Value Factors, Design, and Cut Quality of Colored Gemstones (Non-Diamond)

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In this comprehensive article, the author discusses the value factors of colored gems in five parts. Parts one and two appeared in Gem Market News, January/February 2016, Volume 35, Issue 1. Parts three and four appeared in Gem Market News, March/April 2016, Volume 35, Issue 2. What follows is the fifth and final part.

Part 5: Craftsmanship and Summary

Part 1 discussed the major value factors that affect the price of a colored gemstone which included cut quality. Part 2 defined aspects of cutting styles to establish some common language, with a focus on basic faceting styles, and a short discussion on cabochons and beads. Part 3 spoke about dark patterns in a gem and what causes them. Part 4 explored many of the factors used in the trade (rightly or wrongly) to assess relative value as well as explained some of the additional choices cutters make and why. Part 5 will discuss craftsmanship's bearing on cut quality.

Wireframes or depictions of facet arrangements (such as Fig. 5-07) are from scans of real gems so as to illustrate certain aspects of gem cutting. Face-up patterns (such as Fig. 5-03, right) were made using the program DiamCalc; adjustments were made to the refractive index to represent the gem material being demonstrated. DiamCalc cannot show double refraction.

Craftsmanship

Craftsmanship is a broad term that denotes how much attention to detail the cutter gave to the finished gem. Most colored gemstones are cut in a variety of fancy shapes with many facet variations. Because of that, some aspects are less critical than others. Minor deviations of craftsmanship aren't as critical as achieving the optimal color. However, very careful attention to detail is rewarded by being able to demand a higher price. As the general value of the type of gem goes up, this becomes truer. A very well-cut richly hued citrine will not get as much added benefit as a tourmaline with very exceptional color. Yet with very rare and expensive gems, this becomes less true, e.g., a very well-cut and fine-colored sapphire will only benefit slightly from exceptional cutting. There are a number of elements that fold into craftsmanship which significantly impact value.

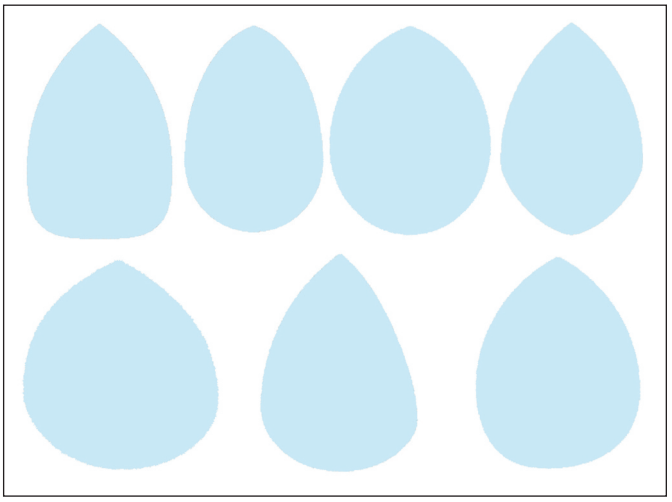


Fig. 5-01. Illustration by Al Gilbertson, © GIA.

- **Outline.** The outline, or shape, of the stone should be graceful and pleasing, and symmetrical (when appropriate) (see Fig. 5-01). While all of these are pear shaped, none could be considered an idealized pear shape. TRADEOFF: A finished gem of exceptional cutting, color, or rarity can get away with a less pleasing shape provided it is still symmetrical (see Fig. 5-01, row 1). The cutter chose to recover significant weight from the rough due to what they felt was an important gem. The value per carat may be less for that same stone if the outline lacks symmetry (see Fig. 5-01, row 2), but the weight saved may make it a gem that sells for more than one of average color or size.

- **Table.** The table should be centered, parallel to the girdle, and follow the general shape of the gem. A rectangular table on an oval gem looks out of place (see Fig. 5-02). Additionally there is usually an optimal table size for the best appearance for any facet arrangement, and the relative size will vary depending upon a number of factors. Figure 5-03 shows first the table size and facet arrangement, followed by images of the gems face-up, and lastly the gems tilted 15 degrees, demonstrating that there is more windowing when tilted for gems with a large table of this facet arrangement. TRADEOFF: A cutter chose to cut the gem with a large table rather than cut several smaller gems. In extremely dark gems, a large table with shallow proportions can be preferable to a gem that is extremely dark, since it lightens the color to a range that sells for more.

  Very small tables are generally less desirable (see Fig. 5-03), and surprisingly, do not minimize windowing. The greater crown height retains more weight creating the perception that the gem is top-heavy and pointed.

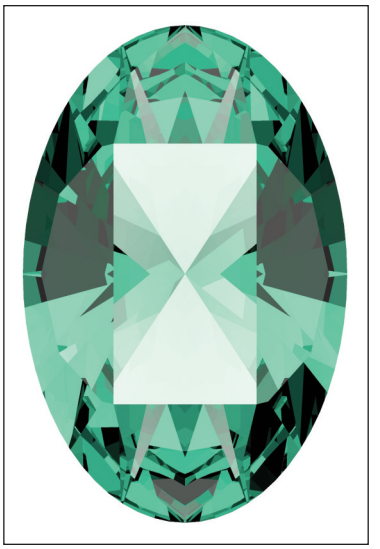


Fig. 5-02. Illustration by Al Gilbertson, © GIA.

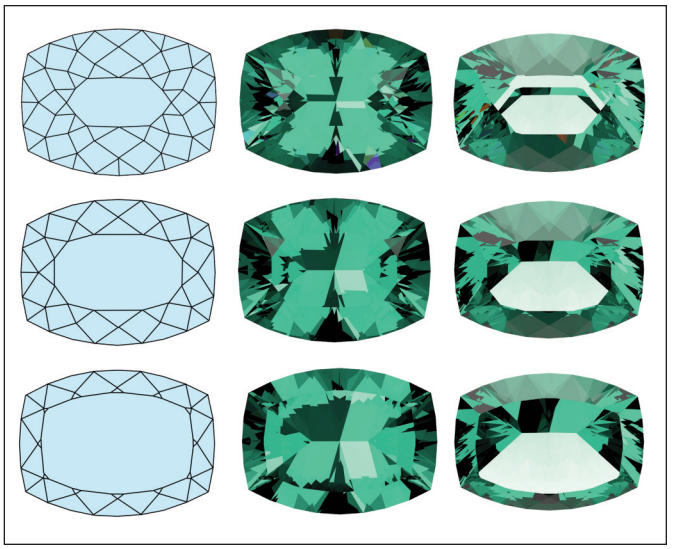


Fig. 5-03. Illustration by Al Gilbertson, © GIA.

- **Shoulders.** Shoulders on hearts, ovals, and pears (see Fig. 5-01) that look pinched are less pleasing (see Fig. 5-01, row 1, fourth pear shape). Broad shoulders are acceptable if the overall outline is still pleasing.

- **Culet or Keel Line.** The culet or keel line of the bottom of the gem needs to be centered (see Fig. 5-04). The more visibly off-center, the more it affects the perception of how well the gem was cut.

- **General Symmetry.** Looking at the gem face-up, mentally divide it into halves or quarters (fifths if it is a pentagon, etc.) and look at how each segment mirrors the others. If there is an impression of a significant deficiency, this will also affect the perception of the cut quality, and ultimately the gem's value.

- **Girdle Thickness and Unevenness.** Girdle thickness rarely affects a gem's face-up appearance. Extremely thin girdles should be avoided as they are very easily chipped. While corners and points (tips) are vulnerable to chipping, slightly thicker girdles at these spots are acceptable to help mitigate their vulnerability. Extremely thick girdles are difficult to set and

Fig. 5-04. Spinel, euclase, iolite. Photos by Robert Weldon, © GIA.

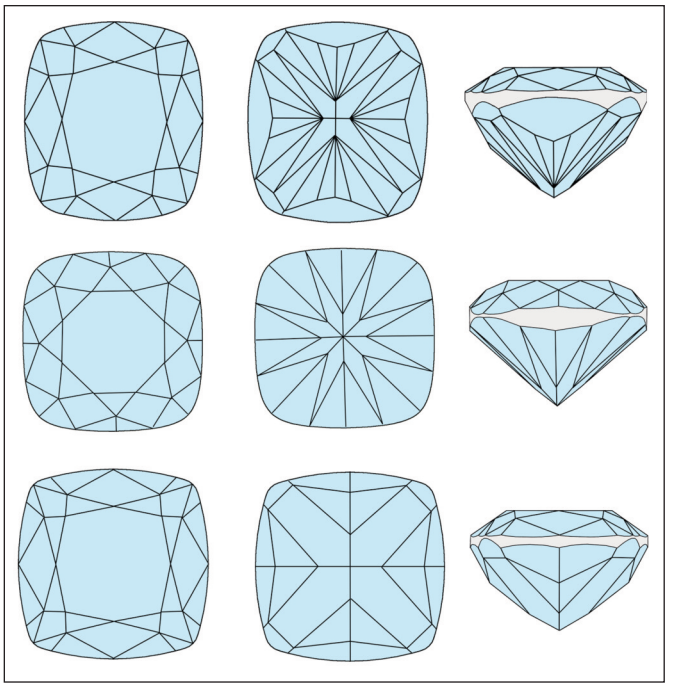


Fig. 5-05. Illustration by Al Gilbertson, © GIA.

obviously add unnecessary weight. Extreme unevenness can be an important intentional part of a designer cut where certain parts of the design require a thicker portion of the girdle (e.g. corners on cushions) (see Fig. 5-05) and don't detract from the value as much when it is required for the cutting style. Other types of extreme unevenness or waviness also lower the perception of the gem's cut quality and ultimately its value.

- **Girdles with Sharp Edges.** Nathan Renfro (Analytical Manager, Identification at GIA, Carlsbad) points out that some cutters round the girdle edges so that they are less likely to chip when being set. This means that the girdle edge may not come to a sharp edge where the girdle meets the crown or pavilion and that the girdle itself may not be flat.

- **Polish.** The late Stephen Kotlowski (Uniquely K Custom Gems) noted that all of the facets should look like they are highly polished with a mirror-like quality, and this polish quality should be examined under magnification. Poorer polish means less value and vice versa.

- **Alignment of Crown and Pavilion.** With certain facet arrangements (e.g. step cuts, designer cuts), better crown and pavilion alignment will help set the quality of cutting to a higher level. This alignment is fairly unimportant in many standard oval, pear, and cushion shaped commercial-cut quality gems unless it makes the girdle extremely uneven. In hearts, this alignment can be seen in angular or mismatched lobes, and shallow or deep or awkward clefts (see Fig. 5-06). Often these deficiencies can be slightly masked by the design of the jewelry.

- **Facet Meets.** With designer cuts (see Fig. 5-07) it is more important and fairly expected that the facets should meet in sharp points with each other, according to Stephen Kotlowski. Some designs will purposely have portions without standard meets, so be careful not to be overly critical (see circled areas on the triangle in Fig. 5-07). Outline, facet symmetry, and polish are more important than the exactness of the facet meets.

- **Misshapen Facets.** With designer cuts it is fairly expected that the facets should mirror each other. If the deviation is obvious to the unaided eye when the gem is viewed face-up, it can be distracting and lessen the overall value of the designer cut. Wayne Emery (The Gemcutter) says, "In a designer or precision cut, there is no excuse for any misshapen facets, not even slightly. It's too easy to be very precise; anything less is poor workmanship."

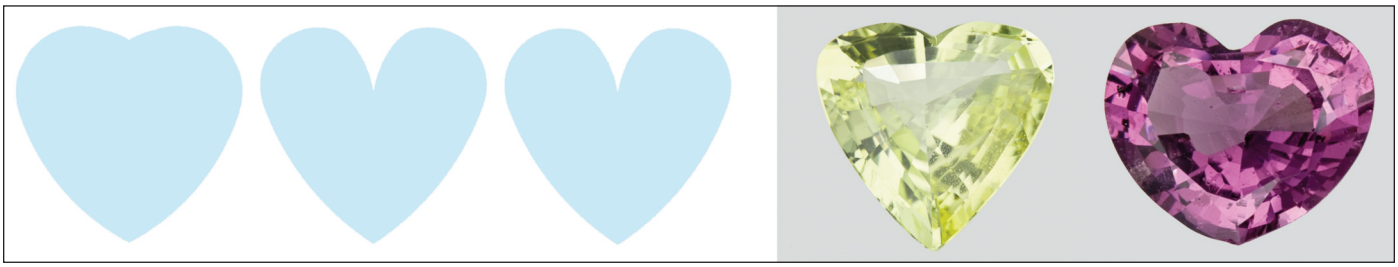


Fig. 5-06. Illustration by Al Gilbertson, © GIA. *Brazilianite, spinel.* Photos by Robert Weldon, © GIA.

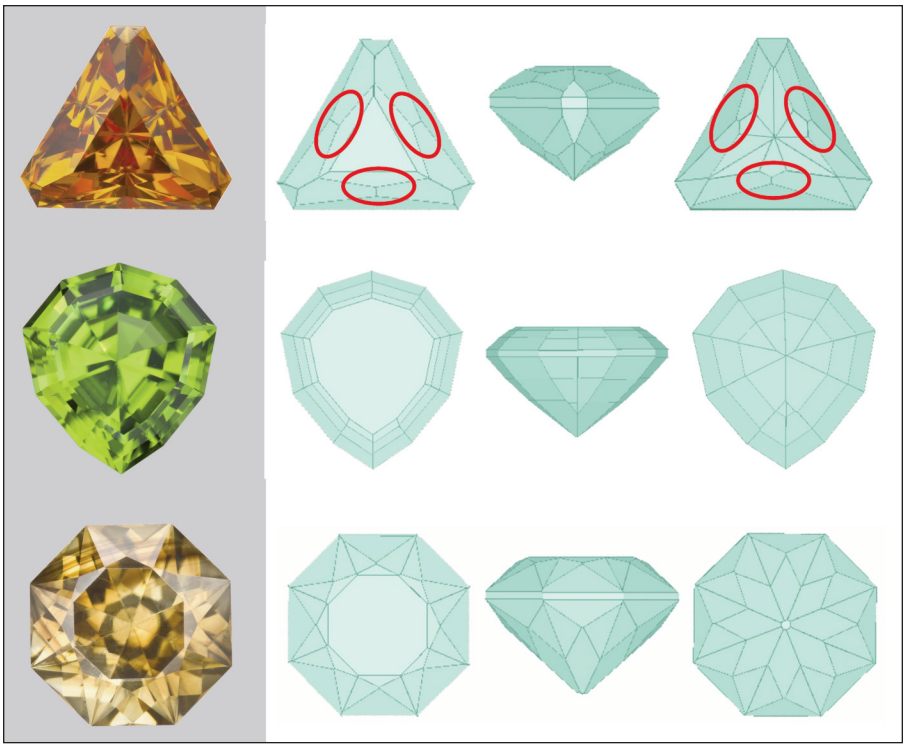


Fig. 5-07. Illustration by Al Gilbertson, © GIA. *Scheelite, peridot, phosgenite.* Photos by Robert Weldon, © GIA.

- **Rounded Facet Junctions.** Ideally, adjoining facets should have sharp junctions. However it is not uncommon to see slightly rounded facet junctions in commercial grade cutting. Unless this slight rounding is eye-visible, it seldom detracts from the value of the gem, but it should. The difference between stones with sharp flat facet junctions and those with very slightly rounded facet junctions is notable. The flat facets and sharp edges add crispness to the appearance that cannot be achieved otherwise. The extra time needed to add this care when cutting justifies a significant difference in cost for a designer gem.

- **Proportions.** Proportions affect the face-up appearance of the gem in general, so calling out proportions any more than this article already has is unnecessary (see Parts 3 and 4, Gem Market News March/April 2016).

- **Bulge.** Bulginess in the pavilion or crown sacrifices the face-up beauty of a gem while adding significant excess weight (even up to 35% and more). Often the jeweler pays less per carat for the less attractive deep bulgy gem.

Re-cutting Issues

It is not unusual for jewelers to want to re-cut a damaged or poorly cut gem. Re-cutting requires determining the added expense versus the recovered weight to see if it is worth the effort (don't be surprised at substantial weight loss). Not all cutters have the same philosophy about how a gem should look when it is re-cut. Will they re-polish an older style step-cut cushion without changing the angles substantially, resulting in that older classic appearance? Or, do they want to use a modern cutting style and will the resulting face-up appearance match a consumer's expectations? Get recommendations from others who have used their services, ask what they deem appropriate for the gem, and view examples of their work.

Cutters agree that the total number of facets is relative to the finished size of the gem. Figure 5-08 shows three very different facet arrangements for a round gem. The first, with only 17 facets, is best utilized on small gems, generally under about 3 mm. More facets than that on such small gems will start to blur the effect of the faceting and be less interesting, especially if the material is strongly doubly refractive. The second example with 57 facets is great for sizes from about 4 to 11 mm. This facet pattern will be less interesting or dynamic on larger sizes. Gems larger than 12 mm really need more facets, such as the third diagram with 113 facets. Note that emerald cuts don't suffer when cut in all of these size variations.

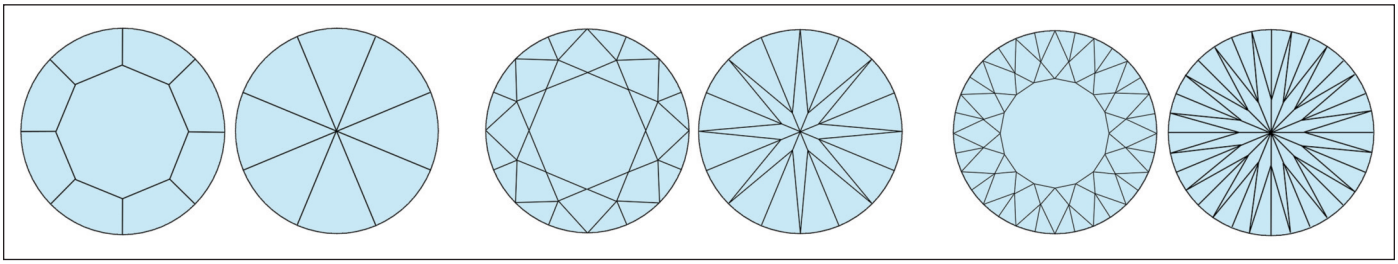


Fig. 5-08. Illustration by Al Gilbertson, © GIA.

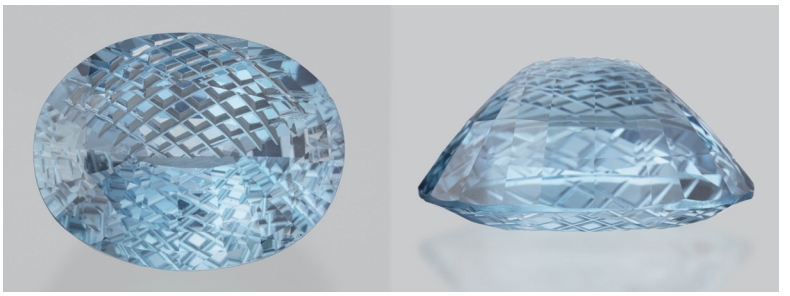


Fig. 5-09a. Blue topaz top and side view. Photo by Orasa Weldon, © GIA.

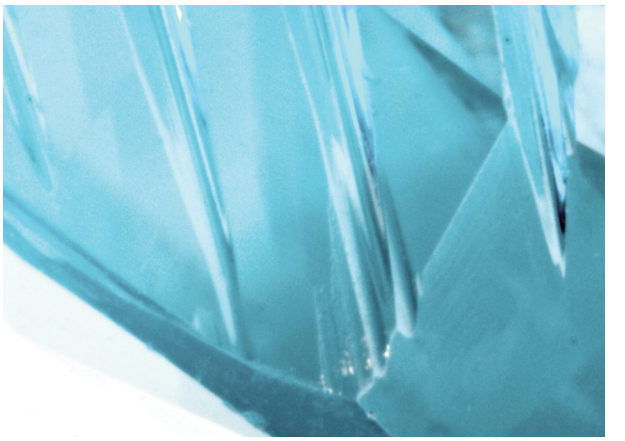


Fig. 5-09b. Blue topaz ends of grooves. Photo by Robison McMurtry. © GIA.

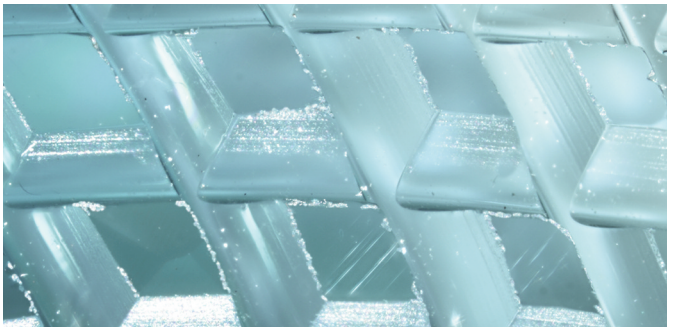


Fig. 5-09c. Blue topaz unpolished grooves. Photo by Jonathon Muyal. © GIA.

Wayne Emery points out that the relative size of the facets, especially on the crown, is important to a pleasing design. There are some designs that split the star or upper girdle facets into several small facets, while leaving the crown mains large. At first glance, this type of cutting will result in a disappointment. Crown facets need to be evenly sized not only to keep the color more evenly spread, but to create a better face-up appeal.

Craftsmanship Evaluation of "Fantasy Cuts and Artistic Cutting"

Noted gemstone artists Dalan Hargrave (of Gemstarz) and Mark Gronlund (of G3 Gems) were kind enough to share some critical insights for evaluating the craftsmanship of concave faceting. V-grooves and concave dish-shaped grooves or facets are two types of applications to colored gems. There are three ways to evaluate these applied styles of cutting:

- **Finish.** Using a loupe, look at the inside of the facets and grooves or concave areas. The edges of where the concavities meet the facets should be sharp-edged and free from chipping (see Figs. 5-11b and 5-11c). The surfaces should all have a very high, even

Fig. 5-10a. Cubic zirconia top and side view cut by D.K. Kim. Photo by Orasa Weldon, © GIA.

Fig. 5-10b. Cubic zirconia bottom view cut by D.K. Kim. Photo by Robison McMurtry. © GIA.

Fig. 5-10c. Cubic zirconia close up side cut by D.K. Kim. Photo by Robison McMurtry. © GIA.

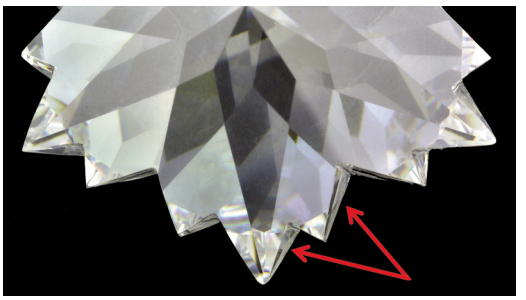
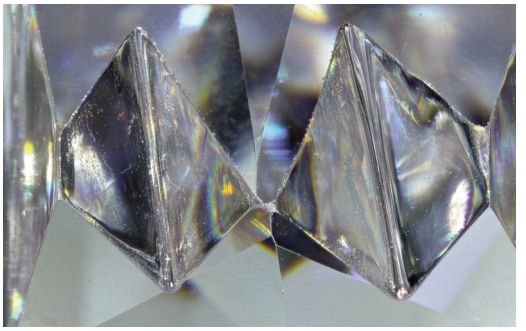


Fig. 5-10d. Cubic zirconia close up top cut by D.K. Kim. Photo by Jonathon Muyal. © GIA.



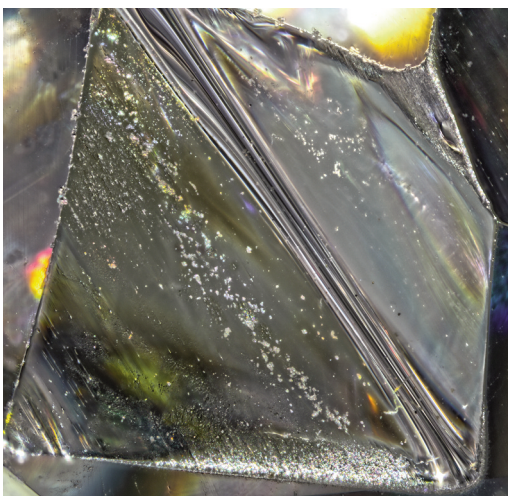


Fig. 5-11a. Ametrine top and side view cut by Dalan Hargrave. Photo by Orasa Weldon, © GIA.

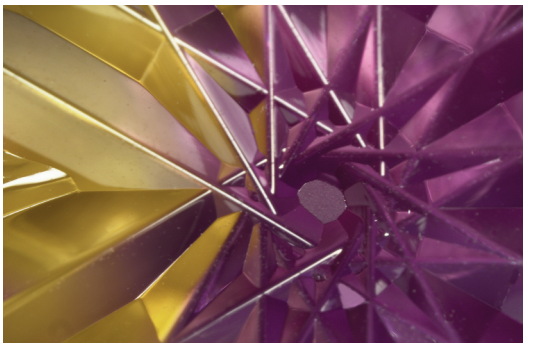


Fig. 5-11b. Ametrine close up center cut by Dalan Hargrave. Photo by Jonathon Muyal. © GIA.

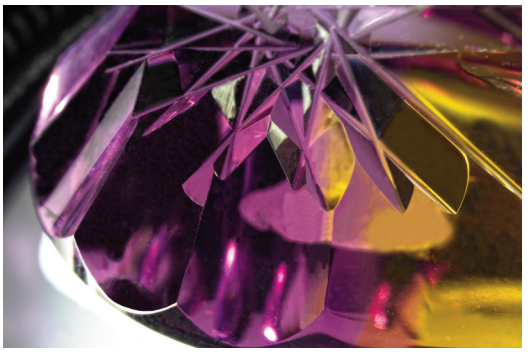


Fig. 5-11c. Ametrine close up side cut by Dalan Hargrave. Photo by Jonathon Muyal. © GIA.

Fig. 5-11d. Ametrine close up top cut by Dalan Hargrave. Photo by Jonathon Muyal. © GIA.

polish. Mass-produced work or lesser quality work will often have chipped edges and grooves from the cutting tools that haven't been polished out (see Fig. 5-09c). Sometimes there may be pock-marks because the polishing did not remove the earlier grinding done with coarser grits (see Fig. 5-09c and 5-10d). Distorted polished surfaces are common with lower quality goods (see Fig. 5-10d).

- **Central Brilliance.** Since the purpose of these reflections is to enhance the brilliance and visual interest of the gem, concave faceting works very easily with round gems, as it brings the visual interest to the center. For odd shaped gems, this centrality of focus is harder to achieve, but can still be used to accent a portion of the gem (see Fig. 5-12). These reflections are playing with optics or using light in a new way in a particular gem material to create strong contrast patterns. The effect should enhance the "central brilliance" of the gem and make interesting patterns. The application of a few grooves on the pavilion or at the edge of the gem is easily done and mass-produced (see Fig. 5-09a), while applying them in a way that provides a visually vibrant pattern with central brilliance takes more artistic ability and work.

Even the freeform sunstone from Figure 5-12 has optical dishes placed in a manner that points the eye to the central green area. Without these dishes, the sunstone would be less visually interesting. Central brilliance can also be symmetrical, so that if you were to fold the gem in half, one side mirrors the other (called line-symmetry). The long rectangular tourmaline in Figure 5-12 has a line-symmetry type of brilliance. Central brilliance is not seen in all fantasy items, but when present enhances the face-up appearance of the gem.

- **Symmetry of Groove Placement.** Grooves and concavities that are symmetrical or laid out in a well-developed pattern not only enhance the central brilliance, but show a consistency even under magnification. The sunstone of Figure 5-12 does not have symmetrically placed optical dishes, whereas the concave facets in the tourmaline in the same figure have a high level of symmetry. Added symmetry adds more value.

Fig. 5-12. Sunstone and tourmaline cut by John Dyer. Photo courtesy of John Dyer & Co.

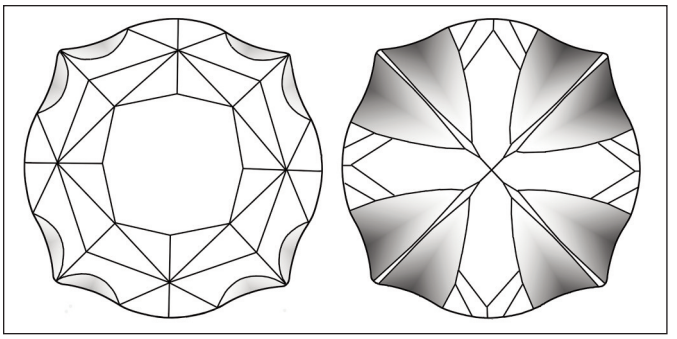


Fig. 5-13a. Illustration by Al Gilbertson, © GIA.

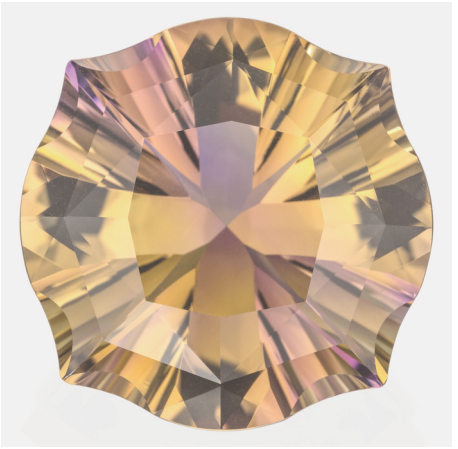


Fig. 5-13b. Ametrine top view cut by Chris Wolfsberg. Photo by Orasa Weldon, © GIA.

Fig. 5-13c. Ametrine close up back cut by Chris Wolfsberg. Photo by Robison McMurtry. © GIA.

Fig. 5-13d. Ametrine close up side cut by Chris Wolfsberg. Photo by Robison McMurtry. © GIA.

Four Examples of Fantasy Cutting

- **The oval blue topaz** (see Fig. 5-09a) has a series of cross-hatch style grooves on one side of the pavilion. When observed face-up, the grooves reflect to the other side and fill the gem with the effect. The ends of the grooves are uneven and irregular (see Fig. 5-09b). There is small chipping and abrading at some of the places where the cross hatching occurs (see Fig. 5-09c) and at the end of some of the grooves. The bottoms of the valleys of all of the grooves are well polished, but the groove walls have scoring from the original grinding that has not been polished out (see Fig. 5-09c). This is an indication of lesser cutting quality and/or mass-manufacturing.

- **The star-shaped CZ** (see Fig. 5-10a) is grooved at the girdle to create a star-styled outline. When looking at the gem face-down, some of the grooves are not evenly spaced (see Fig. 5-10b), are not perpendicular to the table, and tilt at an angle (see Fig. 5-10c). The walls of the grooves have scoring from the original grinding of the grooves that has not been completely polished (see Fig. 5-10d). This is an indication of lesser cutting quality and/or mass-manufacturing. In this case, it is a poorly executed knock-off of a patented design by Wobito.

- **The drop-shaped ametrine** (cut by Dalan Hargrave—see Fig. 5-11a) is good example of concave faceting that uses v-shaped grooves on the back of the gem (see Figs. 5-11b and 5-11c) for optical effect. A closer look from the back of the gem shows that the grooves are all well-polished and the ends of the grooves are chip and abrasion-free. This is typical of fantasy gems of high quality. Dalan employs a technique that curves the grooves seen in the top of the face-up image of Figure 5-11a. Note also the symmetry of the groove placement. The grooves used for the cross-hatched pattern create bright lines of contrast, emphasizing a central brilliance in that portion of the gem. The curved grooves also create strong lines of contrast, adding a line-symmetry to the top portion of this gem.

- **Not all concave faceting uses grooves to create contrast.** A more careful examination of Chris Wolfsberg's design for an ametrine (see Fig. 5-13a) demonstrates how the use of more gently curved concave facets helps create the unique outline of the gem. Another example of very fine craftsmanship, Wolfsberg uses evenly polished, concave curved or dished facets that are very carefully matched to mirror each other (see Fig. 5-13b). There are no unpolished, abraded, or chipped areas (see Figs. 5-13c and 5-13d).

Summary

Faceting is a series of compromises. The cutter compares various tradeoffs to make decisions about cutting the final gem. Most importantly, the cutter needs to achieve the best face-up color possible from that gem. The shape (outline) needs to be aesthetically pleasing and desirable, while the quality of the cutting should provide an attractive contrast pattern that enhances the color.

Many jewelers and gem dealers haven't taken the time to understand the difference between good gem cutting and great gem cutting. With a little effort, it is always possible to detect the hand of a dedicated artisan in their creation. We often sacrifice values of real craftsmanship at the altar of "good enough." In a world that places a premium on low price, disposable goods, and speed of getting things done, craftsmanship suffers. Even though we are able to quickly realize the quality of something that has been expertly cut, many often choose the cheap and average gem instead. Diamonds have gone through a bit of commoditization over the years, and much of the public and most of the trade is keenly aware of price ranges for certain goods. High quality cutting in diamonds is now appreciated. Prices for colored gems are very blind to the public and even many jewelers, so quality can be sacrificed and sellers can purport fictitious "good deals." It's time to set good enough aside.

Expert craftsmanship comes from creativity, and a passion and attention to detail that improves over the length of an artisan's career as they seek to do better. The artisan grows as they pay more attention to the small details. Too often the jewelry trade treats highly skilled professionals as something they don't think they want to sell, since they think that the work is too expensive. By learning the difference and becoming passionate about quality in the goods you sell, you pass on to the consumer an attitude that says good enough is not good enough. You pass on a care for the detail and an ability to recognize and appreciate quality.

In a world that seems to want to treat all of us the same, people struggle to point out their own uniqueness. Some do it by their clothing or lifestyle, others by what they drive. Why not demonstrate their uniqueness by the quality of the fine gems they wear? Handling and selling quality craftsmanship is at the heart of getting out of the rut of good enough. It's also key to earning the respect of clients and customers, and ultimately creating friends (your clients) who appreciate fine quality. ◆

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