'Facet Designer' - Newsletter 01

'HEARTS'

Diamond folks talk about 'Hearts & Arrows', which are patterns they like to see in special viewers as an indication of cutting excellence. We showed you the 'Arrows' at Fig.19 in the 'Facet Designer' tutorial.

'Arrows' are seen with crown toward the viewer. 'Hearts' are seen with pavilion toward the viewer.

Both 'Hearts' and 'Arrows' are seen with the light from above and an obstruction in the center. To see the 'Hearts', however, it is also necessary to obstruct light within 60% above the horizon. We can simulate this here using the tri-color illumination option.

The stone used here is a round brilliant diamond per Marcel Tolkowsky, for which the data are:

Symmetry = 8   *Index gear teeth* = 96
Girdle Thickness = 0.031
Table size = 54% (Tolkowsky 53% was a math error)

CROWN	*Row*	*Split*	*Shift*	*Position*	*Slope*
break	1	3	-	0.74	(40.45)
main	2	0	-	0.74	34.50
star	3	0	6	1.00	(21.78)
PAVILION					
break	1	3	-	0.25	(42.01)
main	2	0	-	0.09	40.75

Fig.1 shows the gem image with 12 reflections. Right-click (green arrow) for message **Reset to Initial Position** and then click on that; this will reset the image to full view looking at the crown, shown in Fig.2.

Per Fig.2, red arrow, left-click twice on the tilt button and the image will roll over to the full view of the pavilion, shown in Fig.3.

Select **Ray Tracing** under **Image** to get **The Map of Illumination** shown in Fig.4. Select the tri-color sphere (blue arrow), then adjust the range of red light to 10° (red arrow) and green light to 40° (green arrow) from the gem axis.

The yellow arrow points to a 'Heart'. An excellent article (unpublished) has been written on how the heart shape is formed and how to modify it.

Slide **Position** of Pavilion Row 1 (black arrows) to see the significance of 'break depth' on this pattern.
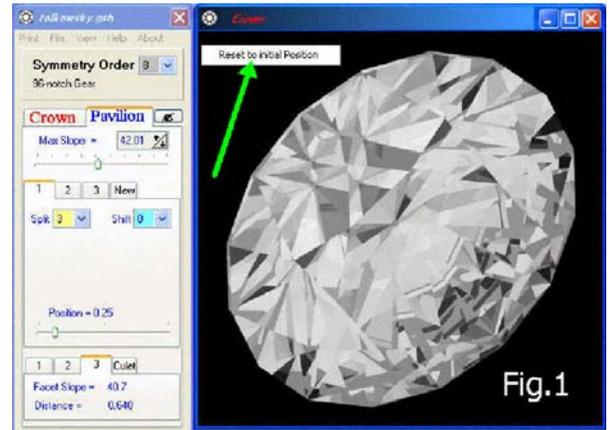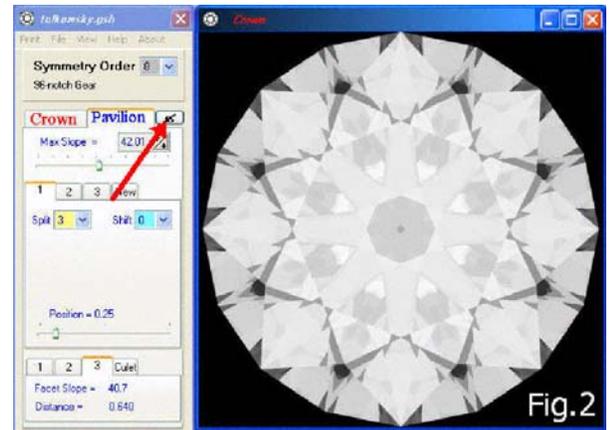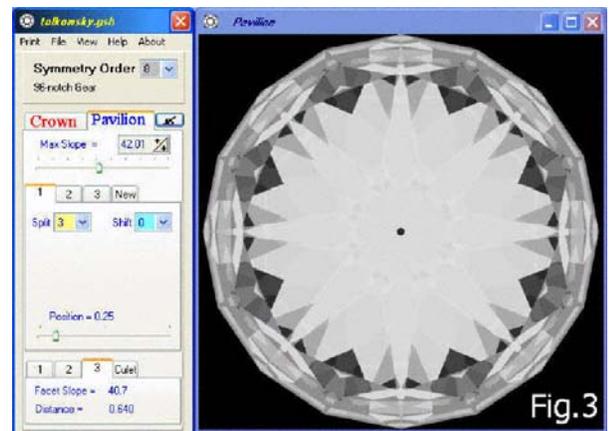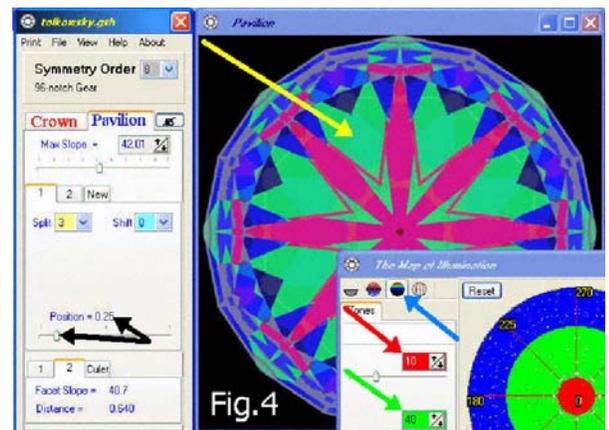
B.L.Harding   2004 Jul 5

Fig.1

Fig.2

Fig.3

Fig.4