Top 10 Gridgen Tricks

In the **Pointwise Pointer** we try to keep you on the leading edge of the latest and most powerful features in Gridgen. But after 23 years of usage, we've learned time and time again that positive experiences often come in small packages. So here's our countdown of the Top 10 Gridgen Tricks.

Shrink Factor

This often overlooked feature found in the DISPLAY sub-menu of the Examine command provides a hidden and unique visualization capability. Setting Shrink to a value of zero (0) instructs Gridgen to display cells as nodes. This is extremely helpful in situations where extremely skewed cells are present and are hard to find due to their size and thinness. The rendered nodes are fixed size, regardless of zoom level, so they are always visible. If complex topology still makes them hard to see, open the DISPLAY COMMANDS menu from within Examine and turn off Show Nods and/or Show Cons to remove clutter.

Can you see the collapsed cell? It shows up on the right as a red dot with shrink factor set to 0.

Glyph Folder Variables

Tired of tedious directory or folder navigation when looking for files to load or Glyph scripts to execute? Try creating Glyph variables containing the paths to your favorite folders. In fact, you can create/set these variables in your rcfile so they exist every time you run Gridgen. For instance, in your rcfile, add a line similar to

```
gg::varSet myGrids "C:/MyFolderPath"
```

Then when doing I/O use the menu option Type In… Dir. This puts you into text input mode where the browser will list all of your current variables, including those defining favorite paths.

Joined Connector Breakpoints

Very often we find ourselves joining connectors together in order to produce a continuous distribution of grid points. When doing this, Gridgen preserves the original connector distributions by inserting breakpoints at the location of every removed connector node. Before saving the joined connector, save some time by immediately going into the ReDistribute command and using Remove Δ All to delete the interior breakpoints. Then save the newly joined connector.

Glyph I/O Portability

Gridgen's Glyph scripting capability is powerful. It includes the ability to journal and play back an entire meshing session. However, file I/O journalled by Gridgen uses explicit pathnames, which can be easily broken by moving a script to a new folder or directory. You can make your scripts portable by changing these I/O statements to make use of Tcl's built in File commands.

Before:
```
gg::gridImport "C:/Documents and Settings/User/My Documents/ramp.gg"
```

After:
```
gg::gridImport [file join [file dirname [script info]] "ramp.gg"]
```

Merge, Replace Connectors

There are often times when you need to completely replace an existing connector with a new one either due to duplicated topology or the need to completely reshape a given connector. You do not have to delete the original connector and then rebuild

all the domain and block topology using the new one. Gridgen's Merge tools provide a command allowing direct connector substitution. Look for the "Replace Connectors" command in the MERGE ENTITIES submenu of CONNECTOR COMMANDS. This command will replace the first selected connector with the second selected connector regardless of topology or relative physical locations.

Elliptic Solver Floating BC

Many consider Gridgen's elliptic solver for smoothing and improving structured grids to be a great strength. However, even many seasoned users are not aware that Gridgen has a floating boundary condition available for domain boundaries. Multiple adjacent domains can be run in the solver as if they were a single domain. Their common connectors float as part of the domain solution with the common connectors' shapes being permanently modified. This capability can produce fantastic domain interfaces with nice orthogonality and distribution.
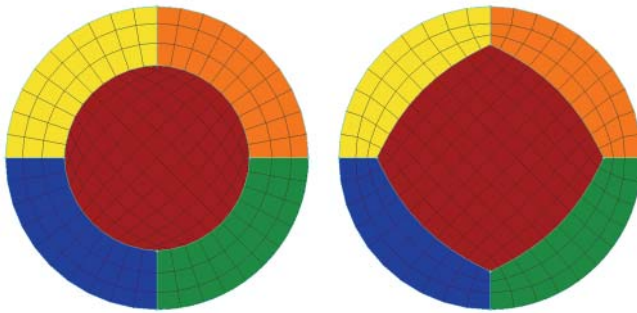
Grid quality is improved over the original simple topology (left) using the elliptic solver floating boundary conditions (right).

Rapid Distribution Change to TANH

There is a powerful hidden capability lurking in Gridgen's Set Δs Vals command. After choosing a spacing constraint to change, note the Message window shows values of –2 or –3 can be entered to change distribution on the affected connector(s) to either TANH or MRQS. In a single step, you can use this to change an entire set of connectors over to TANH, Gridgen's default distribution function. This need arises most often when you have imported a grid from a raw grid format, such as Plot3D, using the Grid Pts Import command. Importing raw grid results in connectors that all have a type General or discretely defined distribution.

Mouse left/right

Gridgen uses the right mouse button for picking. It has been that way since it was first developed in 1983, when graphical interfaces were just emerging. (Why didn't everyone follow our lead?) If you would like Gridgen to use the left mouse for picking, like all those Johnny-come-latelys, you can swap the functionality of the left and right mouse buttons to your preference using the Mous LeftPk toggle in the DISPLAY COMMANDS menu.

Rcfiles, _gridgenrc/.gridgenrc

If you find yourself repeatedly setting specific values in the SET DEFAULT VALUES menu or changing options in the DISPLAY COMMANDS menu (such as the previously described Mous LeftPk), save yourself some time by using an rcfile to have the settings made for you automatically every time Gridgen starts. Gridgen will execute all the Glyph commands included in this file as it starts, as long as the rcfile resides either in the folder in which Gridgen was started or in your home directory. It should be named _gridgenrc on Windows and .gridgenrc on Unix platforms.

Control Pick/Shift Pick

Do you ever want to find the coordinates of a point or find the distance between two points? Hold down the Shift key on your keyboard while picking any pickable point in the grid or database. The coordinates of the point and its distance from the last Shift or Control Picked point are shown in the Message window. Similarly, hold down the Ctrl key on your keyboard while picking any pickable point in the grid or database. The center of rotation will instantly transfer to the picked point, and that point's coordinates will appear in the Message window.

Coming Soon

Look for Gridgen's successor, Pointwise, to be released this summer. Based on years of your feedback, we have combined Gridgen's reliable CFD meshing technology with modern user interaction to bring you a quantum leap in meshing capability. In addition to the high quality grid techniques we have always had, you will appreciate Pointwise's flat interface, automated grid assembly, and undo and redo capabilities. You will receive Pointwise for free as part of your current Gridgen license.

You need not worry about Gridgen going away. We are going to move forward with both products to ease your transition to Pointwise. The two codes are fully compatible; Gridgen can read Pointwise's files and Pointwise can read Gridgen's files. Plus, the two products will share license management.

Watch www.pointwise.com for announcements regarding Pointwise's release.