

# Diamond Cut Grading - SLOPE PROPORTIONS

## GENERAL

We must have meaningful standards whereby cutters will be rewarded for good cutting and penalized for bad cutting.

Then all appraisers should follow the same standards so a diamond owner will get the same appraisal everywhere.

It is my opinion that Cut Grading of diamonds must be divided into two parts: PROPORTION & MAKE ...

**PROPORTION** grading would be based on the average of opposite slopes of the main facets\* and the table size according to established standards – yet to be agreed upon. This paper discusses slopes, as the starting point.

**MAKE** grading would involve symmetry, girdle thickness, and craftsmanship (polish, facet meets, etc.).

## SLOPE PROPORTION STANDARDS

It is now generally understood that there is no one ‘best’ combination of pavilion and facet slopes; there are many excellent proportions and ‘best’ depends on preferences.

Illustration at right is result of MSU studies of brilliance and fire, in 1999, for combinations of crown main slope A and pavilion main slope B. Yellow is ‘best’. I added the yellow ‘best straight line’ through MSU ‘best’ proportions.

Analysis by GIA was different and neglected obstruction of light sources by the viewer’s head. My approximate straight line through their ‘brightest’ cuts (white) is shown (the head obstruction problem does not occur in these cuts).

Red rectangles on this chart show AGS grades described by simple angle tolerance limits. Note how much variation there is within a zone: upper left and lower right corners are good; upper right and lower left are much inferior.

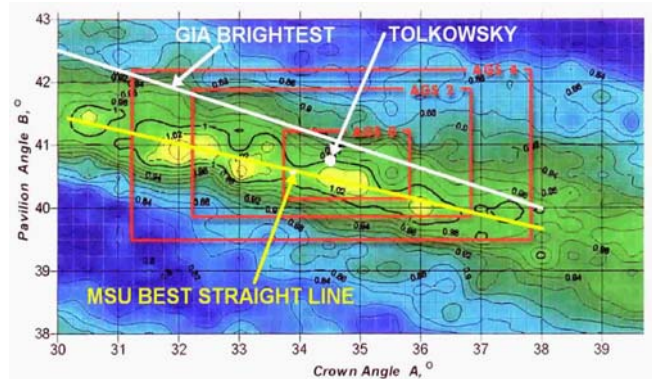
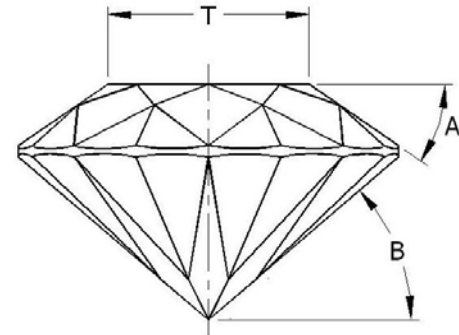
Garry Holloway created a chart with numbered zones, based largely on data in the MSU chart. These numbers were the starting point in a system called the ‘Holloway Cut Advisor’ (HCA). To this he added factors for table size and girdle thickness, producing a single number to rate cut proportions by using data from commercial test reports.

The blue line is an extension of Talkowsky’s 2D method.

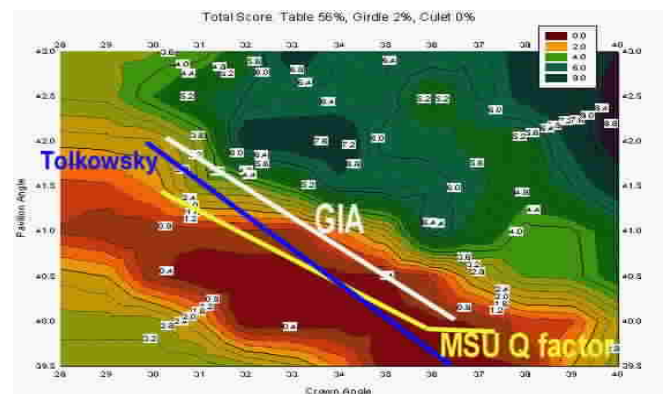
I think that a value for crown/pavilion main facet slope proportion could be approximated simply as deviation from some ‘best straight line’, or by defining grade ranges, like AGS, but using parallelograms aligned with some ‘best straight line’, as shown in yellow at right per the MSU line.

Here shown with the same tolerance ranges as AGS, these grade zones have less variation in brightness/fire value. This was proposed in “Diamond Talk” (Internet) 2001 Apr 8 and was discussed with AGS 2002 Mar.

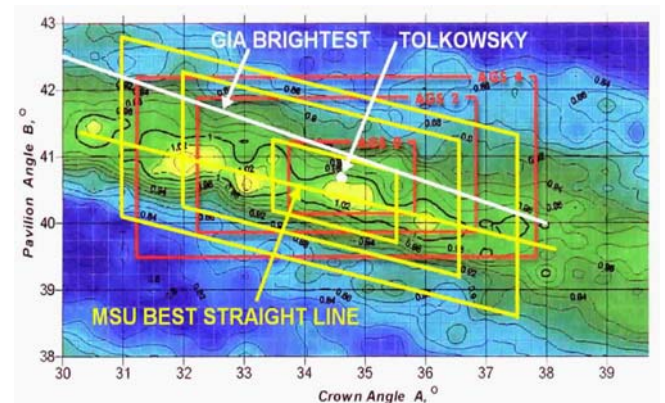
\* Necessary if measuring is done from tilted tables – see symmetry article by Sivovolenco, Shelementiev, Holloway in Russian Gemology Bulletin, Summer 2003 (Vol.9).



MSU Fig.8a = combined brightness and fire for 53% table



Garry Holloway’s chart for rating slope proportions



Diagonal proportion-grade zones with AGS grade tolerances