

# PointwisePointer

A User Tip from the Pointwise® Support Desk

Spring 2009

## Examine Rules!

While the **Examine** command certainly is powerful, this edition of the *Pointwise Pointer* is not intended to position **Examine** above all other commands. Rather, this edition's focus is on the new **Rules** command in the **Examine** menu.

**Rules** provides a proactive mechanism to alert you when certain grid quality criteria you set are no longer met. Pointwise keeps track of the rules you create and alerts you when a rule or rules have become stagnant so that you can reevaluate them with a single mouse click.

### The Examine Rules Panel

The **Rules** panel is divided into four frames: a list of rules, rule management, applying rules and evaluating rules.



The rules list shows at a glance all the rules currently defined, their status and the entity type to which they are applied. The list is also how rules are selected for use with the other commands on the panel.

**Manage Rules** is where you create or modify rules. The **Apply Rules** frame is enabled only when you elect not to have a rule automatically monitor all entities of the selected type (called a **Global** rule as explained below).

The **Evaluate Rules** frame provides commands for computing the metric associated with the rule and applying your criteria to

the computed values. There also are visibility controls for turning on or off the cells that are rendered when a rule is broken.

## Rule Evaluation

As soon as a new rule has been saved, a new rule (ruler) icon appears in the state icons area of the **Status** bar at the bottom of the GUI. Here, the icon is shown with a green dot indicating no stale rules. This means that all rules are up to date relative to the status of the entities to which they apply.



Changing an entity on which a rule has been applied – for example, running the solver – causes the rule to become stale and the icon is updated to reflect that state.



This indicates that a rule needs to be evaluated to make sure it has not been broken. You can return to the **Examine Rules** panel and use the tools in the **Evaluate Rules** frame for this purpose.



Use **Evaluate** to update metrics for the selected rule, or use **Evaluate All** to update all rules at once. If a rule is broken, i.e. cells lie outside the specified acceptable value range, the state icon updates in the **Status** bar to indicate this condition.



Also, the worst cells that break the rule in the affected entities immediately will be rendered in the **Display** window. There is a user preference available in the **Preferences** panel (**Edit** menu), **Max. Rule Violations**, which controls the maximum number of cells total for all rules that will be rendered. This preference is set as a safety mechanism to guard against having an extreme number of cells rendered in an unusual case. The default maximum is set to 1,000 cells.

## Manage Rules

It is important to remember that a rule specifies the criteria you deem acceptable, so a rule will flag cells that violate the limits you set.

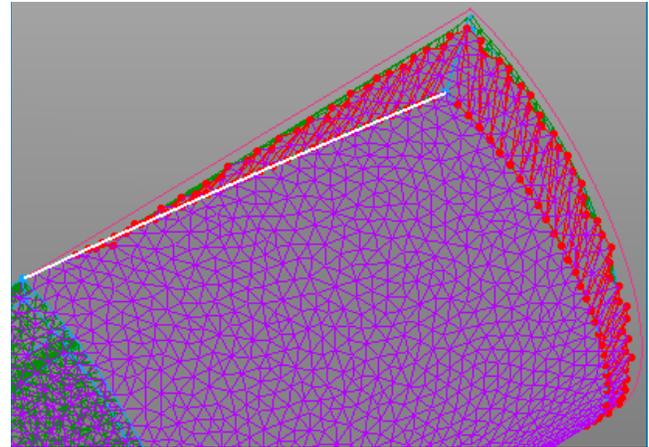


At the top of this frame, choose the entity type to which the new rule should be applied. Just below, by default, Pointwise will create a name based on the rule function and limit. You can turn off **Use Default** and enter your own text name if you prefer. Next, select the **Function** for your rule. The available list of diagnostic functions is adjusted based on the entity type you have chosen. Select an operator from the **Limit** pull-down and enter a corresponding value in the **Limit** text field. For the example shown, the user has selected the minimum angle skew diagnostic and specified that this measure must stay above 15 degrees for all domains. Cells with minimum angles falling below 15 degrees will break this rule.

If you do not want to apply your new rule automatically to all existing and future domains, you can toggle off the **Global** check box. Once the rule is saved, you can then select it in the list above and use the **Apply Rules** selection mode commands to select the specific domains to which to apply the rule.

The **Color** option will open a color palette to allow selection of a render color to use to display the cells that break a rule. When you finish setting up your rule, click **Save Rule** and note that it appears in the rules list above. At any time, you can select an existing rule in the list and use **Delete Rule** to have it cleared.

Cells breaking the rule will be rendered in the color specified for the rule in **Manage Rules** on the **Examine Rules** panel. The default is bright red. These cells violating your rule are ranked by severity and the worst cells are given priority for rendering.



You may not wish to address the issues causing the broken rule immediately. In this case, you can turn off the display of cells that break the rule. In the **Examine Rules** panel, select the broken rule.

Then, click **Hide** in the **Evaluate Rules** frame, or you can use **Hide All** to turn off cell rendering of all broken rules. Shortcuts are provided on the **Grid** toolbar to evaluate quickly all rules and also show/hide cells for all broken rules. These icons are shown here at the right end of the toolbar.



Try **Examine Rules** now to see how it can save time finding and preventing cells that do not meet your quality criteria.