# ‘Facet Designer’ - Newsletter 10

## ROSE-CUTS

Recall that I said, in Newsletter 05, that setting ***N.of Reflections =1*** was ‘absurd’. Wrong! Anton read this and reminded me of the ‘rose cut’ which we never think of anymore. A ray enters one side of the ‘crown’, reflects off the flat pavilion and exits back out through the crown. When you test the optics of this cut you will see why it was abandoned nearly a century ago!

Drawing the rose cut involves tricks in using the ‘Facet Designer’

### THE NORMAL WAY = POINT UP

Fig.1 shows an arbitrary form of the rose cut, where the main facets are perfect squares. To do this use the following data for the crown:

***Symmetry = 8*** ***Index Gear Teeth = 96***

| CROWN: | ***Row*** | ***Split*** | ***Shift*** | ***Position*** | ***Slope*** |
|---|---|---|---|---|---|
| girdle | G | 3 | 0 | 0.31 | (89) |
| break | 1 | 3 | - | 0.77 | 50.00 |
| main | 2 | 0 | - | 0.53 | (42.97) |
| star | 3 | - | 6 | 0 01 | (35.71) |
| PAVILION | | | | | |
| break | 1 | (3) | - | 1.00 | (40.00) |

Make ***GirdleThickness = 0.31*** and ***Max.Slope = 50°***., which is apparent in Fig.3.

When you flip over to do the pavilion, you will see the breaks already drawn with ***Split =3***, ***Shift =0***, ***Position =0.70*** and ***Max.Slope =40°***. If you try to reduce the slope to 0° the program will crash.

Instead, make ***Position =1.00***. The break facets still have 40° slope (theoretically) but they have zero length! – they don’t exist! See Fig.2 & 3.

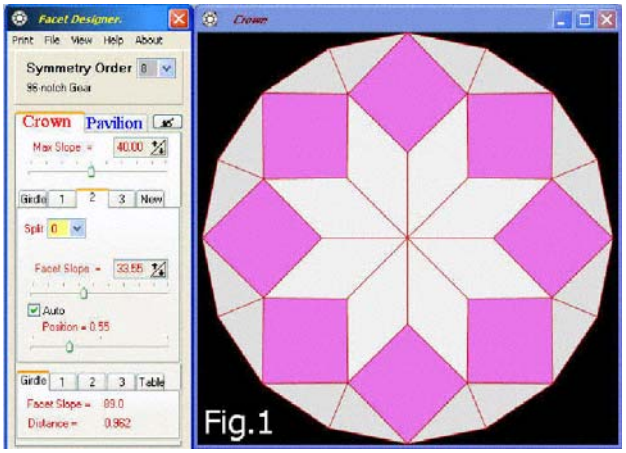
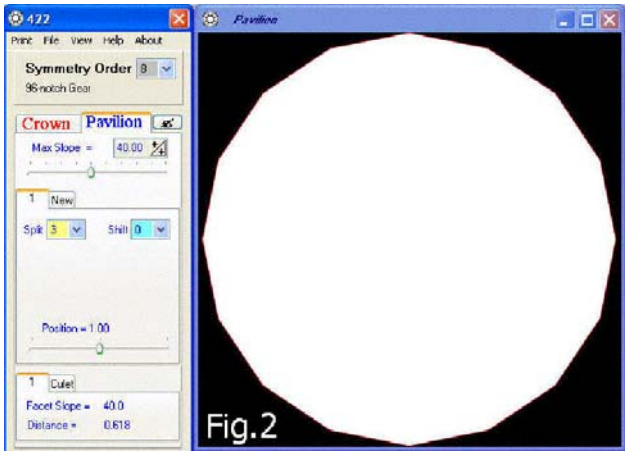
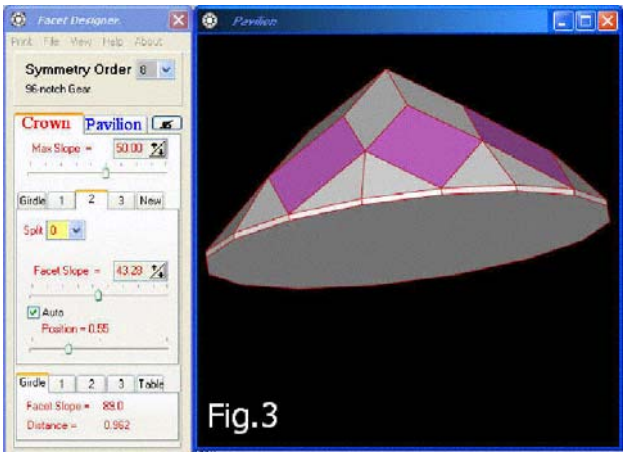
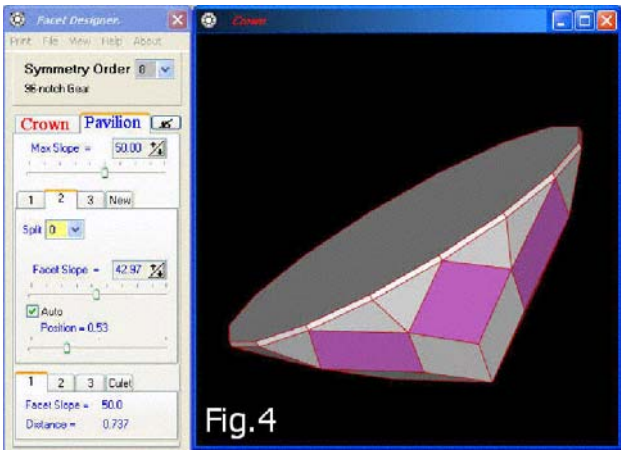
Restore to normal view and select ***N of Reflections =1***; you will see that there are now some images

You can do all the light studies, using ***Map of Illumination*** and ***Animation***; they are not impressive.

### BACKWARDS = FLAT FACE UP

Of course you will turn the gem over and study it the other way around. No problem, using all the tricks we have shown you for turning image, sphere and light. BUT ... if you try to use ***Animation*** it won’t work!

***Animation*** always turns the gem back to ‘normal view’ with the center of the crown facing you at the center of its figure-8 pattern.

No problem – just draw the gem again, but with the crown flat by setting its ***Row1 Position =1.00*** and drawing the pattern on the pavilion side as you did before for the crown, as shown in Fig.4.

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