

'Facet Designer' - Newsletter 03

WHERE IS LIGHT FROM ?

'NORMAL' ILLUMINATION

This gem is Tolkowsky's diamond, as follows:

	Symmetry = 8		Index Gear Teeth = 96		
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	0.25	42.01
main	2	0	-	0.09	40.75

Fig.1 shows the crown with 'normal' illumination (white foreground, with *cos* gradation, and black background), as provided by the left sphere icon (blue arrow).

There was a question, a few years ago, as to what caused the dark wedges at the girdle, indicated here by the lower red arrow. They are almost pure black; looking at the sphere, this light color appears to come from near the horizon.

SOURCE FRONT or BACK?

To find if light comes from front or back. use the red/blue sphere indicated by the blue arrow in Fig.2. Note that the 'wedges' (yellow arrow) have a blue tone, so the light which causes them is from the back. Here the LIGHT AND GEM are turned to face left to get a side view of the colors. This is done by dragging the sphere along its horizontal meridian (green arrow) with the **LEFT** mouse button until the red equator line is vertical (it turns blue when you pass vertical).

The color of the 'wedges' seems to match that of the sphere at the point indicated by the black arrow.

WHERE FROM MORE SPECIFICALLY?

To find the range in which the light source lies, select the tri-color sphere indicated by the blue arrow in Fig.3. Turn the LIGHT AND GEM to face left, using the **LEFT** mouse button; as in Fig.2 (not shown here).

Then turn the LIGHT ONLY so that the colors are behind the gem. This is done by dragging the sphere along its horizontal meridian (green arrow) with the **RIGHT** mouse button until the blue/black boundary is vertical.

Clearly the light at the 'wedges' comes from the green zone.

WHERE FROM EXACTLY?

In Fig.4 the blue/green boundary is moved until the color of the 'wedges' changes from green to blue. This is done by tapping on the 'down arrow' of the green band control (blue arrow). The change is very slow but will go as many degrees as you have tapped, so tap five times to change 5 degrees. The angle from the gem axis to this boundary is shown in the control box (green arrow).

Because the shifting of spheres was not perfect, we see two adjacent wedges with the two colors, as indicated by the yellow arrows. So, in this example, the light came from about 48° off the gem axis. But we don't know by what route through the gem – perhaps another technique will tell us that.

BLH 2004 Jul 20

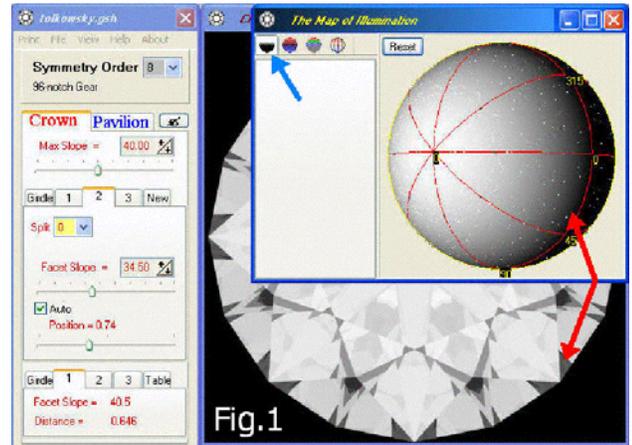


Fig.1

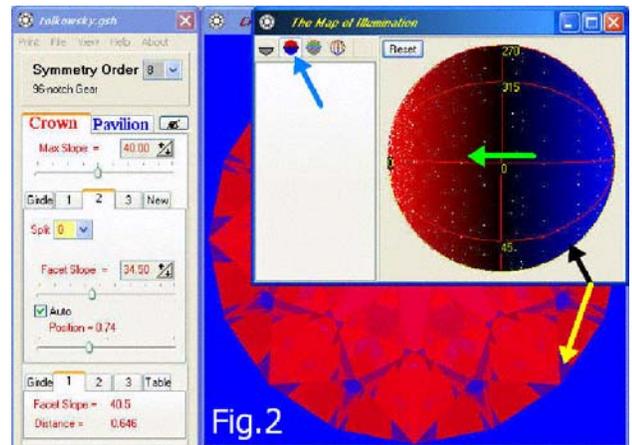


Fig.2

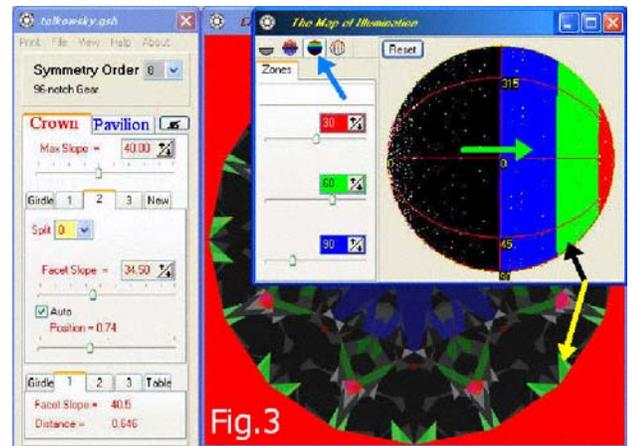


Fig.3

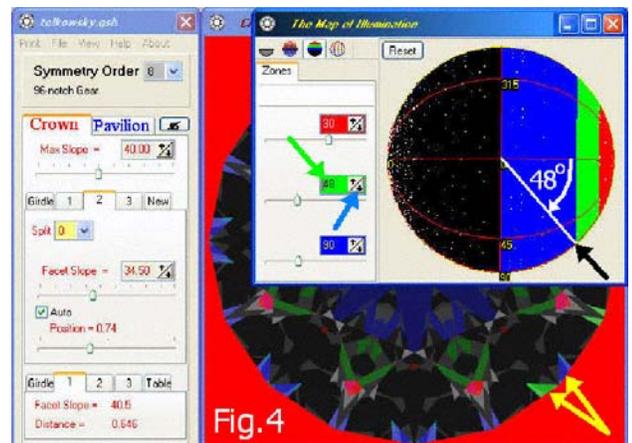


Fig.4