

Photos courtesy Llyn L. Strelau

# READY, SET, SPARKLE

By Llyn L. Strelau

## Making a statement with stone settings

**G**ems cut in traditional shapes are beautiful, though also predictable and easily taken for granted. For many projects, setting a calibrated stone is simply a matter of purchasing a finding. When a gem is not calibrated, one can handcraft a basic setting. Yet, a round is a round is a round. Right? Well, yes, except when it isn't!



A comparison of different claw settings versus bezel settings to accent the shape of diamonds.

We are all accustomed to the facet arrangements of standard round brilliant, radiant, and princess cuts, and often don't think about their structure when designing a piece of jewellery. However, fancy stones offer an opportunity to create something unique and one that can enhance a stone's true potential. When designing around a fancy shape, I like to use the setting to showcase and reinforce the gem's esthetic qualities, whether simply to define the outline or to draw attention to the complexities of the actual faceting.

As a designer, I have long enjoyed working with designer-cut gemstones simply because they offer more of a challenge in terms of creating a custom setting. But before we get to the technique I use to make the most of an unusual stone, here's a quick overview of general categories of cuts and how a setting can either play up or diminish their true potential.

### Typecasting

Fancy and designer gems tend to fall into one of three general categories. The first encompasses standard gemstones that may not exhibit their distinct shape when set in a regular mount. Here, careful consideration to the setting can make a big difference in creating visual impact. In some instances, a standard claw setting can actually distract from a gemstone's shape.

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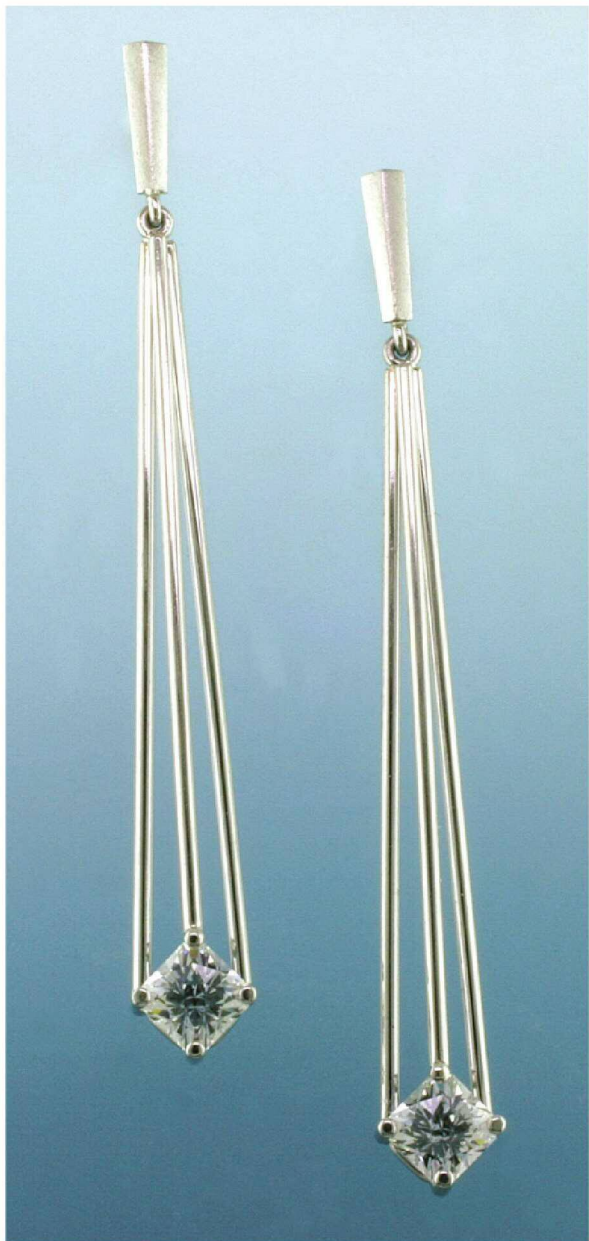
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Signature square-cut diamonds set in drop earrings. Notice how the earrings do little to accent the stone's unique facet design.

Four claws, for example, can make a round gem look more square, while a pear shape may appear less so when the setting does not feature a V-claw at the stone's apex. Consider a pair of earrings. From normal viewing distance, it is difficult to discern whether the stone is round, square, or triangular. And yet, by designing the setting to the gem, it is possible to highlight those shapes to greater effect.

While some people do not like the idea of a full bezel setting, it does allow a gem's outline to be clearly defined, separating it from the surrounding background, rather than confusing the eye as a claw setting might. As long as a gem is cut with proper pavilion angles, it still sparkles as it should. Rim bezels—which only wrap a gem's girdle—can avoid the 'tube' look of a typical bezel.

The second category refers to diamonds (or other smaller gems) with standard girdle outlines/shapes, though with creative variations on traditional facet arrangements. There are various proprietary cuts on the market, all of which are sold for a considerable premium over regular cuts. Using a standard claw or bezel setting with one of these may actually do it a disservice, as it may simply look like a 'normal' gem and not exhibit the distinctions that come with its premium price.

In the third category, we have coloured stones cut by gem designers in a wide variety of fancy custom shapes. These works of art are truly something to behold—they are complex and an exercise in precise calculation. The details of these cuts are easily visible when looking at a large stone, but often, their true magic is only seen under magnification. Some fancy cuts simply have distinct outlines with fairly standard facet arrangements, while others have typical outlines, though innovative facet structure. The former could benefit from bezels or claw styles that enhance the distinctive outline, while the latter really do look their best with a setting drawing attention to the stone's innovative cutting.

For the purposes of our discussion, we'll take a look at two recent projects using cuts that fall under the second and third categories and how I maximized their potential using a technique to magnify images of the actual facet patterns.

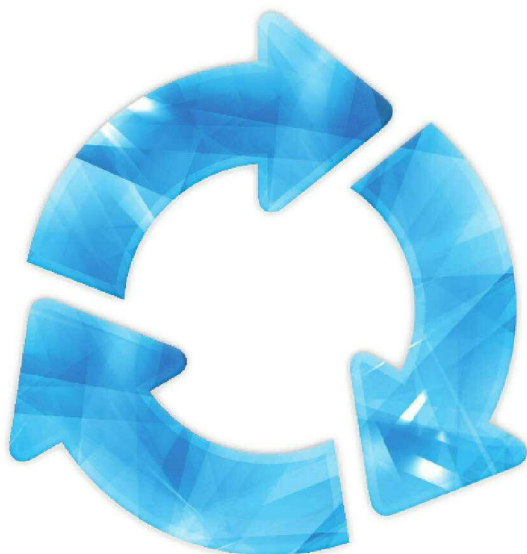
### Upon closer examination

Phillip Youngman, a brilliant gem artist from California, is primarily known for his expertise in cutting coloured gemstones. A few years ago, he spent many months designing two signature diamond cuts—one round and the other square. Both shapes have relatively 'normal' pavilion facet design, but their crowns are a variation on the rose cut.

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To the naked eye, the diamonds are beautiful and have incredible life and brilliance, but it is only when examined with a loupe or microscope that one can see really the intricate facet arrangement.

Our second example is a suite of coloured gems cut by Colorado's Stephen Avery, another of the world's premier gem cutters. Stephen rarely cuts standard stones, preferring instead to design new shapes and facet structures. One of his specialty cuts comprises crown facets that are actually multiple diamond shapes. But again, unless the gem is a large one, the significant details of its faceting are often lost when viewed without magnification.

The final example we will look at is a proprietary round diamond by Christopher Designs. I have one in my safe, and although I have not designed a specific piece of jewellery around it, I mention this stone because of its unique attributes. Featuring a multi-faceted crown, this cut comprises 12-fold symmetry and a girdle made of 12 straight line facets. While it appears as a very brilliant round diamond, again, the intricacy of the actual facet arrangement is not easily seen without magnification.

My technique for creating settings for these three distinctive fancy cuts is to first model the stones using CAD, a somewhat painstaking process requiring careful measurement of the relevant dimensions and arrangement of the individual gem's facet pattern.

I start by drawing the stone's outline, and then, using calipers and measuring scale in combination with a gem microscope, start building the gem model. I usually recreate the pavilion's pattern, as well, but for these examples, it isn't really necessary to be as particular about this, since the crown is the most distinctive feature and the design element on which I tend to concentrate.

If you have access to a diamond cut grading machine, it is possible to scan a gem and create a file that can be imported into CAD. You will still need to work with a wire-frame model in the next steps, but this will at least cut down some of the tricky work of trying to measure individual facets. Alternatively, some gem cutters work with proprietary software to design their cuts and they may be able to provide a file to you.

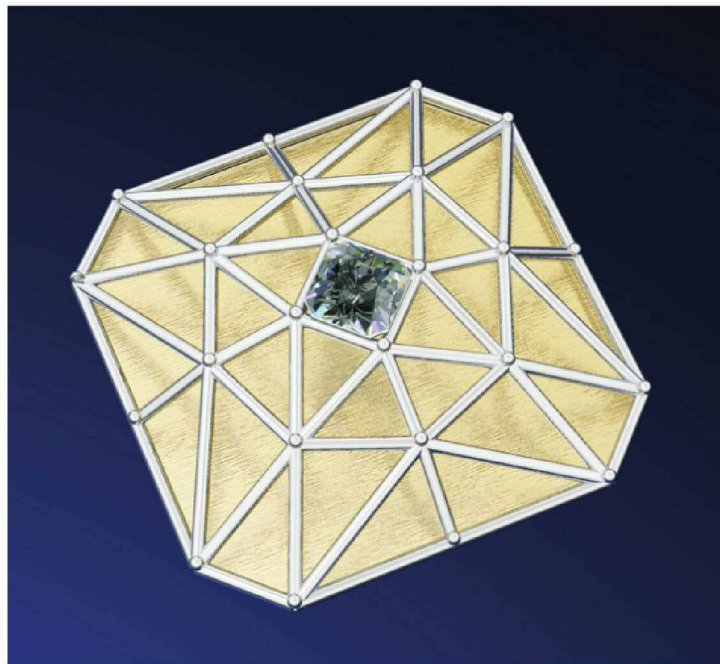
Magnifying images of the actual facet patterns in a setting works well for pendant, earring, and brooch designs. However, the size of the diamond's table is a factor to consider when designing rings. Stones with smaller tables in relation to the gem's overall diameter prevent the diamond from filling up the entire table section of the magnified wire frame.

The size of the gem and the finished piece determines the next stage. To create our setting, we first enlarge the model in CAD to allow the finished piece to be large

## bench tips



The design for this pendant magnifies and defines the facet structure of this signature-cut stone by Phillip Youngman.



Another option for our pendant is a platinum wire frame over a matte-finish yellow gold back plate.

enough so that the facet patterns are easily visible. Phillip's square cut has a small, central square table facet. At just over one carat in weight, the diamond I worked with was approximately a 6-mm square. Scaling the model up in 3-D until the dimensions of the table facet matched the size of the actual diamond resulted in a finished pendant that was a 30-mm square and large enough to clearly show the facet structure. As seen in the photo above, the diamond became the table facet of the enlarged wire-frame pendant.

The four gems—spessartite garnet, aquamarine, and pink and green tourmaline—in Stephen's colour suite are each 6 mm long. (See photos on page 32.) I purchased the suite at the Tucson Gem Fair and was then fortunate to find a strand of pastel multicoloured Chinese freshwater pearls to re-enforce the gems' colours, inspiring a pendant/clasp design. Additionally, I found a large white South Sea pearl for the centre of the piece that contained all the colours of the rainbow in its purity. I decided to scale this wire frame much larger to provide spaces in which to float each of the gemstones.

Christopher Designs' proprietary round cut has a similarly central table facet that follows the outline of the 12-sided girdle. The diamond I have is only .83-carats and just under 6 mm across. Since its table is smaller in proportion to its diameter than Phillip's square cut, using the same scaling technique would only result in a form that was 12 mm across. This could be worn as a small

pendant, but is perhaps better suited to become a ring or a pair of earrings.

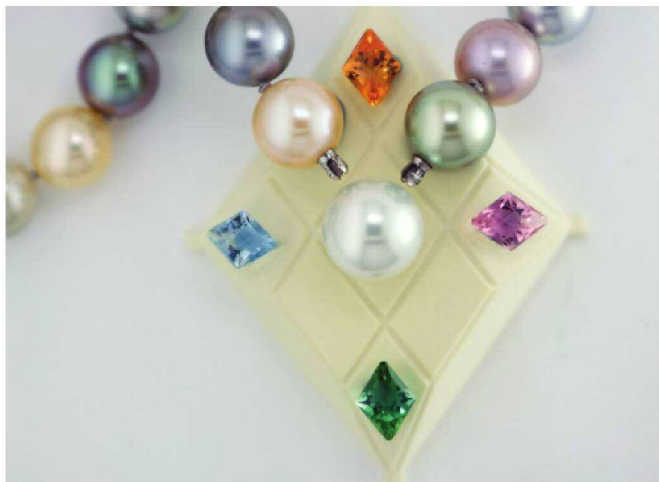
One could make a larger wire frame suitable for a pendant, 'floating' the diamond in the centre of the piece (seen on page 24). This could perhaps be accomplished by using fine wire 'spokes' to support the stone, which would be set in either claws or a delicate rim bezel.

### Framework

The next step is to use the wire frame model to create a jig or support matrix to use in the actual construction phase of the jewellery. To start, I model a solid object of the same outline shape as the wire frame, which is then positioned on top of this new solid block and lowered until the wires are embedded to half their diameter. Then using the Boolean subtraction function in CAD, the wire frame is used as a cutter to leave grooves in the block that replicate the wire frame. This block is then milled by a CNC machine. (I have used both hard wax and a resin for this purpose). Now the fabrication in metal begins.

I chose platinum wires for these two projects because the metal can be pre-polished and the finish is unaffected by subsequent steps. Fabricated platinum also has good dimensional stability. Using the wax or resin block that is milled, we begin by laying suitable lengths of wire in the support grooves and tacking them together one by one with a laser welder. The frame is built up wire

## bench tips



'Quadrille' layout shown on a milled resin construction jig.

by wire, its segments being held in perfect alignment following the original stone's pattern of the facet junctions. It would be extremely difficult to achieve this level of accuracy without the use of a computer-milled support jig.

Once all the frame components are tacked together, they are stable enough that we can remove the piece from the supporting jig and reinforce all the junctions, resulting in a strong openwork frame. Depending on the piece, claws or a bezel are added to set the gemstones. Cleaning up the welds is done using standard bench techniques with abrasive files and paper, followed by pre-polishing, ultimately setting the stone, and giving it a high-polish finish.

For the diamond pendant featuring Phillip's signature square, we added a second iteration of the outer frame to strengthen the piece and also provide a space that would allow a chain to be threaded through for suspension.

The pendant incorporating Stephen's specialty cut (christened 'Quadrille' for the historic dance by four couples in a square formation) was built using two identical wire frames that were attached back to back, creating a cage within which we captured the central pearl. Simple two-claw settings were hand-fabricated from platinum wire, each of which had two wire support struts. We pre-polished the settings and set the gemstones before welding the supports into position in the four quadrants of the wire-frame cage. This piece incorporates German-made bayonet fittings in the central pearl and the ends of the strand, enabling the centrepiece to be worn on the pearls or fitted to a suitable chain for a more casual look.



The finished pendant in platinum, with pink and green tourmaline, aquamarine, spessartite garnet, and South Sea and freshwater pearls. The stones' cut is reflected in the pendant's design.

As I mentioned previously, I included Christopher Designs' round as an example, although I have not yet created a piece of jewellery with it. Given the 'ratio' of its central table, this cut could be set in a ring (whether hand-fabricated or not), as the actual diamond would fill up the entire table section of the magnified wire frame. Additionally, you could use the same technique to create another support jig to make an openwork wire shank. Earrings would only require an ear post welded to the back.

Whether defining the shape of a gem with a suitable bezel or claw setting or creating a more elaborate, magnified replica of a gem's distinct faceting, the ultimate goal is to let the stone make the strongest statement possible. Diamonds and coloured gemstones are an important part of a design and they deserve to be presented in a way that brings out their unique qualities to the best advantage. ♦



*Llyn L. Strelau is the owner of Jewels by Design, a designer-goldsmith studio in Calgary established in 1984. His firm specializes in custom jewellery design for a local and international clientele. Strelau has received numerous design awards, including the American Gem Trade Association's (AGTA's) Spectrum Awards and De Beers' Beyond Tradition—A Celebration of Canadian Craft. His work has also been published in Masters: Gemstones, Major Works by Leading Jewelers. Strelau can be reached via e-mail at [designer@jewelsbydesign.com](mailto:designer@jewelsbydesign.com).*