Module B. Colour from the Cosmos

Lesson 11 - Processed Diamonds

*Cut: The external anatomy of a gemstone*

The cut of a gemstone refers to the quality of the facets that define its proportions. This is not to be confused with the shape of a cut gemstone (e.g., round brilliant, cushion, pear, etc.). This **C** is probably the least understood, intuitive, and appreciated of the four, but plays a very big role in the resulting optical effects of fire and brilliance. A poor cut (e.g., too shallow or too deep) can leave a stone dull and lacking life, whereas an excellent cut will return almost all of the light entering the stone back to your eye through the top (called the table; See figure below for terminology). Cut can also have a significant impact on the weight of a diamond. For instance, two stones with the same face-up diameter can have totally different carat weights depending on how thick the culet or the pavilion is. In modern-cut gemstones the culet is often absent from the final shape or at least very small.

Simplified anatomy of a Round Brilliant cut diamond.

Grading cut is usually done by assessing the quality of the facets and their polish, as well as looking at the physical proportions of the stone. The GIA ranking includes "excellent", "very good", "good", "fair", and "poor". Stones with excellent (also known as ideal) cut will show good symmetry of facets as well as good Length to Width ratios when comparing the top-down dimensions of the table and full diameter. Other factors for cut grade include girdle diameter and angles for the crown and pavilion.

This wire drawing of a Princess cut diamond has a perfectly proportioned top-down view, with a Length to Width ratio of 1.00. An ideal cut ~5 carat stone would measure approximately 9.3 mm by 9.3 mm with a full depth of about ~6.95 mm.

Drawings of diamonds showing light paths into and out of each of the stone. Cuts from left to right are shallow (poorly cut), ideal (well cut), and deep (poorly cut).

View examples of different diamond shapes with line drawings of facets and 3D renderings here, [Internal Cuts Gallery](http://www.octonus.com/oct/gallery/internal.php), from the OctoNus company website. These images were produced by DiamCalc, a software that models cut gemstones.