'Facet Designer' – Tip # 04

VIEWING SPOTS on the DARK SIDE

Here we hope to amplify and clarify rotation of sphere and light and to show the significance of the meridian flags.

THE VIEWER'S EYE = LINE OF SIGHT

The viewer's eye is ALWAYS at the '0' pole of the sphere. The large image shown is ALWAYS from the viewer's eye and the line through the poles is the line of sight. It passes through the CENTER of the stone but the stone AXIS may be in a different direction. Turning the axis of the stone relative to that of the sphere can be achieved only by dragging the image in the large picture – with the exception of the *Flip* button, used in Fig.4, which reverses the axis of the gem (switches crown view to pavilion view, and vice-versa).

'NORMAL' LIGHTING

Fig.1 shows 'normal' illumination of the gem used by the program unless otherwise specified At the *RayTracing* menu (inset) this is the left sphere indicated by the blue arrow. The red arrow shows that the '0' pole of the sphere is toward you, the green arrow shows the 270° meridian at the top, and the orange arrow shows the 180° meridian at the left.

VIEWING SPOTS of the CROWN

In Fig.2 we put dark in front of the crown to see its light source locations better. Note that these are not light sources, since the front is dark; rather they are the spots from which light sources would reach the viewer's eye.

We did this by selecting the custom sphere at right (blue arrow), coloring *Back* white and *Front* black. The poles and meridian markers have not changed.

VIEWING SPOTS of the PAVILION

In Fig.3 we paint the *Front* of the sphere black and the *Back* white. Then we rotate the sphere and gem 180° about its vertical axis, by dragging its equator with the LEFT mouse button (red arrow). 270° is still at the top (green arrow) but the pole (yellow arrow) has changed from 0° to 180° and the left meridian (orange arrow) has changed from 180° to 0°.

Observing these meridians can be important when tracking the path of a light spot on the gem, as in later Newsletters.

You can turn the sphere and gem to look at the dark side by dragging it in various directions with the LEFT mouse button, not just along the equator. No matter how you do it, the meridian marks will provide orientation.

FLIPPING GEM OVER to VIEW PAVILION SPOTS

In Fig.4 we flipped the gem over so that the pavilion is facing the viewer. This is hard to do by dragging the gem, but happens perfectly if you hit the *Flip* button (red arrow). The sphere is not moving; you will see the spots moving on it. If there is an error message, ignore it. The poles and median markers are the same as in Fig.2 because the sphere has not been moved – just the gem within the sphere.

HOWEVER, the pattern of spots is INCORRECT. I am sure that Anton can explain it but, for now, DON'T DO IT!
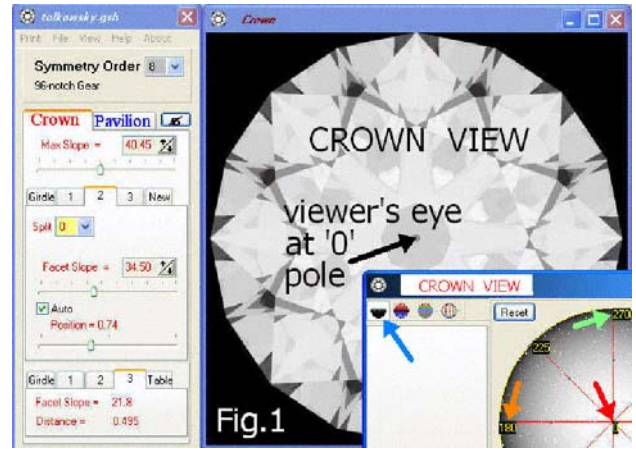
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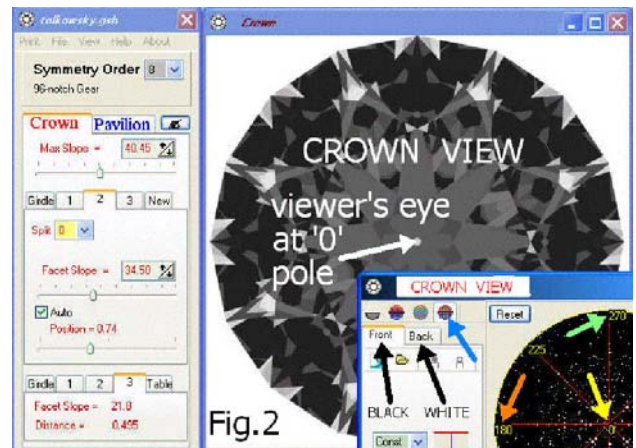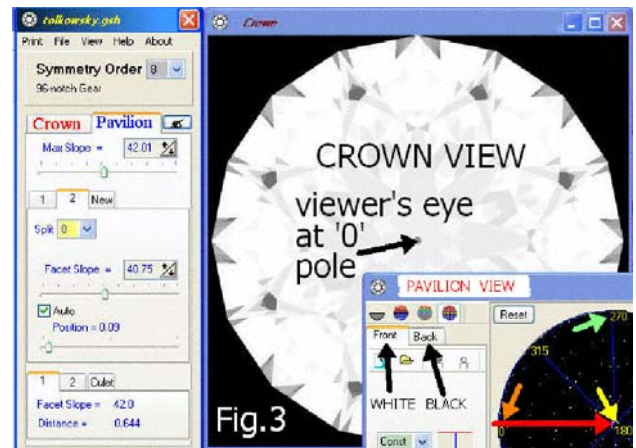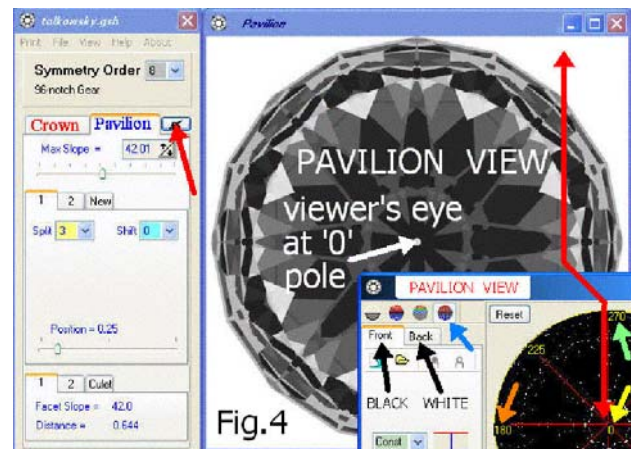Fig.1

Fig.2

Fig.3

Fig.4