Table 18-1 The gemstone optimization Targets used by BOG

Optimization Target	Comment
ISO Brightness	Calculated by GemRay. Overall brightness for uniform illumination.
Illumination Response	Maximizes impact of rays entering the gem at large angles; reduces head shadow effects and may improve dispersion (see also the discussion starting on page 196)
Tilt Performance	Minimizes brightness loss due to windowing when the gem is tilted
Sparkle or Scintillation	Maximizes scintillation or "action." See page 261
Dispersion or Fire	Maximizes dispersion. See page 261

Optimizing in this way brings up the inevitable challenge of comparing apples to oranges. How does a 5% change in ISO brightness compare to a little more scintillation or a somewhat improved tilt response? In other words, how do you determine the weighting factors in the equation for MF?

Rats! Another great question, and unfortunately, this one has a less than satisfying answer: trial and error, combined with experience using the program and specific design goals, leads to a reasonable selection of weighting factors and a well-optimized gemstone. The BOG website offers further wisdom and advice.

18.5.3 Real World BOG

Begin by **double-clicking** on the BOG icon. You should be presented with a DOS window for running GemRay and the BOG main control window (Figure 18-39).

The optimization workflow runs from top to bottom in this window. The first step is to load the Briar Rose design. Click the **Select GEM File…** button. BOG presents you with the file and reference angle selection dialog box (Figure 18-40).

Navigate to the Briar Rose GemCAD file using the top part of the panel. With the correct file highlighted, click the **Extract Angles** button. This scans the prescription and presents you with the pavilion and crown angles. You need to **select** one of each as a reference for the optimization process (see Chapter 10.6 if this is not clear). It doesn't really matter which angles you choose. I tend to work with either the main or break facets. Note, however, that the remainder of this optimization tutorial assumes the angles shown in Figure 18-40. Click **Ok** to continue.

Figure 18-39 The main window for running BOG. Note that BOG always re-loads the parameters from when you last used the program. Don't be surprised if some of the fields already have entries.

The next step is to inform BOG about the gem material and the range of angles you wish to explore. Click the **Modify Values…** button in the main window (second from the top on the right hand side) to open the appropriate dialog box (Figure 18-41).

The meaning of the angles should be clear. BOG begins with the starting values and varies them within the range set by the minimum and maximum. If the optimization process drives