

# User Commands

## Key Features

- [Hyperglyph](#) datascapes facilitate deeper levels of **insight**.
- Store **nD Scene Graphs** in basic tables using a [MySQL DB](#) or [CSV files](#).
- Navigate and **transform** the scene with the mouse, keyboard or **AR/VR** devices.
- Open **glyph URL records** in your browser or **launch** local files and apps.
- [Texture map](#) images or [live video](#) onto any geometry (import [3D models](#)).
- **Command Console** to help select by attribute: color, level, leafs, etc...
- [FileViz](#) your local directory trees or [GitViz](#) online github issues (**REST API**).
- **Remote** control the entire scene using [OSC networking](#) for **live IO**.
- **Animate** using **physics** or your own tables of [channel track](#) data.

## Overview

This page is an overview of all User Commands (tools, modes, console(s), etc.) You may also want to see the **detailed usage** pages on [Tools](#) or [Text Consoles](#).

The GUI is organized into 3 regions, the 3D scene, toolbar and console. There are several ways to interact via the standard keyboard and mouse, as well as optional hardware like the SpaceMouse & zSpace Stylus. The left toolbar displays **mode** and **tool** indicators which you can click (or change mode with **scroll-wheel** or keyboard). It is worth noting that the devices operate **simultaneously**, ie: **Fly** the camera with the [SpaceMouse](#) while modifying glyphs with the system [mouse](#) **AND** use the Keyboard ([Game Mode](#) or [Console](#)).

Important: At startup the keyboard is set to 'Game Mode', where the 'Esc' key will toggle fullscreen ON/OFF. However, you might **accidentally** find yourself in one of the 3 different console modes ([Command Console](#), [DB Menu](#) or [Text Tag](#)), in which case 'Esc' will exit the console and return you back to 'Game Mode'.

## [Import, Load & Save Files](#)

- Load scene data:
  - **1, 2 or 3** key loads a preset scene from the '**usr/csv**' folder.
  - **L** key to load texture **images**, **3D models** or (CSV) tables (node, tags, etc.) using the file dialog to select the file location.
  - **Alt+L** or **Alt+(1, 2 or 3)** - Load entire scene as a child of the currently selected glyph (ie: load onto a sub-grid in the scene).
- Save (part or all of) a scene:
  - **Shift+(1, 2 or 3)** - will overwrite (replace) the preset with the current scene.
  - **K** - key will save a timestamped dataset to '**usr/csv**' folder.
  - **Alt+K** or **Alt+Shift+(1, 2 or 3)** - Save only the currently selected glyphs.

- Note that branches will be saved as root objects with their local coordinates.
- **[Save Selected]** - Toolbar button will save a scene dataset with ONLY the currently selected items.

\*Note that media assets (3D models, images, etc.) are not (currently) saved, but are referenced by the scene table set.

## Mouse, Trackball, Trackpad & Touchscreen

Behavior is based on the active **[mouse: (mode) ]** and **[tool: (type) ]**.

- **Mouse Wheel** - changes tool type.
- **L-Click** on **[mouse: (mode) ]** indicator will switch between **Camera, Grid & Glyph** mode.
- **L-Click** on any of menubar tool to set the **[tool: (type) ]**.

### Mouse Navigation

- **L - Hold** on scene background to **XY ORBIT** around current object.
- **L+R - Hold** on background to **XZ ORBIT** circle and **ZOOM** in/out.
- **R - Hold** on background to **FLY** camera around scene.
- **Hints:**
  - Directly switch between camera orbit XY and XZ modes by using **L-Hold** while pressing (or releasing) **R-Hold**.
  - After using **FLY** mode (**R-Hold**) you will then be able to use **LOOK** mode using **L-Hold**.

### Mouse Selection

It is possible to **L/R-Click** to select using several of the tools (Combo, Move, Scale, etc.) However other tools use the clicks to change the glyph attributes (topo, color, etc.)

- With **[tool: Select]** you can create a selection set:
  - **L-Click** on an object will select it (can select multiple).
  - **R-Click** on object de-selects it.
  - **L-Hold** to drag a selection box (add to selection).
  - **R-Hold** to drag a de-selection box (removes objects).

### Mouse Tools

- **[Create]**
  - **L-Click** on background creates a new hyperglyph (pin with torus).
  - **L-Click** on a glyph creates a new (attached) child glyph.

- **R-Click** deletes glyph.
- **[Link]**
  - **L-Click** on the 'A' link end and then select the 'B' link end.
  - **R-Click** cancels and resets for picking the 'A' link end.
- **[Combo]**
  - **L-Hold** drags selected objects in XY (L-R & Forward-Back).
  - **R-Hold** scale objects up/down.
- **[Move]**
  - **L-Hold** moves objects in XY (L-R & Forward-Back).
  - **R-Hold** moves objects in XZ (L-R & Up-Down).
- **[Rotate]**
  - **L-Hold** rotates objects on X & Y axes (Heading, Tilt).
  - **R-Hold** rotates objects on Z axes (Roll)
- **[Hide]**
  - **R-Click** to Hide all sub-branches of selected node.
  - **L-Click** to un-Hide sub-branches.
  - See **Keyboard Game Mode** commands below for hiding per branch level, etc.
- **[Topo], [Geometry], [Color], [Texture]**
  - **L-Click** for next (topo type, index color, texture map, etc...).
  - **R-Click** for previous type.
- **[Text Tag]**
  - **L-Click** to select a glyph, and then use keyboard to modify or enter a new tag.
    - Repeating **L-Click** on the same glyph will change it's draw style (color, size).
  - **R-Click** will hide the tag (but the text will be retained).
  - You can exit **Tag Console** and return keyboard to **Game Mode** by pressing 'Esc'.
    - In **Game Mode** (with **Text Tag** tool) you can hide all tags with ` (left single quote).
    - **Enter** - will return you back to the **Tag Console**.
- **Hidden Tools - accessible via scrollwheel**
  - **[Alpha]** - Changes glyph opacity (transparency).
  - **[Channel]** - Animation channel (subscribes selected nodes to tracks).
  - **[Freeze]** - Freezes animation and editing.
  - **[Set High]** - Restricts the max position of a glyph to current location.
  - **[Set Low]** - Restricts the minimum position (is specific to active axes **X** key).

Hint: The console will display tips on tool usage when you switch to a new tool.

## SpaceMouse

The **3Dconnexion SpaceMouse** (family) are 6DOF devices that operate the camera and modify glyphs (currently selected by the keyboard, system mouse/trackpad/touchscreen or zSpace Stylus).

- The **[3Dmouse: (tool)]** GUI indicator is visible (**ONLY**) when a [3Dconnexion driver is installed](#).

- **L button** - changes mode between **Camera (blue)** and **Glyph (red)**.
- **R button** - changes **tool** type:
  - Camera mode (**blue**) has two navigation methods:
    - **[Orbit]** - around (**Twist/Tilt**) and zoom in/out (**Forward/Back**) of currently selected object.
    - **[Fly]** - around the scene (6DOF).
  - Glyph mode (**red**) has several tools:
    - **[Combo]** - orientation (**Twist/Tilt/Roll**) and translate (**Push XYZ**).
    - **[Move]** - translate (**Push XYZ**).
    - **[Rotate]** - orientation (**Twist/Tilt/Roll**).
    - **[Size]** - Uniform scale (**Up/Down**), non-uniform (**Left/Right**) & (**Forward/Back**).
    - **[Color]** - **Alpha (Up/Down)** or **RGB color (Twist/Tilt/Roll)**.

Hint: can also **L/R-click** on GUI indicator to change modes with (2D) mouse or zSpace Stylus.

**Important**, you may need to [disable the 3D connexion GUI overlay](#) to prevent popping up on top of the app.

## **zSpace Stylus**

The **zSpace System** (desktop/laptop) is an AR/VR device with a **6DOF** stylus (aka: zStylus).

- The "[zStylus: (tool) ] GUI indicator is visible **ONLY** when a [zSpace System](#) is used.
- The **zStylus** tool operates independently of other input devices (keyboard, mouse...).
- The tools are similar to standard mouse tools described above.
  - **Center Button** - is equivalent to mouse **L-Click**.
  - **Right Button** - is equivalent to **R-Click**.
  - **Left Button** - changes tool type.

## **Keyboard - Game Mode**

Note: Numbers, -, =, etc apply to the main keyboard, not the number pad.

A useful 'bug' is to change selection to another object (TAB, New, etc..) and do this while performing a rotation, it will continue to rotate, also applies to zoom and translate...

It is possible to press multiple keys at once (3-5 typical depending on the keyboard and key combo...) So for example, you can do a rotation and zoom while simultaneously changing the color.

## **Global Settings**

- **Shift** - **Reverses** some functions, **speeds** up rotation and translation.
- **ESC** - **Fullscreen** Toggle and also exits console modes (return to **Game Mode**).

- **M** - **Menu** display mode (**1, 3 or 40** text lines, toolbar **size** and **hide** GUI).
- **B** - Background **Black/White**.
- **T** - **Tool** type selection, **Shift+N** for previous tool.
- **X** - **Lock axes** so that the **current tool** only effects: **X, Y, XY, XYZ...**
  - Hint: **Click** on the toolbar [**Coord (X/Y/Z): 0.0** ] indicators to toggle an axis **ON/OFF**.

## Operation Mode (Cam, Grid, Glyph)

- **C** - Camera mode, repeat to select next camera.
- **G** - Grid mode, repeat to iterate through grids.
- **Tab** - Glyph mode, repeat to for next sibling.
- **Shift+(mode key)** - Selects previous object (within mode type).

## Create, Delete, Copy, Prune & Graft Glyphs

- **N** - New node, creates nodes, (Shift+N to create a new primary torus)
- **Del** - Delete node, deletes active node and all its child branches

Not (Yet) Implemented:

- **Ctrl+X** - To cut (prune) and store the glyph tree or branch on the clipboard.
- **Ctrl+C** - To copy the glyph tree or branch to the clipboard.
- **Ctrl+V** - To paste (or graft) the clipboard to the active glyph (or Grid).

## Traverse Forest & Trees

- **Left arrow** - select left sibling (SHIFT+arrow to skip towards first node)
- **Right arrow** - select right sibling (SHIFT skips towards last node)
- **Up arrow** - select child, up a branch level (SHIFT jumps to leaf)
- **Down arrow** - select parent, down a branch level (SHIFT jumps to root)

## Select, Hide & Freeze

- **Spacebar** - toggles **show** selection **ON/OFF**.
- **H** - Hides the object, but it will continue to (invisibly) animate.
- **F** - Freeze will stop the objects movement and lock editing it.
- **`** (left single quote) - Has different behavior based on tool mode:
  - **Default** behavior is to toggle **Select ALL/NONE** glyphs.
    - **Alt+`** will invert the selection (\*future feature).
  - With **Hide** tool active it will progressively hide by branch level.

- With **Text Tag** tool active it hides all tags
  - You may need to press 'Esc' to exit the **Tag Console** and be in **Game Mode**.

## Move, Rotate or Scale Objects

- **Move (WASD + QE)**
  - **D** - increase X position (translate)
  - **A** - decrease X
  - **W** - increase Y
  - **S** - decrease Y
  - **E** - increase Z
  - **Q** - decrease Z
- **Rotate (same as Move with Alt key)**
  - **Alt+D** - Right (rotate about Y axis)
  - **Alt+A** - Left
  - **Alt+W** - Up (X axis)
  - **Alt+S** - Down
  - **Alt+E** - CW (Z axis)
  - **Alt+Q** - CCW
- **Z** - Scale objects up (**Shift+Z** for down).
  - **Alt+Z** - Spreads (grid) sub-nodes (translates not scales).
  - Applies ONLY to active axes (**X** key).

## Translate Position Limits

- Set Points restrict the translate\_x/y/z range of an object.
  - **[** (L bracket) - Low set point, object default is z = 0.0 for ground level.
  - **]** (R bracket) - High set point, set points are specific to active (**X\*** key) axes.

## Topology & Geometry

- **J** - Next 'topo' type, **Shift+J** for previous topo.
  - **ALT+J** will change which parent facet (on a cube...).
- **O** - Object geometry, does not change the 'topo' type.

- **R** - Ratio sets inner radius of a torus, **Shift+R** to reduce.
- **Y** - (Grid) 'segments' added in X/Y (2D plane) and Z (3D) layers.
  - **Shift+Y** to subtract 'segments'.
  - **ALT+Y** - (Grid) 'spacing' increase (or **Shift+Alt+Y** to decrease).
  - 'node' table stores (grid) spacing as '**auxa.x/y/z**'.
  - Applies ONLY to active axes (**X** key).

## Texture, Color & Transparency

- **V** - Video or Image texture map (Shift+V for previous)
- Object Color Settings
  - **=** (equal) - next (palette) index color.
    - **Alt+=** - next color palette.
  - **-** (minus) - previous index color.
    - **Alt+-** - previous color palette.
  - **9** - Less opaque (more translucent).
  - **0** - More opaque (less translucent).
- Global Color Settings
  - **B** - Background color, toggle between black and white
  - **8** - change transparency mode (3 alpha modes + none)

## Load & Save Files

- **L** - Load CSV file using File Dialog
- **K** - Save (Keep) writes a time-stamped (YrMoDaHrMnSe) dataset to '/usr/csv' folder.
- **Dataset Preset keys:**
  - **1** - Load ANTZ0001....CSV file set (**Shift+1** to Save)
  - **2** - Load ANTZ0002....CSV
  - **3** - Load ANTZ0003....CSV
- **F4** - Screenshot saved to usr/images/antz(timestamp).jpg

## Built-In Visualizations

- **4** - Reserved for future CoderViz (formally Select ALL, now '~' tilda).
- **5** - FileViz directory tree, choose root folder (**Alt+5** uses 'usr/fileviz').
- **6** - GitViz issues from a github repo (specified in npglobals.csv).
- **7** - Test Scene (generates 250K nodes, perhaps 1st subsample with '\*\*\*\*' key).

## **Animation - Channels & Tracks**

- **P** - Plays track animation (specified in ANTzChXXXX.csv & ANTzChMapXXXX.csv)
  - Press **P** again to pause/play.
- **,** (comma) - Channel Up for selected nodes.
- **.** (period) - Channel Down for selected nodes.

## **Text Tags & Console**

- **I** - Toggles the nodes Text Tag display mode.
- **Alt+I** - Will active the **Text Tag Console**.
- **\** (backslash) - Subsamples nodes to draw faster, SHIFT key reverses

## **Browser URL & record\_id Retrieval**

- **U** - Opens Tag title URL in the system browser, supports HTML href="...".
  - If no URL in title, then uses default URL with record\_id appended.
  - Can also open applications and files based on OS default mime type.
  - ALSO... launches URL as tag title ie: <http://example.com> or app.exe

## **(GUI) Command Console**

- **Enter** (Return) - Exits keyboard **Game Mode** and enters Command Console for text entry.
- Type '?' (or 'help') and press **Enter** to display command usage examples.
- **Esc** (Escape) - leave text Console and return to keyboard **Game Mode**.

## **DB Menu**

- **/** (forward slash) - Open (MySQL) DB Menu (exits Keyboard **Game Mode**).
  - Type a DB **item #** and press **Enter** to load.



- Use **SELECT** command to select nodes in the scene.
  - Use **SET** command to change the node parameters.
- Type '?' (or 'help') and press **Enter** to display command usage examples.
  - Can DROP (delete), LOAD, UPDATE, etc...
- **Esc** returns to Keyboard **Game Mode** where:
  - **Shift+ /** (slash) - Save a time-stamped DB.
  - **Shift+ :** (colon) - Save an update to the active DB.
  - **;** (semicolon) - Load DB update.

## System Console

The app expects command line arguments at startup to load with specific settings and/or files. At the system console (terminal) command prompt:

- Type `C:\apps\antz-msw>antz ? [Enter]` for help on startup command line arguments.
- You can set global parameters or launch with a specific dataset, etc.
  - ie: `antz -f usr/csv/antz0001node.csv` will start the app and load the specified file.

## OSC Setup

- OSC port and IP config is stored in the globals table ('usr/csv/antzglobals.csv')

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