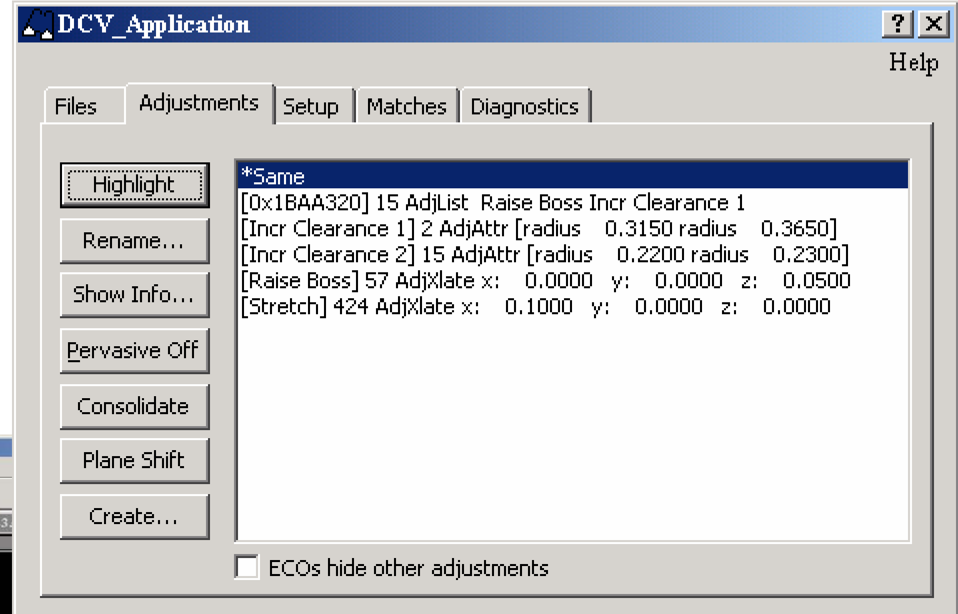
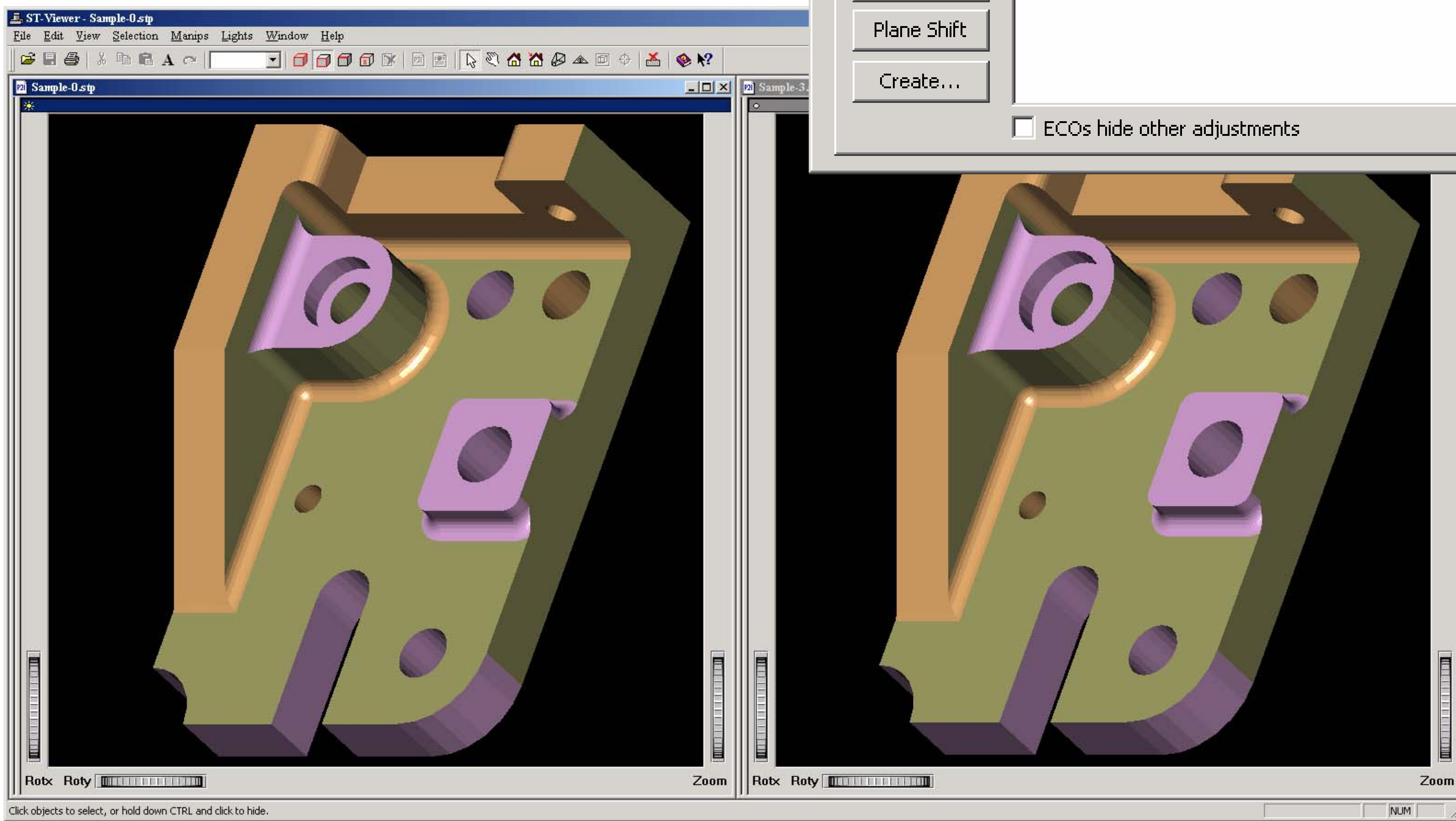
DCV Guided Tour

In the image below, you can see 2 versions of the same part. To the left is the previous version to the right is the current version.

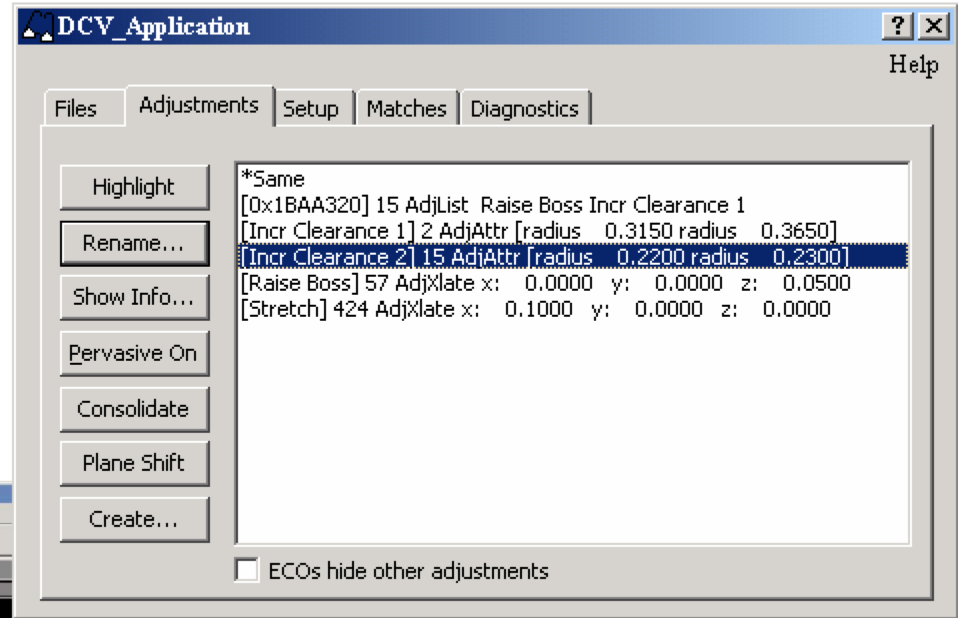
Unchanged surfaces are shown in gold.
Changed surfaces are shown in purple.
Partially changed surfaces are shown in olive.

We accomplish this particular display indirectly by using the dialog to the right to select and highlight (in purple) all the unchanged surfaces.



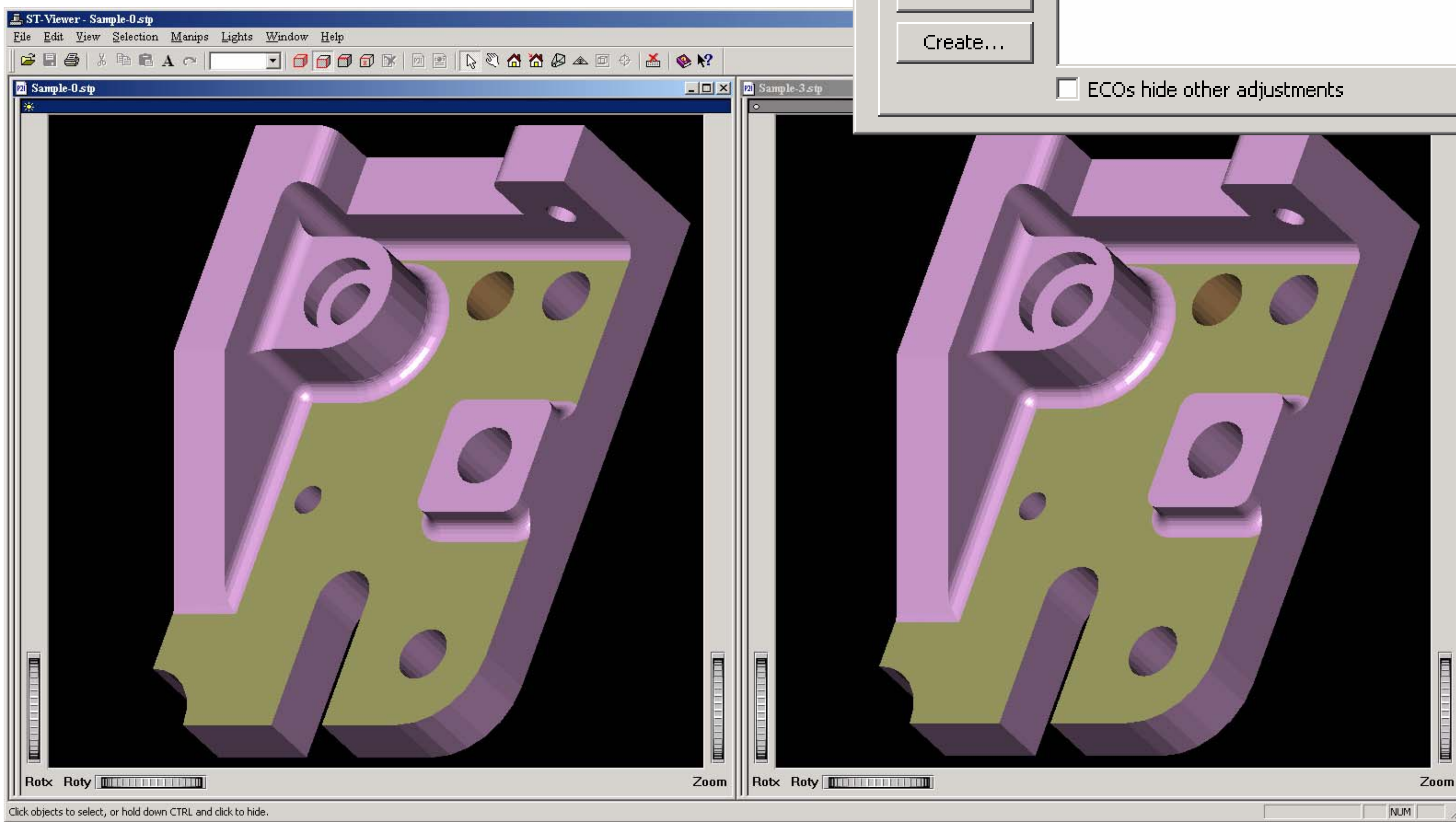


When the user selects adjustment [Incr Clearance 2] to highlight the change of a radius (one place in this case) from 0.22 to 0.23. The adjustments can be renamed to more meaningful names by the user.

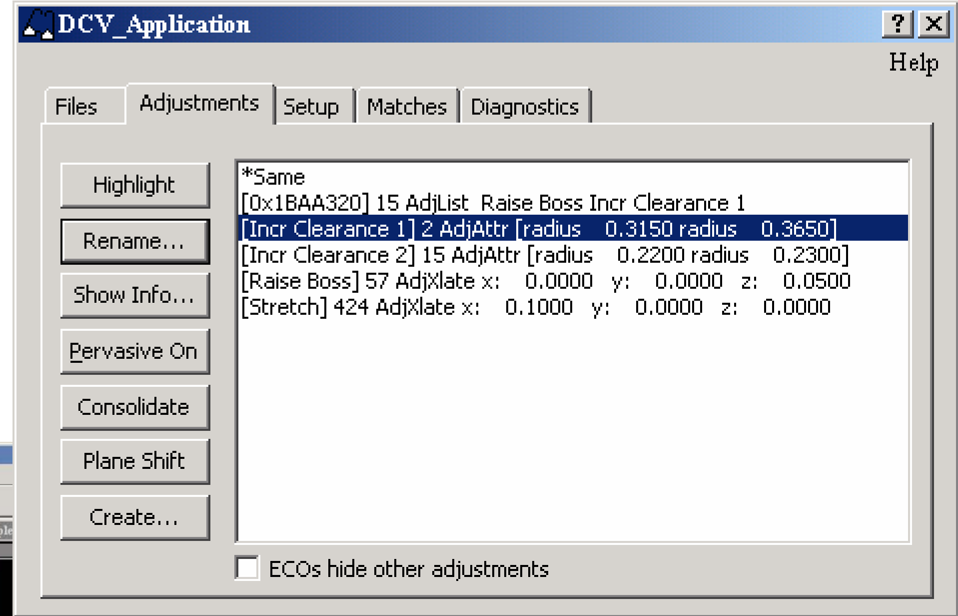


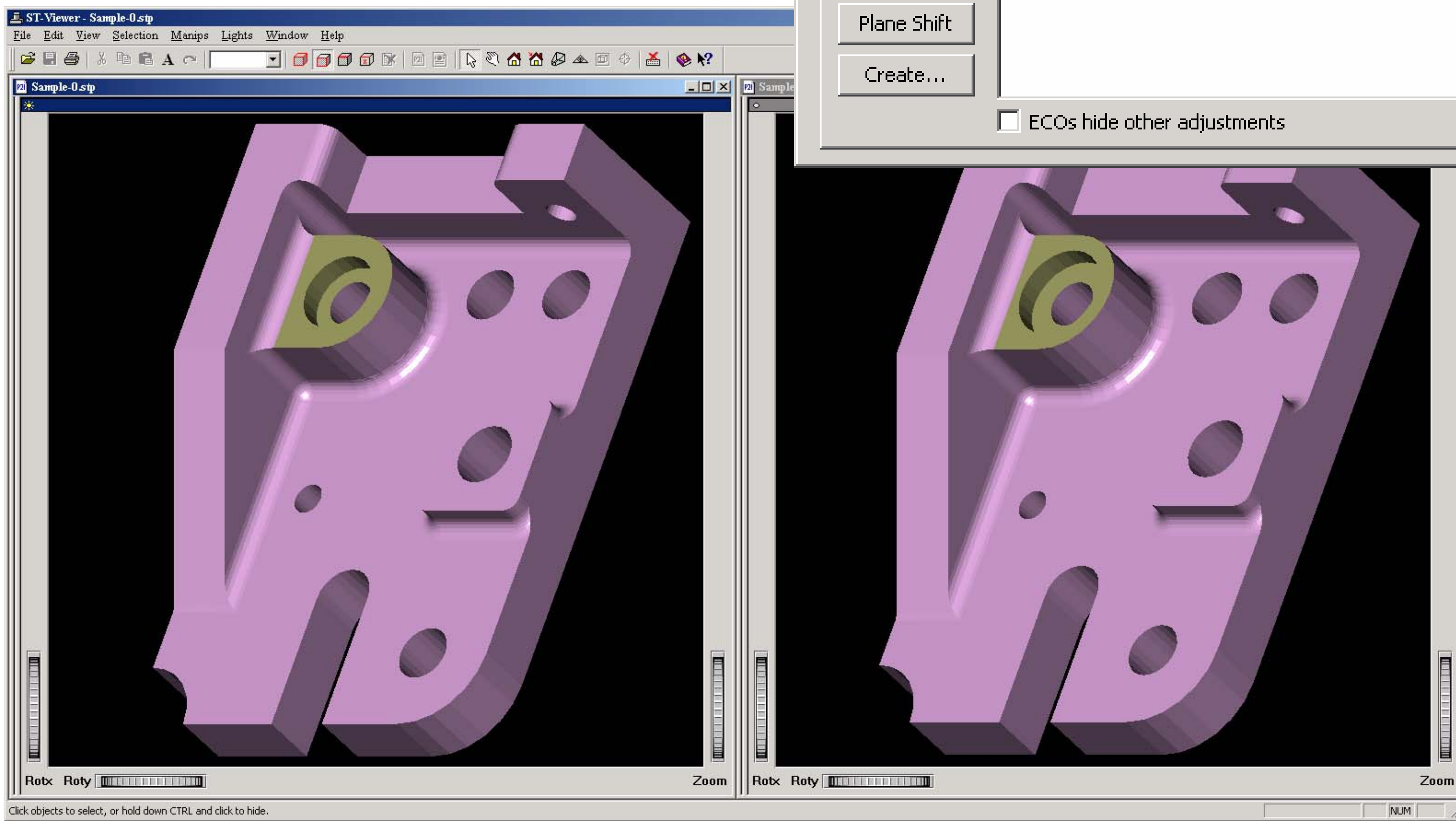
Since the hole was subject to this change and no other, it highlights in gold. The surfaces that the hole passes through had some edges changed (and other edges not changed) so these surfaces highlight in olive.

This is a case of a very simple change, but it isn't at all visible to the naked eye

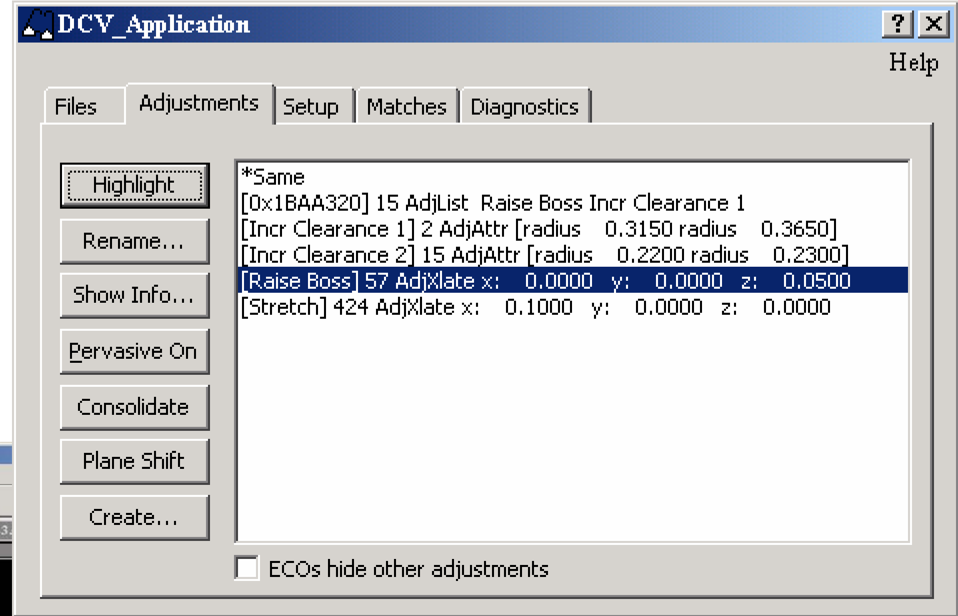


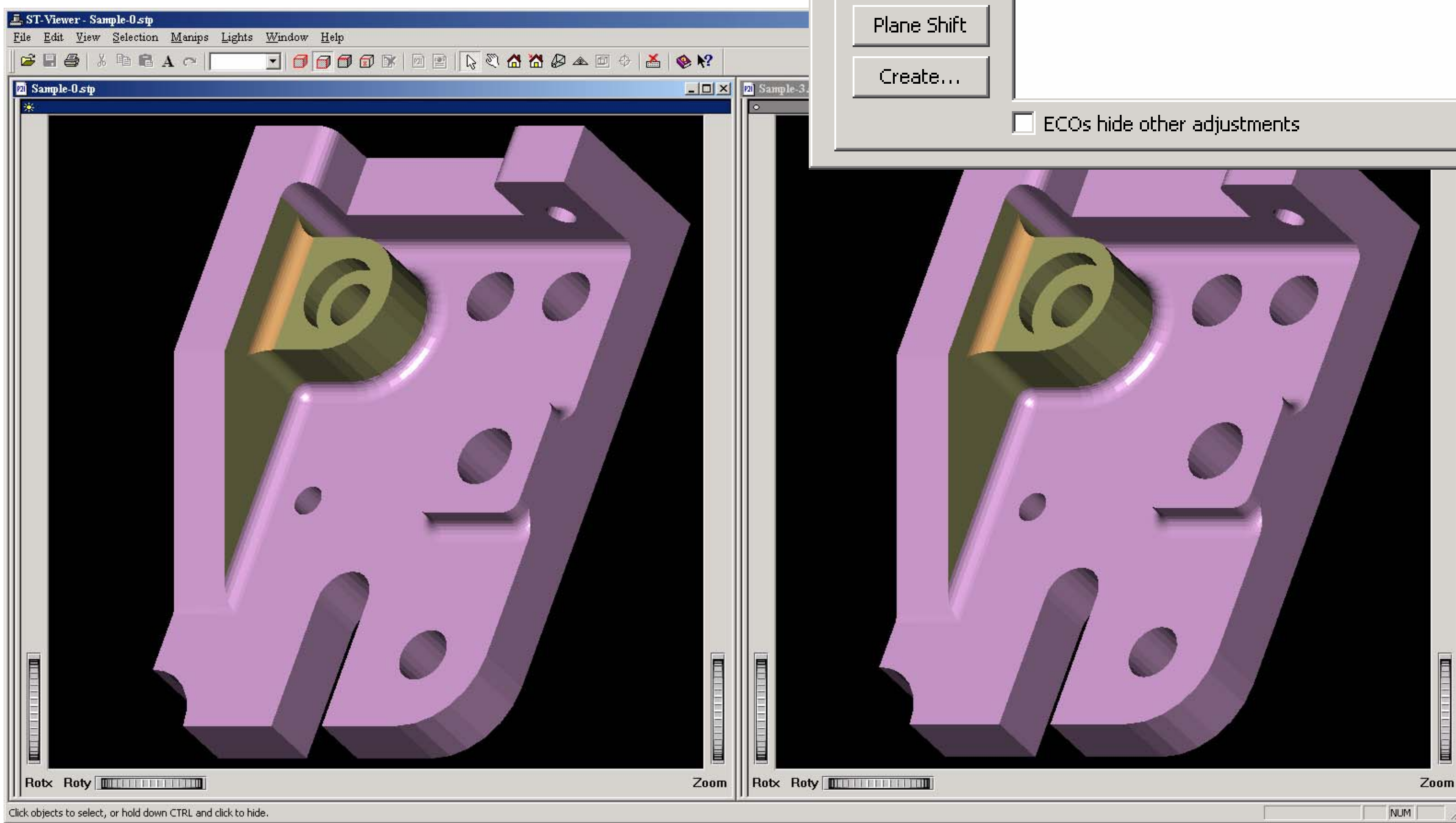
Adjustment [Incr Clearance 1] is another radius change, but not as simple. Observe that all the surfaces are olive colored this time (no gold surfaces). This tells us that none of the surfaces was modified exclusively by the highlighted adjustment. The other change will be apparent later in the next step of this tour.



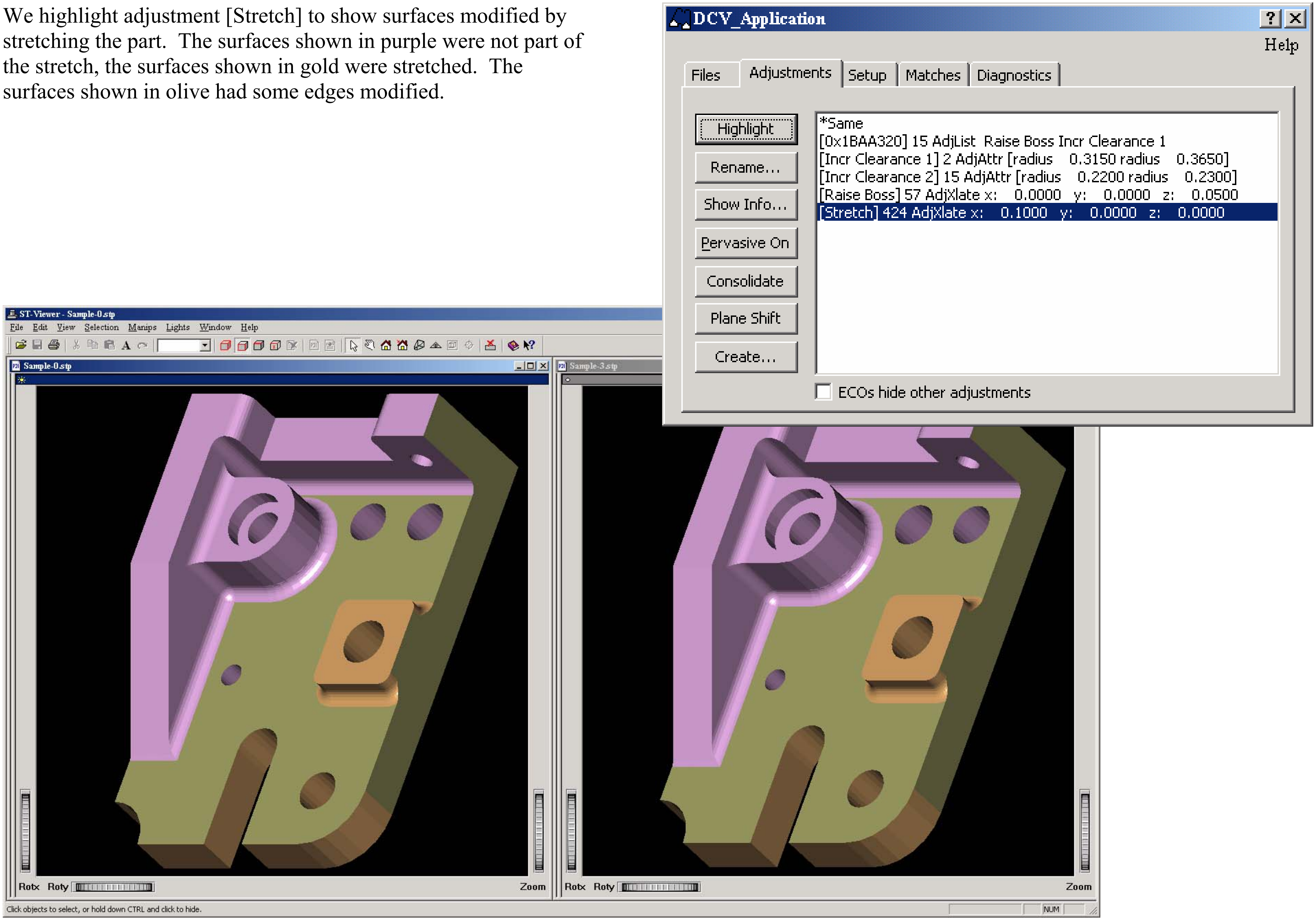


The only surface modified exclusively by [Raise Boss] is the fillet shown in gold. The adjoining planar surface shaped like a “D” was the actual surface that was moved in the CAD system, but one of it’s edges was also modified by the change in the counterbore diameter.

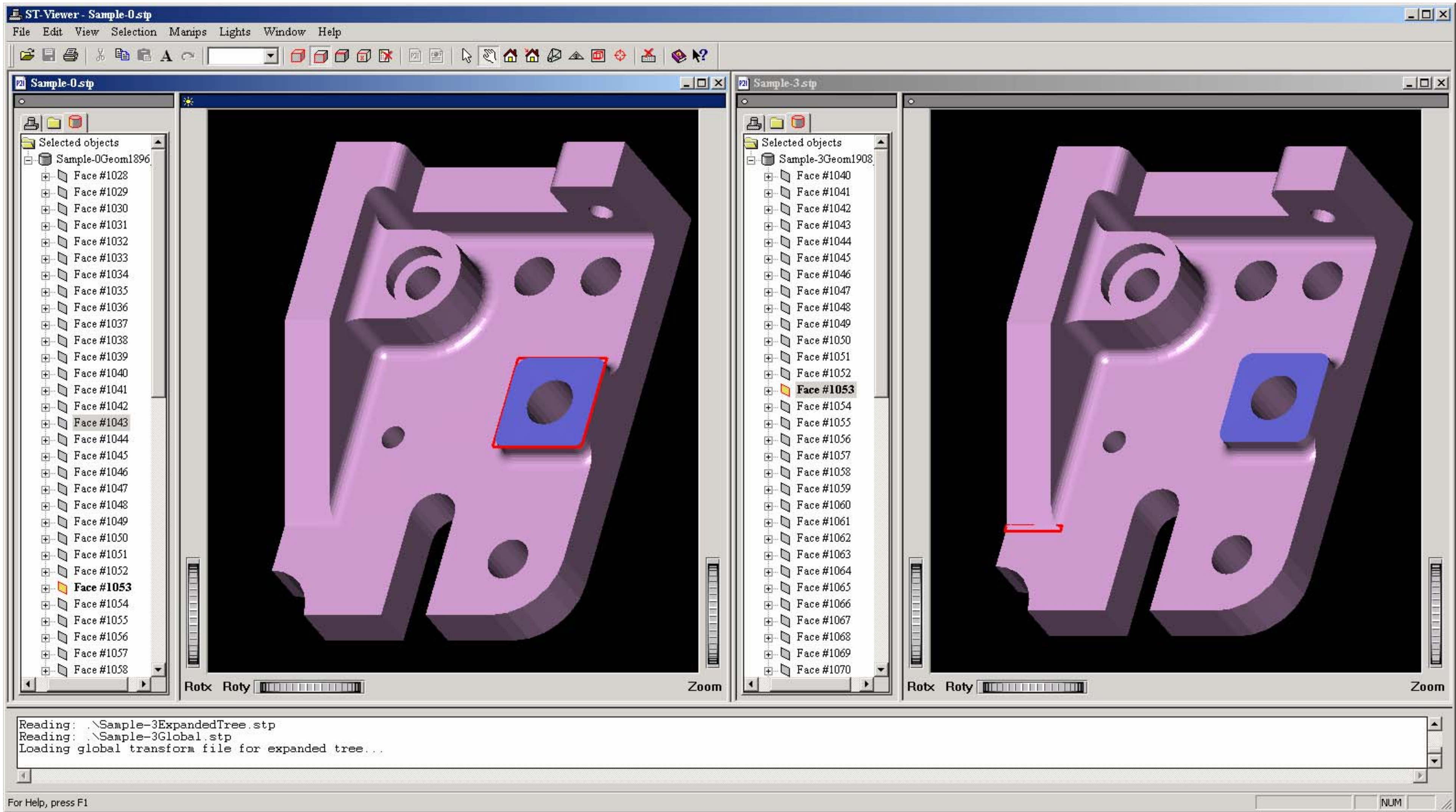




We highlight adjustment [Stretch] to show surfaces modified by stretching the part. The surfaces shown in purple were not part of the stretch, the surfaces shown in gold were stretched. The surfaces shown in olive had some edges modified.

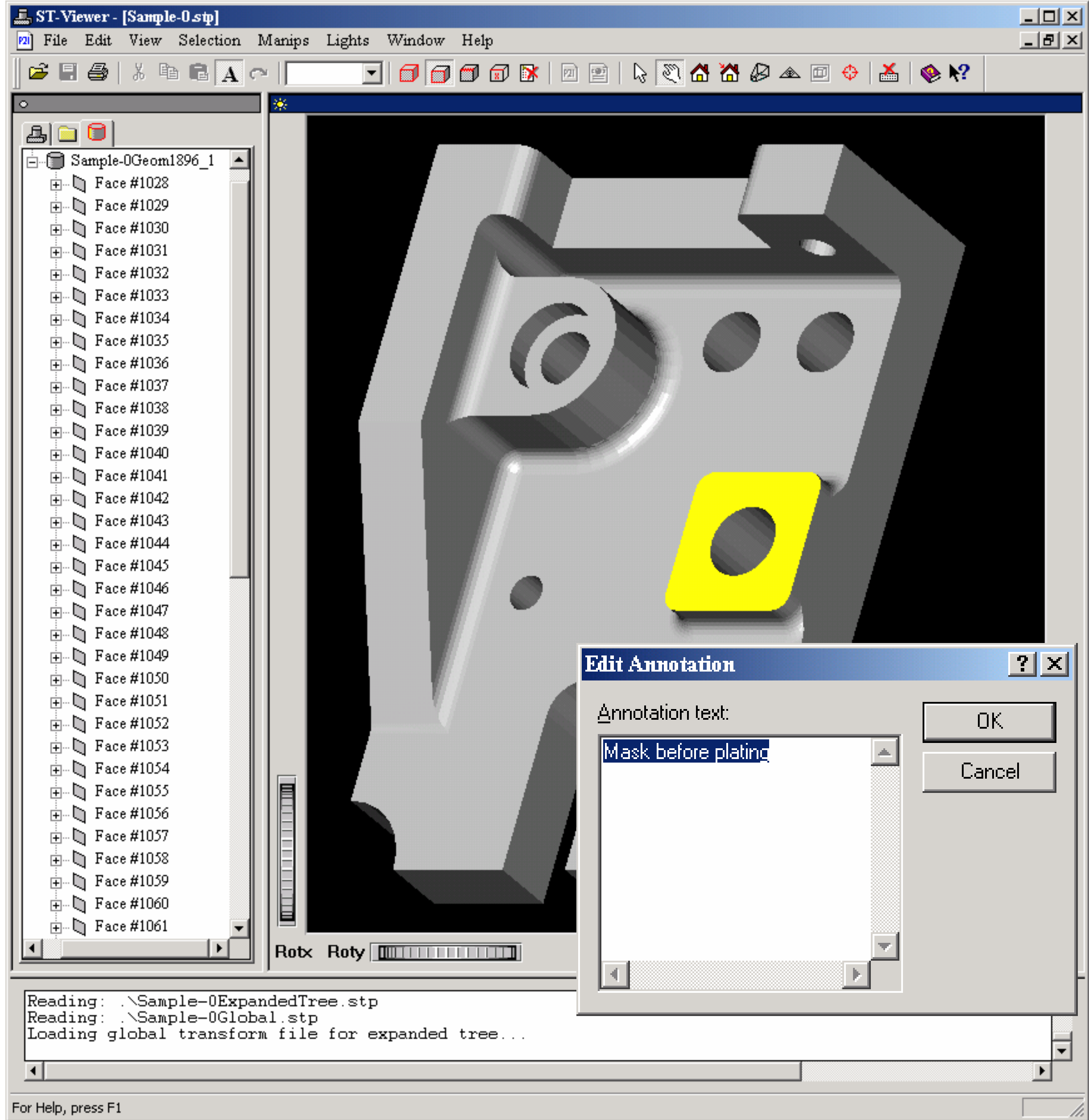


Recognizing and communicating changes is certainly useful, but DCV does much more than that. In each part, entity #1053 is selected and it shows with red box around it. DCV shows the last selection (in Sample_0) is shown in blue along with the matching entity (#1081 in Sample_3 if you're curious) as blue in Sample_3. The point here is that exporting from a CAD system to a neutral format (like STEP) scrambles the identifiers. In the case of STEP as well as most other neutral formats, this is not a violation of the standard. It just makes integration much more difficult.

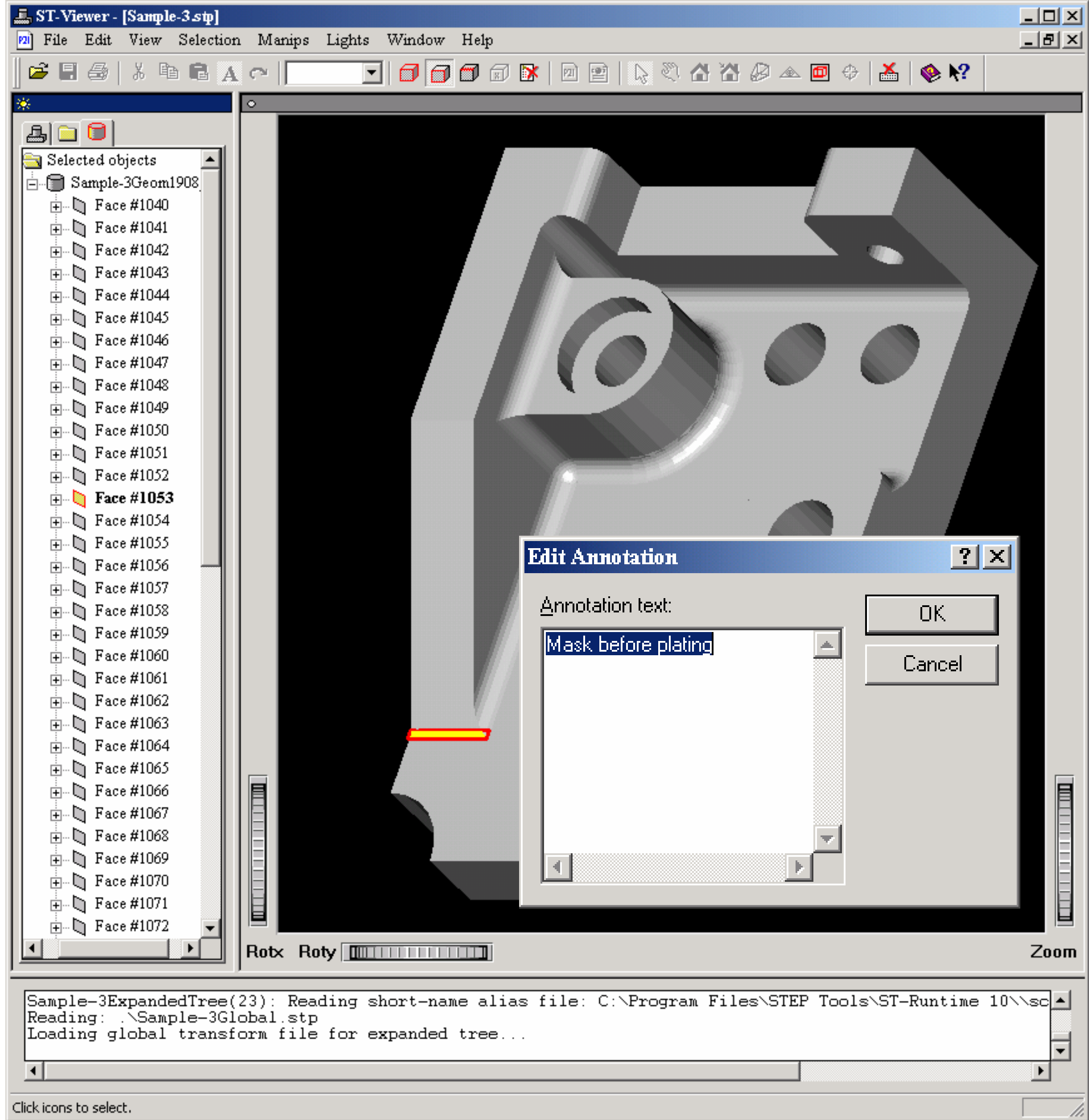


To further illustrate the problem of tight integration and scrambled identifiers (we'll show later how DCV solves the problem), we'll use the viewing tool to annotate entity #1053 in Sample_0;

Some application more serious than viewing/annotation would be NC Programming and Finite Element Analysis.



When we apply try to apply the annotation data to Sample-3, we see results that a certainly not what we intended.



The viewer was not intended for this kind of integration but it's easy enough to do by copying and renaming the annotation files.

You may have heard many explanations about the problems with integration using neutral files like IGES. Some of the excuses are listed below:

1. Not all of the entities translate properly.
2. Solid modelers don't use the same tolerances for fitting surface together.

The problems just listed are real, but they aren't the problem. You're looking at the problem right here.

Don't be surprised if you've never heard this before.

Now we get to show the real power of DCV. Remember, the DCV is a vector and we can do addition with it. So let's see what happens when we add the DCV to Sample-0 to create Sample-3a.

Sample-3a looks just like Sample-3, except that the identifiers reconcile. Now the annotation still applies to the correct surface. The same principle applies to NC-Programming or Finite Element Analysis.