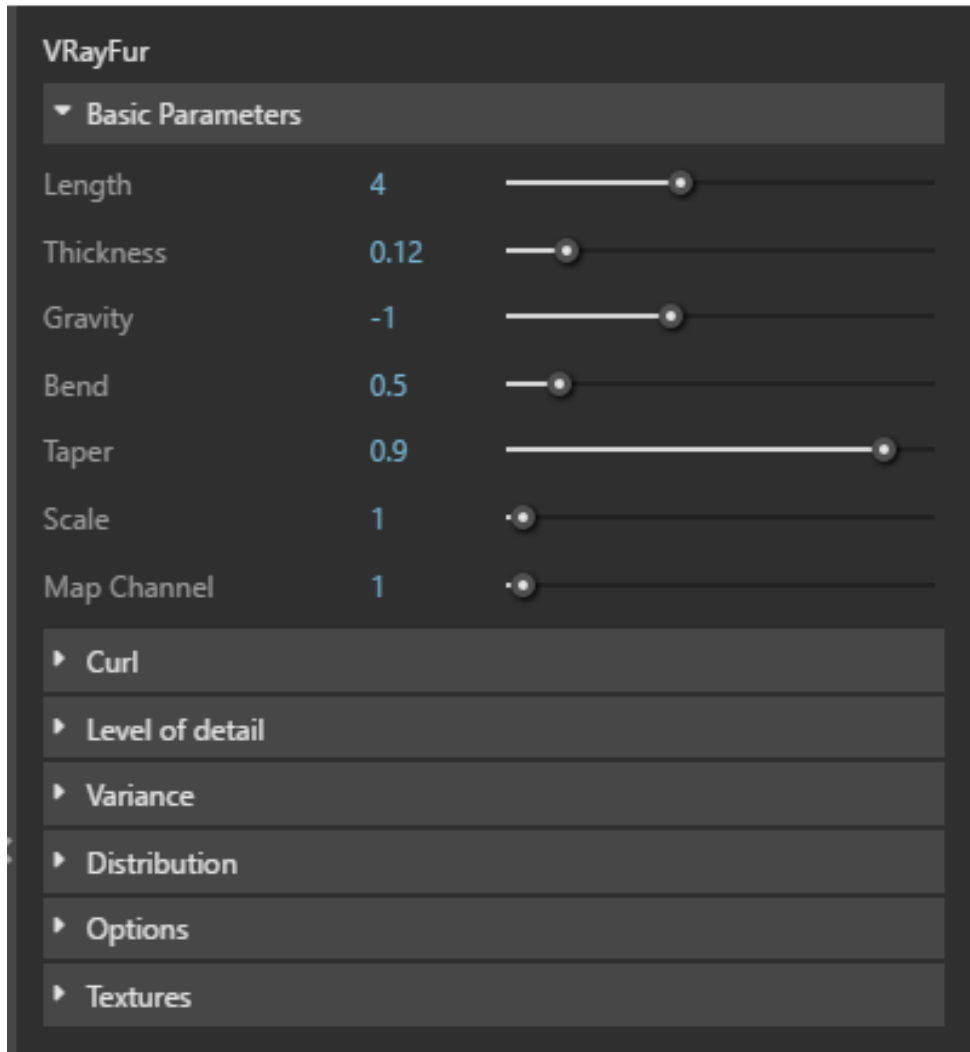
Complex geometry is produced algorithmically.
Geometry created at render time.

- Saves space in primary Rhino file.
- Reduces time saving, loading, and starting renders.



Create/edit/insert from “V-Ray Objects” tab.

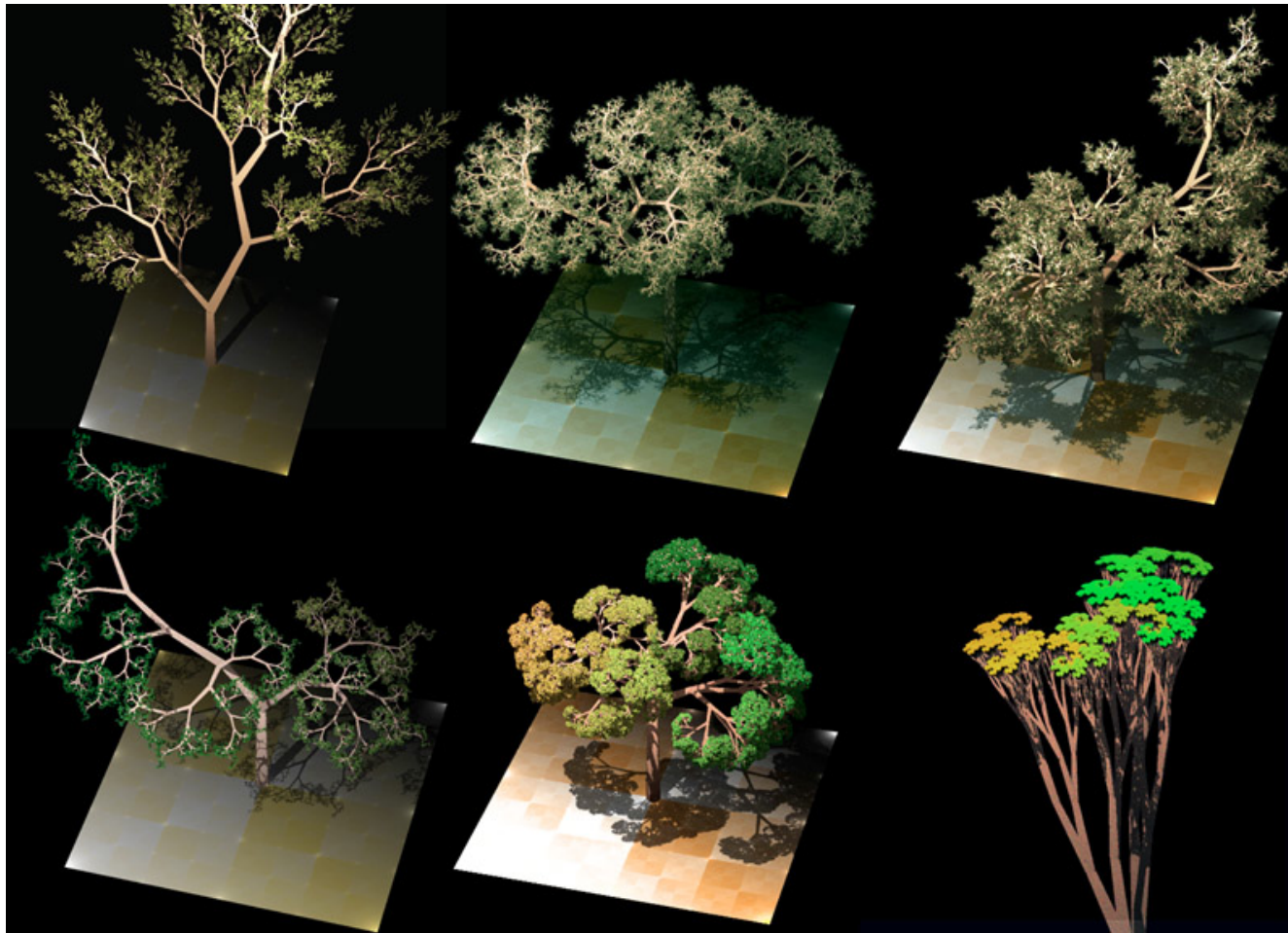
V-Ray FUR



Acts like a texture
(i.e. is applied to
other geometry)

Controlled by
parameters.

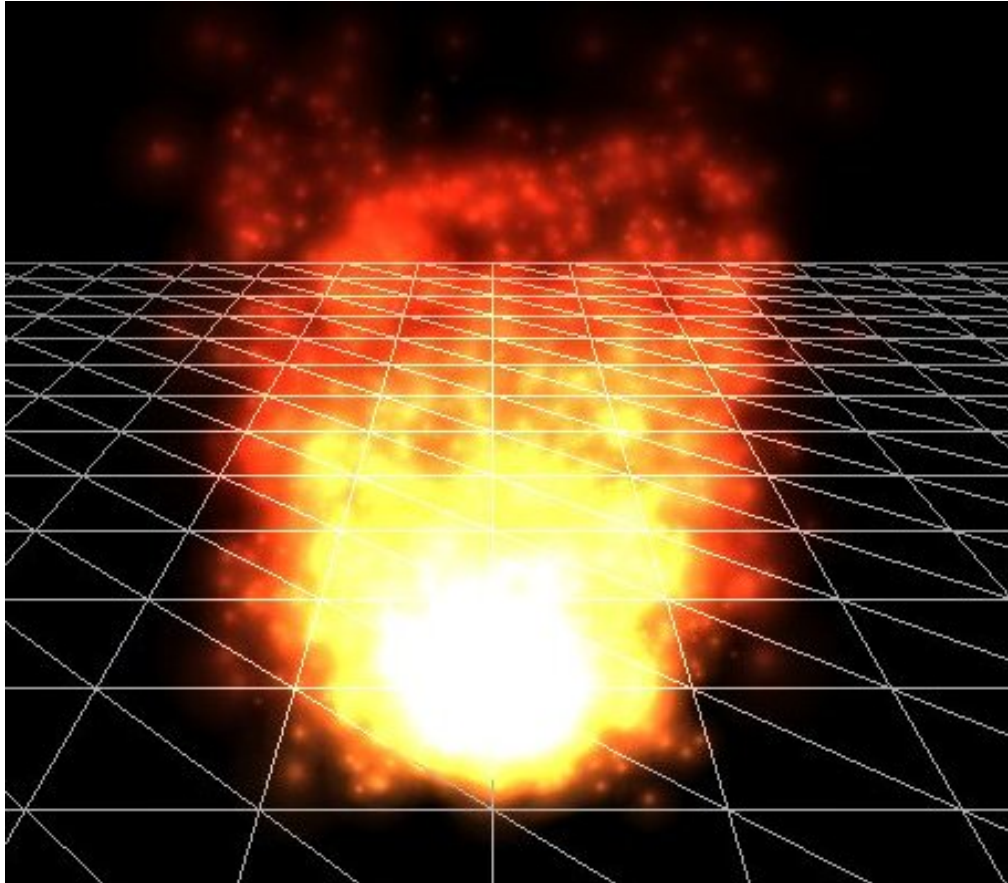
Procedural Geometry: Fractals



“Lindenmayer or L-system geometry is produced by a set of replacement rules applied recursively.

Examples of L-system trees from Wikipedia

Particle Systems



Example of particle system from Wikipedia

Collections of “sprites” or “particles” (like “agents” that act independently in a system of forces or influences to produce “fuzzy” geometry.

Advanced Geometry

fini