

## Overview of 3D Studio VIZ for the AutoCAD User

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Tips on VIZ, including linking with Architectural Desktop (ADT):

<http://www.autodesk.com/vizonline/>

Get patches here also.

Go to VIZ help, search for "AutoCAD" and read the topics.

### AutoCAD -> VIZ <- MAX

\* VIZ is a scaled-down version of MAX, and with its own unique features designed to accommodate AutoCAD and ADT users, particularly architects.

\* VIZ has several interfaces designed for several disciplines. However, its support of disciplines other than architecture is fairly thin. If you are a mechanical designer, Inventor is preferable.

\* You may choose to customize your own interface and save it for reloading.

### Quick Overview of VIZ:

\* Create Panel, Modify Panel, Display Panel (compare Display to Layering)

\* Primitives vs. Extruded Splines vs. Imported Meshes

\* Subobject editing

\* Modifiers and Modifier Stack

\* Transforms: Move, Rotate, and Scale

\* Materials

\* Camera

\* Lighting: be aware of the Light Lister utility

\* Render or Animation output

### Precision placement in VIZ:

\* Select Move tool, right-click on Move tool: enter exact coordinates

\* Select Rotate tool, right-click on Rotate tool: enter exact degrees of rotation

\* Select Scale tool, right-click on Scale: enter exact percentage of scale

\* Modify > Align: extremely useful tool to align objects

### Drawing Insert vs. Drawing Link:

\* In either case, if you're not importing 3D solids, then make sure you have closed polylines.

\* Insert is the same as import: no association maintained with AutoCAD, just get the lines or 3D solids. Allows several options when importing. Does not carry over layers, but names objects according to their source layers.

\* *Link allows updates in AutoCAD to be reflected in VIZ*

\* *Link may bring in floorplan lines (or elevation lines) as the basis of extrusion*

\* Link allows several options when importing, depending on your priority for layering, etc.

\* Link may be bound later, and then it would behave like an insert, except you must have checkmarked "Preserve Access to Individual Objects" to get spline editing

### 3D Project Strategy: Dividing work between AutoCAD and VIZ

Ideally: do mass modelling and 3D design in VIZ

Ideally: do base linework in AutoCAD except for organically curved lines

Ideally: do 3D extrusion / modelling in VIZ (unless you are an ADT user)

Ideally: add stock objects in VIZ (furniture, plants, etc.)

Certainly: do material applications, lighting, and camera work in VIZ

Ideally: do lighting in Lightscape (separate software) but be aware this requires a distinct modelling strategy and can be very time consuming

### Considerations that may favor doing more work in AutoCAD than in VIZ:

\* available staff and available staff skills

\* available hardware locks / VIZ licenses

\* convenient access to floorplans

### **Design in AutoCAD or VIZ?**

\* VIZ excels at Visualization, and quickly extruding 3D designs, "3D sketching" - far, far better than AutoCAD.

\* However, AutoCAD 3D visualization has been much improved with 3D orbit, shademodes, and UCS associated with viewport, etc, and in some situations it may be more convenient to start designing in AutoCAD, and then finish designing in VIZ.

### **Create lines in AutoCAD or in VIZ?**

AutoCAD excels at precision linework, VIZ is a bit clunky.

AutoCAD excels at point-and-shoot distance entry, trim, extend, fillet

VIZ excels at vertex control to smooth out splines (Bezier, Bezier corner, Smooth)

### **Extrude in AutoCAD or in VIZ?**

\* Ideally, extrude in VIZ, because the objects will be native, numerous useful modifiers may be applied to imported splines. Flipped normals (faces that won't render) are less likely to occur if you keep your objects native to VIZ.

\* However, VIZ can manage imported AutoCAD 3D, and you can think of VIZ as your rendering and animation software instead of your modelling software. Imported solids become editable meshes, wherein you can adjust vertices, detach faces, etc. You can correct flipped normals (with subobject on face > flip normals, or applying a 2-sided material, or creating patches).

\* If you decide to extrude in AutoCAD, consider the impact of AutoCAD System Variables such as FACETRATIO, FACETRES, ISOLINES.

### **Conclusions for a 3D Modelling Strategy:**

1) Do linework in AutoCAD, especially for precision point-and-shoot distances, trimming and extending. Do curves in AutoCAD, if those curves are determined by precise radii. However, nicely curved lines should be done in VIZ when Bezier handle control is useful.

2) Extrude in VIZ, ideally. But if you don't anticipate changing the model often and if you have more staff available to extrude in AutoCAD, then extrude in AutoCAD. If the model is of a complex organic nature, it is probably better to extrude in VIZ and use its abundant modifiers, or use vertex control on an editable mesh.

### **Rendering and Animation Strategy:**

\* Without question, VIZ excels at materials application and editing, lighting, cameras, and animation control. (Have you ever created a camera in AutoCAD? Congratulations.)

\* The AutoCAD color palette may be used to pre-designate materials to be applied in VIZ. Also true in ADT.

\* A saved View in AutoCAD translates to a camera + target in VIZ.

\* Lights in AutoCAD become lights in VIZ.

### **AutoCAD Features and Tools that are very SIMILAR in VIZ:**

Status prompt, coordinate readout at base of screen

Grid

Running Object Snap w/ verification symbols

Object Snap w/Shift-right click access and verification symbols

Ortho / Polar

Groups

XREF

### **AutoCAD features and tools that have a CLOSE equivalent in VIZ:**

Wblock -> Save Selected (under File)

Insert -> Merge (under File) or Insert options under Insert menu

Design Center -> Merge selected objects

UCS per Object -> Autogrid or Construction Grid (Autogrid = elevation snap, good for stacking)

Image Attach -> Viewport Background (but scaling may be an issue in VIZ)

AutoLISP -> MAX Script (not close in language, but close in functional power)

#### **AutoCAD features and tools that have an unexpectedly INFERIOR counterpart in VIZ:**

- \* Line coordinate input: cumbersome
- \* Object Properties Manager (OPM) in VIZ: available for viewing only and applicable only to linked AutoCAD objects. How to access: Viewport label right-click, Views > Extended > AutoCAD Object Properties
- \* List or OPM -> combination of right-click on object > Properties, check Modify parameters, check position and rotation by right-clicking on Move, Rotate tools, and the Measure utility
- \* Distance -> Tape Measure helper object, which is more trouble than creating a rectangle alongside the object you want to measure.
- \* Scale: considered a "Transform", and changes the display of the object but does not change its creation data - yikes! The data may be painstakingly corrected with a scaling utility.
- \* Trim/Extend: shapes must be attached. You may try the AutoCAD macros included in a Custom install of VIZ.
- \* Union/Subtract/Intersect -> Boolean: can only boolean one time reliably. VIZ may crash or produce unexpected results if you attempt to boolean repeatedly. In some situations, it is better to use attached shapes with implied hole(s) of inner shape(s).
- \* Keyboard shortcuts: under Options, not as extensive as AutoCAD's command line. There is no command line in VIZ, although there is the MAX Script listener. You need to be a customizer to create more keyboard entry possibilities. VIZ tends to be more mouse-driven (as is Inventor), and therefore may raise the risk of repetitive motion injury. Therefore, make the most of the keyboard shortcuts that are available.
- \* Layering: serves best as selection set. Name layers after materials, for example.
- \* By Object vs. By Layer: Even if you like the By Layer concept, you will probably end up giving display properties to By Object due to the convenience of the Display Panel, the Isolate Tool, and the right-click on object to Properties. But even if display properties go to By Object, the Layer remains usable as a selection set (Edit > Select by > Layer...).

#### **AutoCAD features and tools that have an unexpectedly UNFAMILIAR counterpart in VIZ:**

- \* Outline instead of Offset: use at Subobject level, creates connecting lines at the endpoints, i.e., creates a closed spline. Better than offset in a way.
- \* Mirror: either a simple mirror, or a Clone offset mirror, but the mirror axis is different

#### **AutoCAD features and tools that have an unexpectedly SUPERIOR counterpart in VIZ:**

- \* Array: more complex and versatile in VIZ
- \* Object Tracking or Point Filters -> Align tool in VIZ, or Move or Rotate with an axis constraint using the Transform gizmo, which allows merely highlighting the axis with the mouse prior to moving or rotating.
- \* Blocks -> Instances or References are more versatile
- \* Context menus accessible through right-click: more extensive in VIZ

#### **VIZ Features and Tools that Offer Tremendous Advantages over AutoCAD:**

- \* Modifier Stack and modifiers (extrude, slice, bend, taper, etc.)
- \* Extruded spline with implied hole(s)
- \* Align tool
- \* Transform gizmo
- \* Subobject editing, vertex types and control, editable spline, editable mesh
- \* All tools related to materials, rendering, and animation

Note: You may try AutoCAD macros written in MAX Script for trim, extend, fillet, mirror, offset, and array - included in a Custom install of VIZ.

#### **AEC Objects in VIZ**

- \* AEC objects available in VIZ: wall, door, window, stair, railing, foliage

- \* AEC objects enable automatic boolean (automatic creation of hole) when door is placed into wall, or window is placed into wall.
- \* Do not use the foliage objects unless you remove the leaves - they're not worth the face count. For both people and trees: use bitmaps on rectangles extruded 0.0, w/ opacity map. Or use a plugin like I2Soft ([www.i2soft.com](http://www.i2soft.com)) or Real People / Real Trees ([www.archvision.com](http://www.archvision.com)).
- \* AEC walls: if you have an existing floorplan, you must trace the wall objects over the floorplan. AEC walls are not a modifier, but a base object. Therefore, they cannot take advantage of existing lines the way the Extrude modifier can. AEC walls cannot be curved. AEC walls function best as a quick design tool within VIZ to lay out spaces.
- \* AEC doors, windows, and stairs: very impressive parametric control, but sometimes they do not meet the specific requirements you need for a particular project. Advantages: numerous parameters, flip swing, flip hinge, pre-assigned material IDs, material templates, rotation pivot at hinge, open degrees may be animated, etc.

**Conclusions about AEC Objects:**

- \* If you are designing, you may find the AEC objects in VIZ useful to quickly design an architectural environment.
- \* *If you are an ADT user, create smart objects (interactive booleans) in ADT and not in VIZ.*
- \* If you are an AutoCAD user and have an existing floorplan, you may find it most efficient to extrude walls and headers and you may find no reason to use the AEC walls. Perhaps you will use the AEC Pivot Doors, and perhaps the AEC windows and stairs.