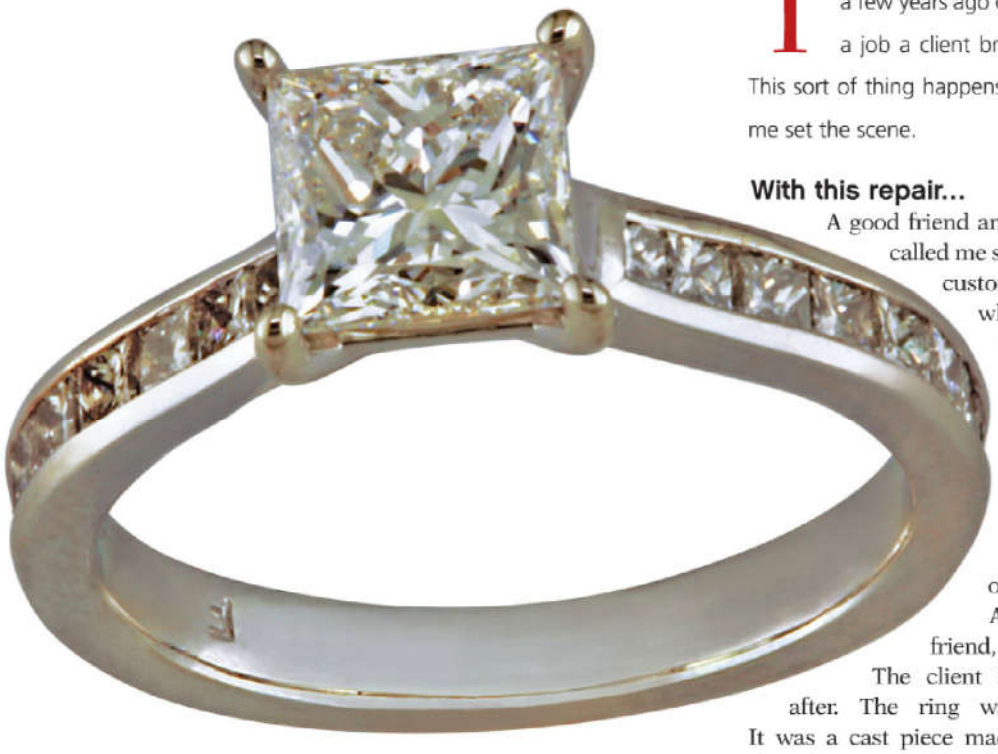
You can't always get *what you want*

The importance of structure in jewellery design

By Llyn L. Strelau



Photos courtesy Llyn L. Strelau

The round wire claws holding this princess-cut diamond are too thin. Sometimes, designers must stand their ground regarding design to ensure a piece will not fall apart.

This article was inspired by a situation I encountered a few years ago of which I was reminded recently by a job a client brought in for insurance restoration. This sort of thing happens relatively often, unfortunately. Let me set the scene.

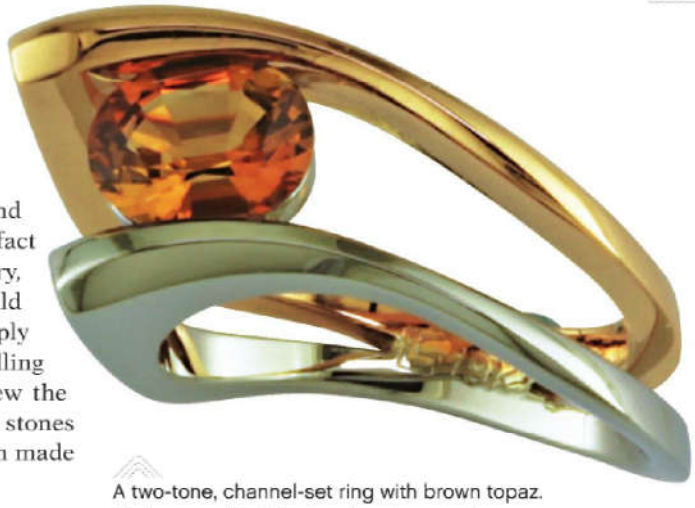
With this repair...

A good friend and colleague in the United States called me several years ago. She had made a custom ring for an out-of-town visitor, who then returned to Calgary where I am based. It seems that after only a few months, the client had lost a diamond in her eternity band. She called the shop that had made it and my jeweller friend asked if she could refer her to me for repair, rather than deal with the issues of cross-border shipping.

Always happy to help out a friend, I agreed to offer assistance. The client and her ring came in shortly after. The ring was, unfortunately, problematic. It was a cast piece made in 18-karat yellow gold with shared prongs. The diameter of the diamonds was such that their girdles extended well beyond the width of the claws and could easily be caught when doing something as simple as putting your hand in your pocket. Eventually (and in this case, far too soon) something was going to give. To make it worse, the claws were not beefy enough to offer enough holding power.

I was absolutely amazed the client had lost only one diamond. The ring just did not have enough structure to physically support the stones.

We could have simply reset the lost diamond and sent the client on her way except for the fact that once I have worked on a piece of jewellery, I feel responsible for it from there on. I could not in good faith see any possible way to simply repair the ring. That said, I was also not willing to become 'married' to the piece, since I knew the client would be back again and again as more stones fell out. What it really needed was to have been made properly in the first place.



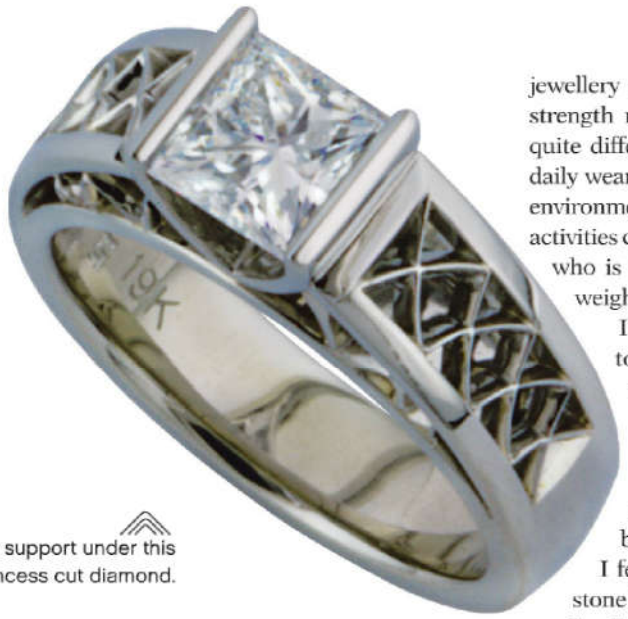
A two-tone, channel-set ring with brown topaz. We laser-welded the bearing for security.

Once married, twice shy

What to do? The way I saw it, there were a few options:

1) Send the ring back to the maker and have her reset the stone and build up the claws as much as possible, thereby, continuing to take responsibility for future wear.
2) Repair the ring in my shop, but have the client sign a waiver stating she understood I could not take responsibility if other diamonds fell out. I would also make it clear she should not wear the ring every day.
3) Send the ring back to the maker in the United States and let her remake it with greater structure.
4) Pay me to remake the ring properly. At least this way I would stand behind the finished product.

Now my friend is a very skilled craftsperson and I was somewhat surprised she had done such a poor job designing the ring. So I called her. As I suspected, against her better judgment, she had only done what the client



Note the support under this channel-set princess cut diamond.

wanted. The customer had seen photographs online of eternity rings with tiny shared prongs that looked beautiful and showed off the diamonds really well. She insisted that was what she wanted and nothing else would do. My friend caved and did what the client asked. As for me, I sent the ring back to her. If I had remade it, the client would have paid twice, which isn't fair, even though she was the reason the mounting was made too light in the first place.

What's the moral of the story? Sometimes it is best to just say no to clients, although we occasionally get beaten down and make things we know we should not. If this ring was only going to be worn on special occasions, the structure could possibly have been sufficient. However, the client wanted to wear it every day, along with her engagement and wedding rings. How does the jeweller prevent a situation like this one?

An ounce of prevention

Clients generally understand diamonds can take far greater abuse than any other gemstone. Engagement rings set with coloured gems are finding greater popularity in recent years, but to be successful, the setting must offer as much protection as possible. In addition, the client must be made aware that frequency of wear and their lifestyle will factor into their choice of stone. Not that they always 'listen' to their jeweller's recommendations. We've all heard of clients who return to the store or studio with abraded and chipped gems and claim it wasn't their fault.

Likewise, it can be difficult to convince a client to consider the realities of the mechanical aspects of jewellery design. Form follows function. The degree of strength required for a brooch, earring, or pendant is quite different than that needed for a ring subjected to daily wear. For example, a woman who works in an office environment and does not participate in vigorous sporting activities can wear a much more delicate ring than another who is on the assembly line in a car factory and lifts weights in the evening.

I believe it is up to the designer to take the time to educate their client on why jewellery has to be made and designed a certain way. Yes, they may like the delicate 'almost no metal visible' look, but they must realize that in many cases, this just is not practical. I know jewellers who will have clients sign a waiver acknowledging they are buying the piece at their own risk. Unfortunately, I feel this can still come back to bite you when a stone falls out. As a designer, my reputation is always on the line, which is why I feel it is better to refuse a commission when I do not feel I can produce a piece in which I have complete confidence.

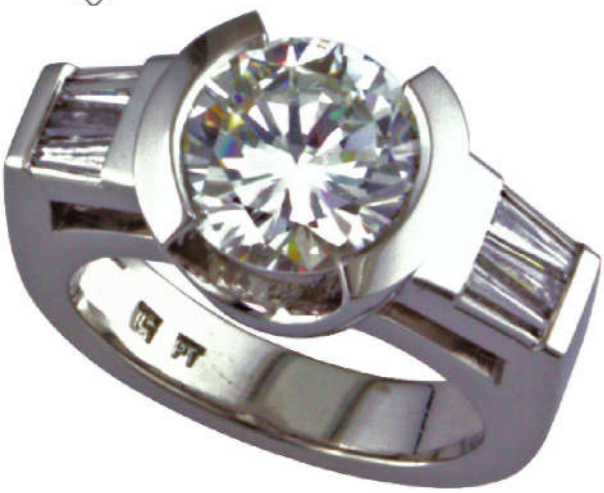
Recently, a client brought a months-old ring she had purchased on a cruise. The centre stone was a natural fancy-colour, radiant-cut diamond flanked by a pair of tapered shield-cut white diamonds. Unfortunately, one of the shoulder stones had fallen out and was gone forever. I didn't need a loupe to see the reason for this loss: the white gold claws that were supposed to hold the stones were not only tiny, they barely clasped the diamonds. Further, the outer claws had broken off entirely and the other shoulder stone claws were hanging by a thread.

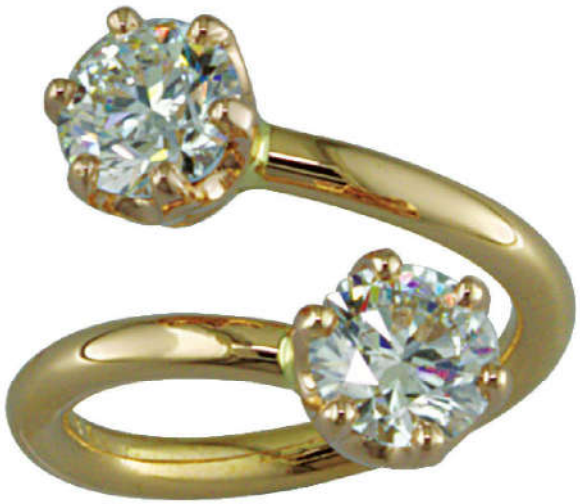
Fortunately, the client had insured her ring and the policy covered the replacement diamond and necessary repairs. However, we ended up having to replace both shoulder diamonds, as it was not economically feasible to match the fancy cut of the remaining stone. Buying a new matched pair and selling the salvage stone back to the insurance company proved the simplest course of action. While we were at it, we not only replaced the white gold claws for the shoulder diamonds, but also installed new, heavier yellow gold claws for the centre stone. The rest of the ring was decent quality and now the client has a ring that will give her years of security and pleasure. Plus, I won't see it back for repair any time soon!

A structured approach

Several aspects of design are of concern when it comes to structure. For starters, the metal used is a major consideration. White and red gold alloys are harder and less malleable than yellow or green gold, so the latter requires heavier claws to offer the same durability.

This ring features heavy half and end bezels to help ensure the diamonds stay put.





This bypass ring should have a physical connection between its two sides, however, convincing my client of this proved impossible. Fortunately, it will not be worn every day.

Platinum's high malleability, ductility, and strength allow for comparatively delicate stone setting and proportions, although when a piece is cast rather than fabricated, much of this benefit is reduced.

For rings, the shank's width and thickness are often a point of discussion between the jeweller and client. Personal esthetics can vary. For instance, I don't like a skinny shank with a huge stone on top, as to me it looks unbalanced. In contrast, someone else may prefer this look because it focuses the eye on the stone. If the client insists on a thin band, however, a shank can be narrow in width provided this is compensated for with increased thickness. Modifying the cross-section of the shank to half-round or knife-edge can help create a more delicate appearance, while still maintaining strength and durability.

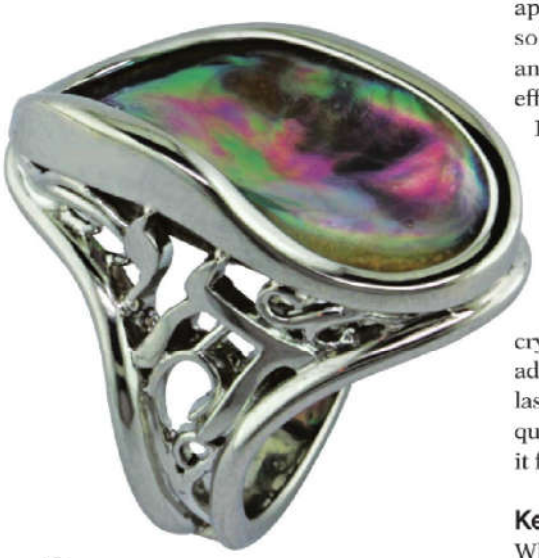
Even plain bands benefit from a bit more heft. Typically, I will not make a band thinner than a height of 1.80 mm and often increase this to 2 mm or more. The choice of metal is also a factor here.

Stone setting is the most common weak point when it comes to structure or lack thereof. Princess and other sharp-corner, square-cut stones are a particular concern. The pointy corners of these cuts are extremely vulnerable to damage, even among diamonds that are otherwise durable. I see many commercial ring settings with round wire claws that are simply too delicate to provide any degree of long-term security. The preferred claw style for these stones is 'L.' Round wire claws can be used provided they have enough substance. In both cases, it is important the metal at the points of the stone is removed, so there is no direct metal pressure on the vulnerable corners. Proper support of a bearing can offer more structure; however, it is preferable the stone doesn't have to actually rest in the bearing since dirt collecting there can affect the stone's brilliance. In addition, cleaning is more difficult.

Tensions mustn't rise

A tension setting is a dramatic method for holding a gemstone, although there are certain limitations in this style. Cast rings are possible, but I prefer using platinum alloys that can be heat-hardened. It is better to forge and fabricate the metal, since work-hardening vastly increases strength. I worry about rings where the shank is narrower than the diamond's diameter, as the girdle will be constantly subjected to bumps and stress. And since diamond is harder than any metal, the setting will loosen sooner or later. The other downside of tension setting is the ring needs to be quite thick to provide sufficient strength; not every person has a finger size to comfortably accommodate this much ring. An alternative to true tension setting is channel setting, which allows for a much thinner metal cross-section, as a bearing (a wire or tubing 'dough-nut') is placed under the gem and soldered (when the stone is a white diamond) or laser-welded in place. This addition holds the two sides of the channel securely in place. Alternative methods use a solid wire to tie the channel together.

The ring seen in the photo to the left contains two 1-carat round brilliant-cut diamonds that were a gift to



Setting this abalone pearl from behind using 19-karat white gold will help protect it from everyday wear and tear.

my client. She already had similar diamond earrings and wished to have these set in a ring. It took a bit of discussion, since she really wanted this open bypass style, although in the end, I could not convince her to include a connection between the two ends of the ring. Over time, it is inevitable the flex of the ring when it is pushed over her knuckle will eventually cause the ring to break. I tried to mitigate this by using relatively large-diameter fabricated red gold (a harder alloy), while making sure it was annealed to reduce its inherent brittleness. As this will not be an everyday ring, it should serve my client well for a long time.

Pearls are not typically the best choice for an engagement ring or wedding band that will be exposed to normal everyday wear. A client was insistent she wanted a pearl in her wedding ring and I finally ended up with the ring in the photo on the next page. The pearl is a natural abalone pearl, its undulated form and brilliant colour play soft and feminine. However, it was not very thick and I knew it would require extensive support if it was to survive what I anticipate is a long and happy marriage! My solution was to use 19-karat white gold (which is harder and more durable) with a very substantial bezel to set the pearl from behind. The 'lip' of the bezel was also quite thick, although contoured to soften the appearance. Initially, I planned the under-support could be made of square wire shaped to conform precisely to the pearl's underside. However, it was pretty quickly apparent that a solid gold plate would be the best solution. The combination of the bezel thickness and the metal below the pearl created a 'strong-box' effect that should prevent most damage to the gem. Its downward curve also reduces the chance of its surface being abraded under normal wear. This is still a ring requiring care when worn, but it managed to meet both the client's desires and my need to make a piece I could feel good about selling.

A client initially wanted a tension setting for a wedding band featuring a rough diamond octahedral crystal. I thought otherwise. Instead, we compromised by adding a solid plate for the stone to rest on that could be laser welded to keep the channel secure. We had to sink quite a bit of the diamond's corners into the ring to keep it from wobbling and working itself loose.

Keep it clean

When designing pendants, the bail needs to be heavy enough to allow for the inevitable wear caused by it sliding on the chain. The same is true of jump rings and links in bracelets and neck wear. Of course, no matter how heavy a piece is made, normal wear eventually takes its toll. This wear can be mitigated, though, when you remind the client 'cleanliness is next to godliness.' Gold against gold does not wear that quickly; the hardness is similar, but it is impossible not to have dirt, lotions, and skin oils combine and create an abrasive combination. Tennis bracelets and metal watch straps are particularly prone to this wear. Regular ultrasonic cleaning will make a huge improvement in their longevity.

Provided you stick to your guns and communicate the realities of the need for substantial fabrication techniques and metal volume, you will not only make a piece of which you are proud, but one your client will enjoy for a long time. Instilling confidence in your product can only work to keep clients happy and maintain your reputation for quality of manufacture, as well as great design. ✧

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.*