

The Midwest Faceter

A Publication of The Midwest Faceters' Guild, May 2010

Editor's Notes

By Dave Root

There are those of us who can't seem to go more than a few hours without pounding on a computer keyboard. And then there are those that have never really bonded to those confounded contraptions. If you are one of the later group, chances are you have never seen or played with the program called GemCad. But if you are a faceter you might just want to consider putting aside your aversion to computers and checking it out. It is a very useful program for faceters, even if you aren't inclined to creating your own designs. I use it most often to adjust angles when I want to cut a design in a material different than what the design was created for. I have also used it a few times to adjust the L/W ratio of a design to fit a particular Tripps setting.

In this issue I have a nice article by Jerry Bartlemay, the editor of *Facets*, the newsletter of the Columbia-Williamette Faceters Guild on GemCad. It will give those of you that are unfamiliar with GemCad an idea of what it's

about, and maybe it will provoke some of you to give it a try. Remember, you can download it and try it out for 30 days before you have to buy it. Try it, you might like it.

Also in this issue, Hugh Lyons gives a detailed description of how he goes about getting good meet points.

And finally I return to one of my favorite sources of information, *The Facetier*. This was a newsletter published by the Arrow Profile Company, the makers of the Sapphire faceting machine, during the '60's and '70's. From the September 1972 issue we have a short article on the optical properties that govern gemstone design. We close out this issue with two designs by Reg Thompson, the Spectrabril and the Ultrabril. So pick a design, enter it into GemCad to test cut it, maybe adjust the angles for your material, and have at it.

Last fall Andy Green of the Blossomland Gem and Mineral Society invited us to hold one of our Frats at their annual Swap Meet.

We happily accepted his invitation and it ended up being a very successful Frat. We had nine people faceting, including a couple of beginners. Not only did we have a good time faceting and talking faceting with each other, but we generated interest in the art with the folks attending the swap.

I would like to thank the members of the Blossomland Gem and Mineral Society for being such gracious hosts, and particularly to Andy Green (a fellow faceter) for thinking to invite us.

The Seminar is coming up June 12 & 13 in Webberville. Last time I spoke with Seminar Chair Barb Yost we still had some spaces available in both the beginners and advanced classes. So if you know someone that might be interested in learning how to facet, or if you could maybe use a little boost from taking an advanced class, give Barb a call. And even if you aren't interested in taking a class, stop in and say Hi. Or attend the general membership meeting Saturday afternoon.



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The Midwest Faceters' Guild

<http://midwestfacetersguild.org/>

The Midwest Faceters' Guild was established July 14, 1979 and chartered in October of that year. The MFG is a member of the American Federation of Mineralogical and Geological Societies and the Midwest Federation of Mineralogical and Geological Societies. Our purpose is:

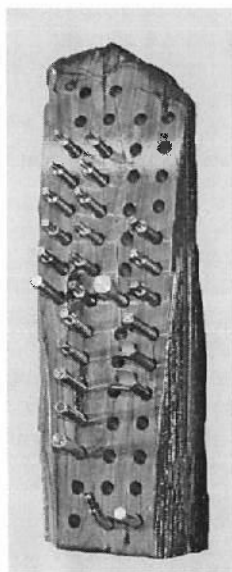
- To promote education and recreation.
- To develop the art of faceting.
- To exchange information related to faceting.
- To provide meetings for those of like interests.
- To promote the achievement of individuals.

The official publication of the Midwest Faceters' Guild is *The Midwest Faceter*, published five times per year.

Membership in the Midwest Faceters' Guild is open to anyone with an interest in The Art of Faceting, regardless of geographical location. Membership applications are available on the website or by contacting the Membership Chairperson. Membership is \$20 single and \$30 family and includes a subscription to *The Midwest Faceter* and enables you to participate in Guild activities such as our Faceter Frats and gemstone competitions.

Calendar of Events

June 12-13	Midwest Faceters' Guild Seminar Webberville High School 309 East Grand River Road Webberville, MI 48892 Held in conjunction with MGAGS
June 12, 5:30 pm	General Membership Meeting Held in conjunction with Seminar
June 16	2010 Guild Competition Deadline All stones must be received by this date.



Meeting Minutes – April 2010 Meeting

April 24, 2010

Meeting brought to order by President David Root at 4:35p.m.
13 members present.

Treasurer's Report --- Barb Yost.

Expenditures as follows:

Placemats for the guild's portion .	\$86	-----something
Newsletter	\$46.64	
Mail outs	\$17.64	
Service Charge	\$ 6.96	bank service
No report on beginning balance		
No report on dues collected		
Ending balance	\$4,546.72	

Discussion on placemats . A 3-way deal with MGAGS , Kalamazoo Club, and Faceters Guild. Distribution of placemats by members.

Seminar Report by Barb Yost:

4 beginners that she is sending information to--signed up but not paid

5 beginners that she is going to send information to

1 advanced signed up but not paid.

The Gem Cad class is still pending because of the health of Everett Brake.

Discussion of where to have another seminar in late summer or early fall.

Barb Yost reported a cost of \$75.00 a day to rent the hall near her (Tallmadge Township Hall), plus a \$50.00 cleaning deposit.

Discussion of August or September . Possible for September. Barb will check and find a good date in September if she can get the hall then.

Dave Root explained again why we aren't going to go back to Elmhurst, Ill. Way too much money .

Old Business:

The guild purchased 10 fast laps from Kingsley North. Covers were purchased from the Facette Shoppe. We did not have to pay shipping as they were picked up by Tyler Miller.

Report from Virginia Steele on the Competition Stone. A form was given to her so she can keep the stones straight. Barb is doing the Pre-Masters stone. So far she is the only one doing that..

New business:

Tyler Miller made a motion that if anyone approaches any one of us about joining in on or buying into anything (such as the placemats) it has to go to the board for approval. Motion made and carried.

A reminder to the committee to look into the by-laws and what could be changed to benefit the guild and what needs to be changed.

On that committee is Linda Badger, Virginia Steele, and Melvin Lehner.

Dave thinks this is necessary. He suggested adding 2 board members at large. They would be used as voting members.

Also Dave brought up that the membership committee needs to be abolished.

Meeting Minutes – April 2010 Meeting, continued.

Membership Report--Ruth Lehner

As of April 24th 2010 there are 62 paid members. In January it was voted that Ruthann purchase a calling card and call all delinquent paying members.

Ruthann called from her cell phone on the weekends to save the guild money. Previously in December she had e-mailed all those with e-mail and reminded them of up coming dues. As of April 24, 2010 all of the Midwest Faceters' cards were mailed to paid members. Discussion followed with mention of the vote in January about if you join in June you don't have to pay dues until Jan of the next year.

David asked for a complete listing of paid members.

Also getting back to the committee to look into the by-laws he wants a list of things that should be changed or dropped by the middle of May so it can be presented at the June meeting and voted on.

Ernie Augenbaugh wondered if we change the by-laws or constitution do we have to have the Federation approve it?

There was discussion about the Frats--Do we want to Facet or have talk sessions?

Discussion of what the Guild is REALLY about.

Getting together more often

We own six (6) faceting machines The Graves machine might need a new belt.

Also looking into Lansing area as a general area for Guild meetings.

David Root adjourned the meeting at 5:45.

Respectfully submitted
Ruthann Lehner



Andy Green of the Blossomland Gem & Mineral Society at the Midwest Faceters' Guild 2008 Elmhurst Seminar.

Getting Good Meet Points

By Hugh Lyons

Editor's Note: This article was originally published in the February 2009 issue of Meet Points, the newsletter of the Vancouver Island Faceters' Guild. I would like to thank Walt Heitland for providing me with this article.

Do you have difficulty getting good meet points? There are different ways of doing it. Using an Ultra Tec with dial gauge and hard stop light, here is how I go about it.

Starting with the pavilion, I rough out a perform using a coarse lap. Then cut the break facets to a temporary culet point (TCP). This initial meet point sets up the whole stone as all other meets flow from it. To do this, start by cutting two opposite facets, say 96 and 48, to a knife edge. Cut 96 to a red light and where you think the TCP will be, then go to 48 and cut to the same red light. If you don't have a knife edge, then cut the two facets a bit deeper to a new red light. When they meet, you have reached a knife edge and you have reached your temporary CP. Now cut the remainder of your break facets to the same stop light position. I only use the dial gauge to tell me that I am getting close to the stop light. Use the system your machine provides to cut this row of facets to the same depth and that they all meet at the TCP. If they don't, adjust them until they do. You have now set up the whole stone.

Next I cut the girdle. Some designs don't permit this approach, but where possible I always follow it. If you are cutting to a set size, cut two opposite sides until you reach slightly larger than the set size. The stone is now roughed out and you can recut the breaks and the girdle with 600 grit and the girdle can be prepolished and be the set size. Now, using 600 grit cut the remaining pavilion facets. The last row of facets should meet at the permanent center point "PCP".

Now is the time when you get serious about your meets. I use 3000 grit on a Batt lap. Prepolish the break facets ensuring that they form a level girdle and that they meet the girdle points. It may be necessary to use the cheater to tilt a facet slightly left or right to arrive at a perfect meet. It is necessary to "cut a little, look a lot" so that you don't over or under cut. Next prepolish the mains. Again I use the cheater and sometimes I need to change the angle slightly to fit the mains to the breaks. Whenever you use the cheater or change the angle, be sure to keep a record so that you can recover the facets when you polish them. Last but not least, prepolish the culet facets, ensuring that they fit the mains and create a perfect culet, or PCP. If you have done your prepolishing properly, it shouldn't be necessary to make any adjustments when you polish. For polishing, I use 60,000 on a BATT lap for material 7.5 or harder, or cerium oxide on a phenolic lap for 7.0 or softer. We will talk about polishing at a later date.

After transferring to the second dop, it is time cut the crown break facets to a level girdle. To do this, I make a shallow cut on the first break facet. If the base of this facet doesn't appear level with the pavilion girdle line I cheat and cut until it does appear level. Now, cut a row of break facets, using the stop light. If the facets don't form a straight and level line, cheat and cut until they do. Then cut the row down until you reach the correct girdle thickness. Make a record of your cheater position. This is now your zero position for the rest of the crown. Cut the rest of the crown, then prepolish and polish in the same manner as you did the pavilion

Using an Ultra Tec, remove the dopped stone from the spindle. Attach the tabling adapter onto the spindle and insert and lock the dop. Set the angle to 45degrees. Cut the table part way down to its meet with the mains and stars. Is it going to meet all meet points? If not, now is the time to cheat and change angle until it will make all meets. Now cut it down until you can make the meets with the prepolish. Often, the meets won't be perfect but polish the table and remove the adapter and dop. Replace the dop in the spindle. RESET THE CHEATER TO ZERO and use the cheater as necessary to adjust the meets between the table and stars. This can usually be done with the polishing lap.

You are done. Take your stone off. Admire it. Now win a prize.

AGemCad Overview

By Jerry Bartlemay

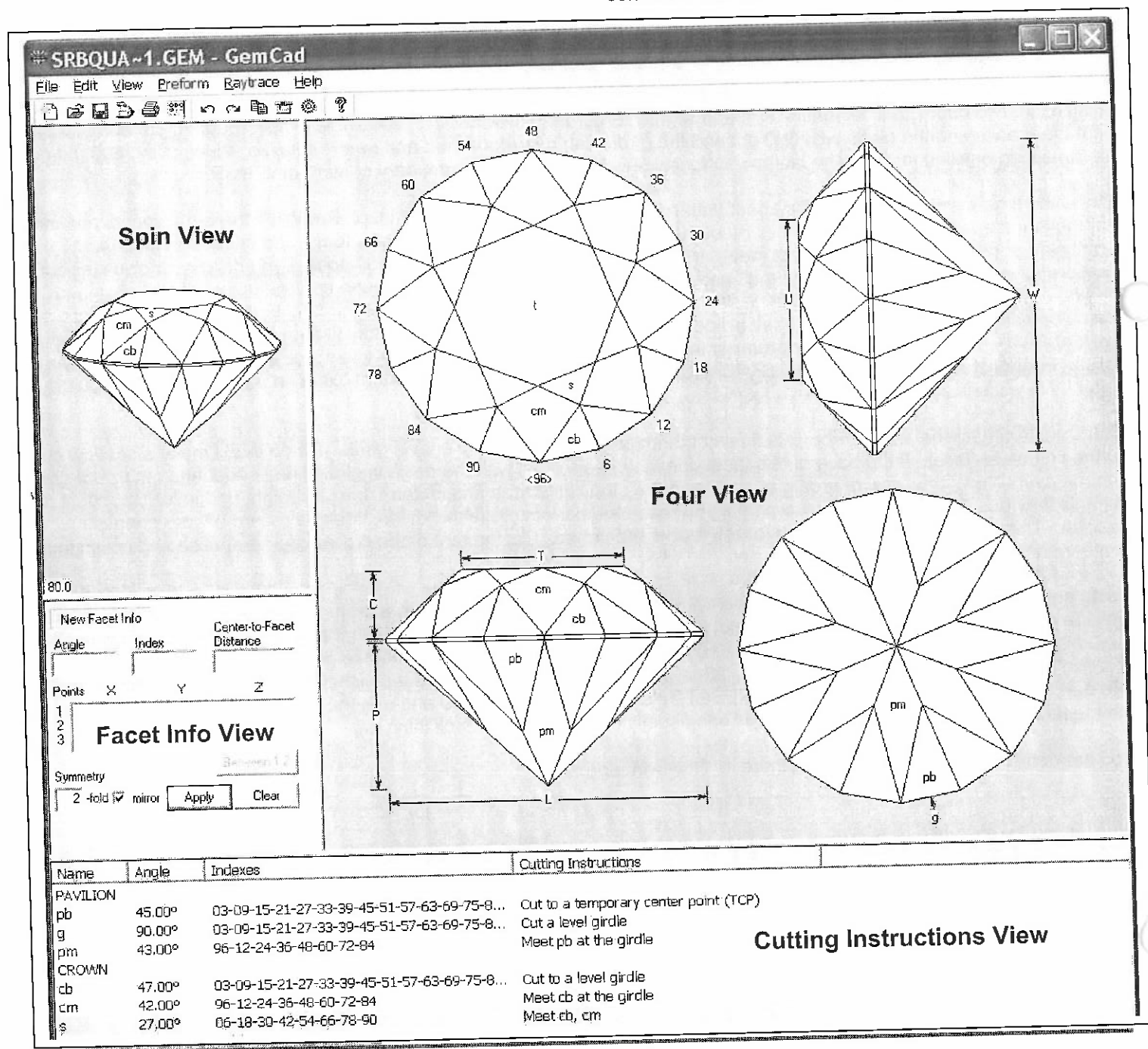
GemCad is a Windows program written by Robert Strickland of Austin, Texas. It has become the major tool used by faceters everywhere. This article will attempt to outline the major uses of GemCad and some examples.

In the beginning, there were two major methods for designing gemstones. The first was trial and error. This method involves using educated guesswork to come up with angle and index settings for each tier of facets.

Many creative designs have been produced this way.

The other method was more formal and involved

calculating the angle and index settings. This involved the use of trigonometry and geometry, two words that scare the heck out of most people. Those intrepid designers who used this method, like our friend Robert Long and his late partner Norman Steele, produced designs that represent the standards in our business. Way back in the DOS days, Mr. Strickland wrote and distributed the first version of GemCad. Since then he has rewritten GemCad for Windows. It works on Windows 95 or later systems with a screen resolution of at least 800 x 600 pixels. This isn't a problem with current technology. GemCad is shareware and can be downloaded at www.gemcad.com. It works for 30 days without registration. A license for continued use of GemCad is only \$95.



If you ever want to do anything in the faceting world other than cut from existing designs, it is well worth the investment.

The GemCad interface has several windows. They all perform different functions as listed here.

The **Four View** shows you a plan view of the design from four different vantage points. You can zoom in on any one of them to see greater detail or use higher resolution. Each facet can be labeled to make it easy to reference its cutting instructions.

The **Spin View** gives you a 3D view of the design. By dragging your mouse in different directions, you can make the image rotate so you can view it from any direction.

The **Facet Info View** allows you to define a new facet or tier of facets.

The **Cutting Instructions View** lists each tier of facets for the pavilion and crown, as well as the perform in some designs. Each tier's information is shown on one line, including angle, list of indexes, and cutting instructions. Each line can be moved up or down in the list to develop the correct cutting order.

As you work with a design, all four of these views are used.

The most obvious use for GemCad is to develop new designs. This is far from the only reason to buy a license, though. We'll get to those other reasons soon.

Develop A New Design

GemCad lets you develop new designs from scratch. It couldn't be simpler to get started.

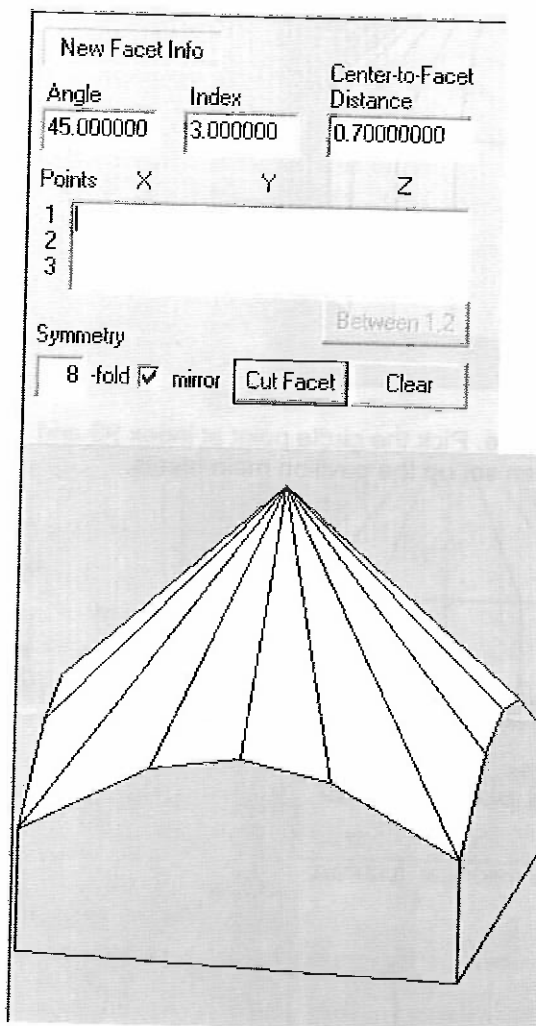
The first thing to do is to make sure you select the proper index gear for your design. GemCad has selections from 32 to 120 teeth. In addition, there is a selection for 360 that would allow you to work in degrees. If you don't see your index gear, just enter it in; GemCad will work with it just fine.

If you want your stone to cut the same way on your machine as it shows on the diagram, check the Clockwise box if the numbers on your index gear go in a clockwise direction. Otherwise leave it unchecked. You can put the starting point anywhere around the circumference of your design.

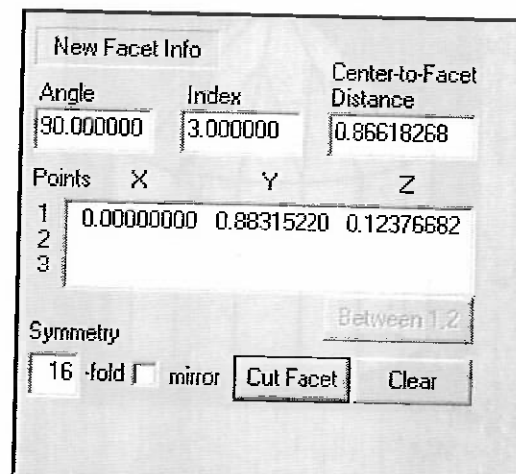
To start, just use the Facet Info View to define the first pavilion facet angle and index, then tell GemCad how

many axes of symmetry the first tier should have, and whether it should be mirror symmetry or not.

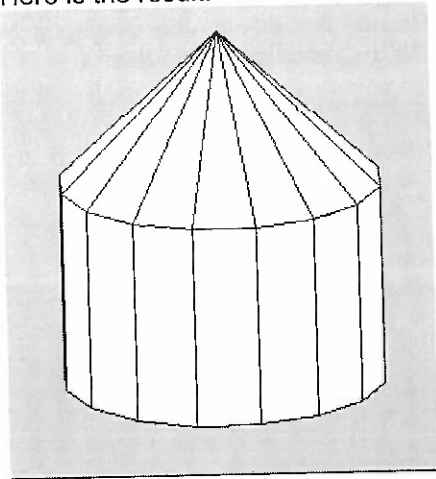
In the case of the SRB, the first pavilion tier setting is shown below along with the resulting Spin View.



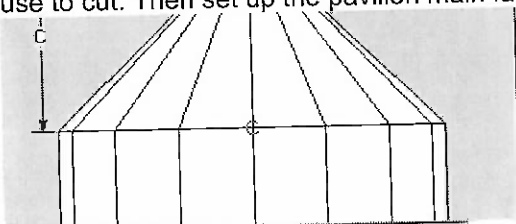
Now is the time to add a girdle. If you move your mouse over a meet point or a line, you get an indicator of where you will add a point to cut from. When the dialog box comes up, click on "Use to Cut". This loads the coordinates of that point into the New Facet Info View. Then add the information you need to cut the girdle



Here is the result.

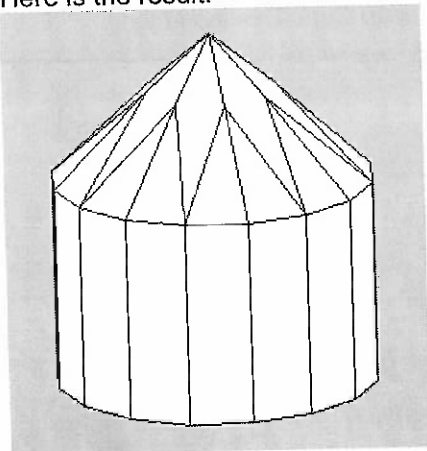


Let's do one more. Pick the girdle point at index 96 and use to cut. Then set up the pavilion main facets.



New Facet Info		
Angle	Index	Center-to-Facet Distance
43.000000	96.000000	0.69282567
Points	X	Y Z
1	0.00000000	0.80315220 0.12376682
2		
3		
Between 1,2		
Symmetry		
☐ 8-fold	☐ minor	Cut Facet Clear

Here is the result.



You can then transfer the stone, which flips the view over so you can work on the crown. I won't go through the whole process of cutting the crown here. The manual for GemCad does an excellent job of leading you through the process to teach you how to use it.

Proof Cut an Existing Design

There are so many designs out there, thousands of them. Many of them, particularly the older ones, have never been entered into GemCad. By putting them into GemCad format, you now have a file you can work with. You can easily change the cutting order, add instructions, change angles, and many other functions.

Modify Cutting Instructions

If you click on a tier from the Faceting Instructions View this dialog pops up.

Edit Tier	
Edit This Facet	
Name	pb
Cutting instructions	
Cut to a temporary center point (TCP)	
New angle	45.00°
tangent ratio scale 1/3 stone	
Apply Edit	
Move Up Move Down Delete Tier Ungut/Recut Cancel	

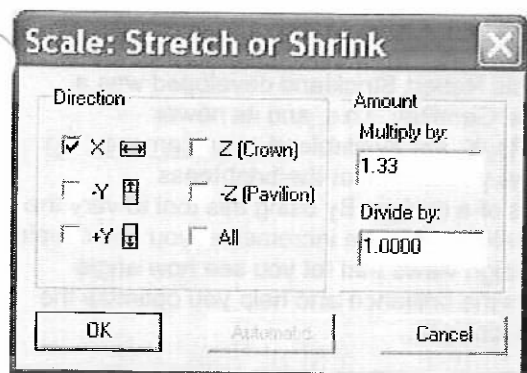
From here, you can move this tier up or down the cutting order, give a name to the facet tier, add cutting instructions, and change the angle. Note, also that the cutting instructions can be added or edited here.

Tangent Ratio Crown or Pavilion Facets

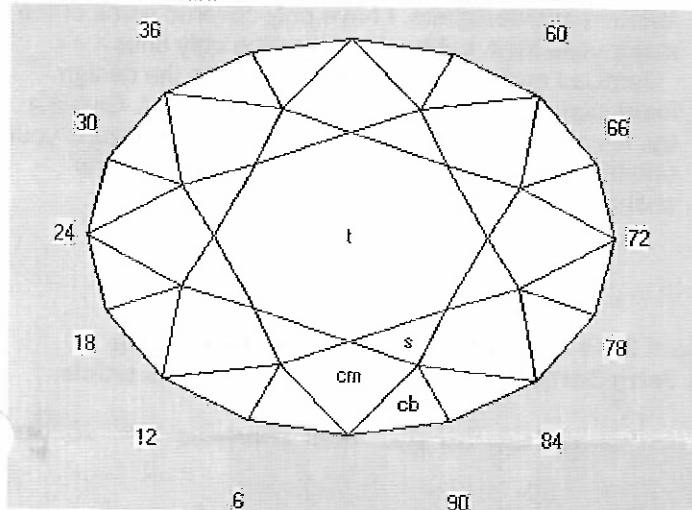
When you are dealing with a design, it was usually developed with a particular refractive index (RI) in mind. If you want to adjust the angles to optimize the design to a different RI, the tried and true method is the Tangent Ratio calculation. GemCad allows you to very easily tangent ratio a crown or pavilion. If you select a tier or single facet and change the angle, the entire crown or pavilion is changed to match the new angle. This makes it very easy to take an existing design and adapt it to a higher or lower RI.

Change the Length to Width Ratio

You can use GemCad to modify the length to width ratio of any design. This might be to make an oval longer or shorter to match a piece of rough, or turn a round into an oval. This uses the Scale feature of GemCad. As you can see, the Scale dialog box lets you change dimension in any or all directions. This gives you a ton of flexibility. As an example, let's turn our SRB into an oval with a length to width ratio of 1:1.33.



Here is the result.



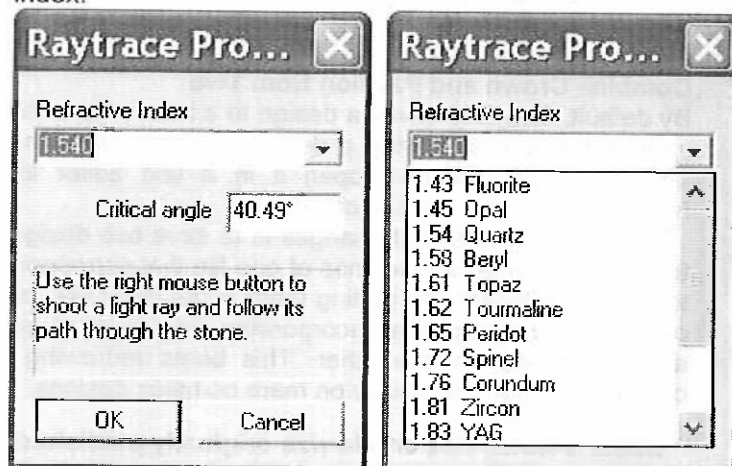
Test Cut a Design

With some designs, it can be difficult to visualize what the facets should look like as you cut them. This is especially true if the cutting order obviously isn't correct, but it is not clear what it should be. GemCad has a replay function to step you through the cutting of your design, one facet at a time. This is very useful for validating the cutting order you have chosen. It is also very useful in those designs that use temporary facets to define meet points. In other cases, the facets may remain, but the meet point used to cut them are cut away. Since all or part of those facets are cut away before the stone is finished and do not appear in the final views, this is a very good way of seeing how they fit into the design.

Use Ray Trace to Analyze the Optical Performance of a Design

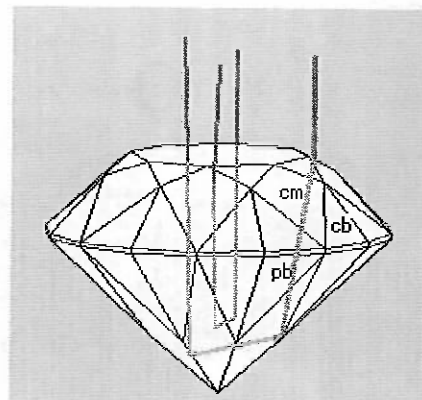
We all know that there are angles that we need to stay away from, such as the angles at or below the critical angle for the pavilion. What is usually uncertain, though, are the optimal angles. There are a number of tables that suggest angle ranges for each gem species, but they all deal only with main angles. Because we don't usually facet just mains, but multiple tiers of facets, optimizing a

design involves a little bit of guesswork (OK, sometimes a lot of guesswork). By right clicking on any facet of the Four View or the Spin View, you are injecting a "light ray" into the stone. GemCad calculates the path of the light ray through the stone and shows you where it will exit. In order to use the ray trace feature, you first must tell GemCad what the refractive index is for which you are doing the analysis. This is done with the Ray Trace Properties dialog. You can either pick your gem material from a drop down menu or just enter in the refractive index.



Then GemCad will calculate the critical angle. You can also use this dialog box to enter in a critical angle, then GemCad will calculate the corresponding refractive index.

Here is an Example of The Spin View With a couple of ray traces.



Optimize an Existing Design

GemCad has the ability to uncut and recut facets or facet tiers. This allows you to move facets around, or move facets out of the way to work on different ones. This helps you in repositioning facets for optimization. You can also use this feature to change the angle of a facet or change the meet points to "dial" in a facet's location. An example of this is last month's Step by Step design, the 8 Main Pendeloque. This was based on Robert Long's Eight

Main Pear, from the Long & Steele collection. Jim Hoeschen used the editing features to reconfigure the crown so it resulted in angles tenths of degrees rather than hundredths. Robert Long and I had a discussion on this. He said "Since all the books pre-date GemCad, I was just happy to get something that went together, and optimization was very difficult. Now with GemCad I think it is desirable and appropriate for anyone with the ambition to improve on the existing designs." All he asks when you do an optimization, that you credit him or whomever the original designer was.

Combine Crown and Pavilion from Two

By default, GemCad saves a design to a binary file with a .gem extension. By saving a design to a text file with a .asc extension, you can open it in a text editor like Notepad and make manual changes.

One of the more useful changes is to save two designs to .asc files. By taking the lines of one file that correspond to the crown facets and putting them in the other file, you can create a design that incorporates the crown of one and the pavilion of the other. This beats redrawing a crown or pavilion, especially on more complex designs.

Analyze the Optical Performance with GemRayX

One of the tools Robert Strickland developed was a program called GemRay. This, and its newer version, GemRayX, are available at www.gemcad.com. This tool allows you to look at the brightness characteristics of a design. By using this tool to vary the crown and pavilion angles in increments, you can develop an array of design views that let you see how angle changes affect the brilliance and help you optimize the angles of your design.

Conclusion

GemCad is probably the most useful tool we have as faceters and designers. I have only covered some of the major uses for it, but by no means the only ones.

GemCad makes it much easier to act on the design ideas that are poking at the back of your mind. Give it a try. It's easy to learn, and will open up your horizons your understanding of how designs go together and how changing facets can affect the design.

Editor's Note: This article was originally published in the April 2010 issue of Facets, the newsletter of the Columbia Willamette Faceters' Guild. I would like to thank Jerry Bartlemay for providing me with this article.



Faceters' Frat at the Blossomland Swap Meet in April

Optical Considerations in Gem Cutting

The optical properties of gem minerals should be given careful consideration when planning to cut a gem. Most gem cutters accept the stone proportions . . . cutting angles, and facet sizes as set forth in the book of their choice. Some faceters may vary angles to some degree, while others freely change the angles to suit the shape of the rough material on hand. Those that make no changes are following the line of least resistance, which is usually best.

If there is no universal agreement on the angle to cut a common gem, the exact opposite is true among diamond cutters. There is virtually no difference of opinion as to gem proportions or correct inclination of facets. It has been found that an angle of slightly less than 41 degrees for the main facets of the pavilion is ideal. It has further been found that any change to a smaller angle tends to deaden the gem. Diamond has a critical angle of just under $24^{\circ} 26'$ thus there is a spread of about sixteen degrees between these two angles. Any change toward steeper angles results in a gem that is too tall and is difficult to mount into jewelry. Also, some light is lost by increasing pavilion angles.

It is true that a diamond begins to deaden in brilliance as soon as the main angles drop below 40 degrees and the same is true for gems of lower refractive indices.

ACCURACY OF CUTTING ANGLES

It is difficult with most faceting machines (except with a "Sapphire"), to place a facet with an accuracy of less than one-half degree. In the case of a few machines, they may be inaccurate, or have been made so by use. In other cases, the protractor may be very accurate, but difficult to read. With the best machine in the hands of an operator with poor eyesight, the results will be erratic. It is recommended that the faceter not approach, closer than one degree, the critical angle of any material.

GEM ACCEPTANCE & RETURN OF LIGHT

A gem with an exceedingly large table would accept a large amount of light, but would have insufficient crown facet surfaces to refract this light when it emerges. In the opposite case, a gem with a very small table would have insufficient light gathering power. The experience of diamond cutters have shown that a table of about 50% of stone width is best under most conditions. In practice, the table size can be varied to as low as 40% or as high as 60% without any undesirable effects. Some gems are deliberately cut with the table much larger than 50% of the width of the stone. This has the effect of making the stone appear larger.

HEIGHT OF CROWN

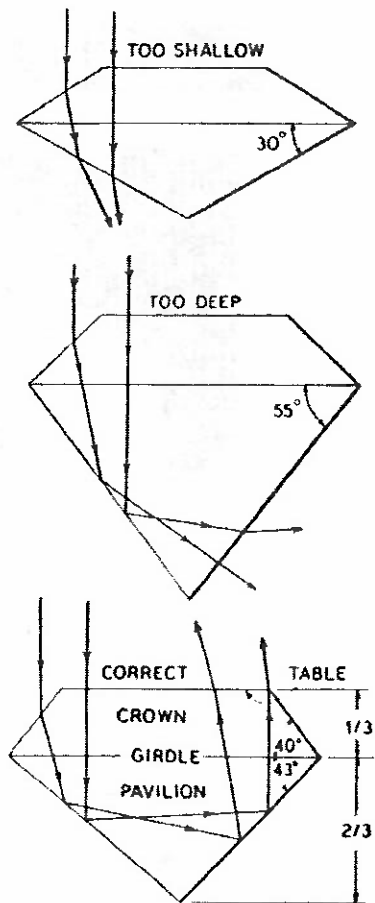
If there is a constant relationship of table and girdle width, the crown height must have a reasonably constant relationship to the depth of the pavilion. Long experience has shown that a ratio of about two times pavilion depth to one of crown height is best. This is also the experience of diamond cutters. It stands to reason that if the pavilion must be cut to exacting requirements, and that the crown has certain ratios constantly in evidence, then the relative size of the crown and pavilion must be fairly constant.

VIEWING ANGLE OF GEMS

Gems are most brilliant when the table is nearly at right angles to the source of light; and further, the viewer should be as near as possible to the same plane followed by these light rays.

Light striking a table at a perpendicular would enter the gem without any reflection. As the angle of incidence is moved away from the perpendicular, reflection would increase until it would be possible that no rays would enter the table.

Editor's Note: This article was originally published in the September 1972 issue of The Faceter.



Passage of Light through Properly and Improperly Proportioned Gems.



*God grant me
the serenity*

*To accept the things
I cannot change,*

*The courage to change
the things I can;*

*And the wisdom to
know the difference.*

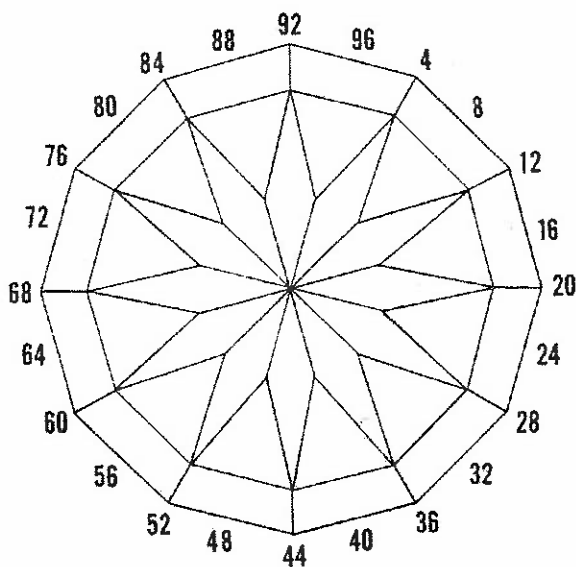
Sapphire FACETING GUIDE NO. 97



ULTRABRIL DESIGNED BY REG THOMPSON

THOMPSON'S GEM STUDIO
748 Rancho Way • Petaluma, CA 94952

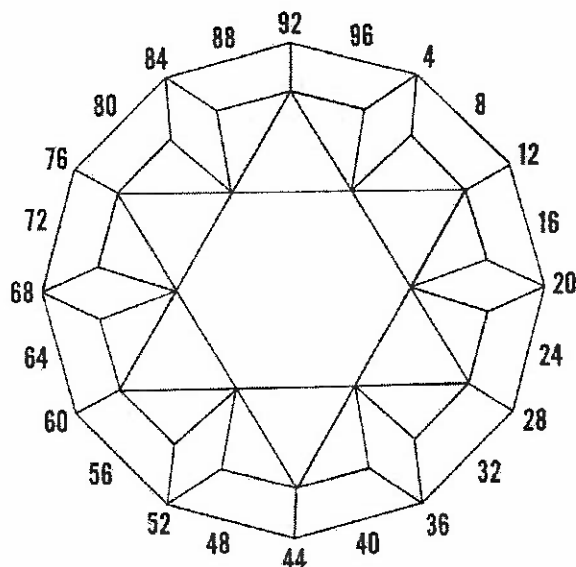
Angles are for Y.A.G.; either colored or clear material. Index settings are for a 96 Index Gear. Minimum recommended stone size is 8mm. Total number of facets are 85, including the table and faceted girdle. Width of table is approximately 50% of overall width of stone. It is recommended that the pavilion be cut first.



PAVILION

ANGLE	INDEX
90°	96 - 8 - 16 - 24 - 32 - 40 48 - 56 - 64 - 72 - 80 - 88
46°	96 - 8 - 16 - 24 - 32 - 40 48 - 56 - 64 - 72 - 80 - 88
41°	96 - 8 - 16 - 24 - 32 - 40 48 - 56 - 64 - 72 - 80 - 88
36°	4 - 12 - 20 - 28 - 36 - 44 52 - 60 - 68 - 76 - 84 - 92

Polish portion of girdle at 89 1/2°.
Polish in reverse order of cut.
Transfer dop.



CROWN

ANGLE	INDEX
44°	96 - 8 - 16 - 24 - 32 - 40 48 - 56 - 64 - 72 - 80 - 88
37°	96 - 8 - 16 - 24 - 32 - 40 48 - 56 - 64 - 72 - 80 - 88
30°	12 - 28 - 44 - 60 - 76 - 92
38 1/2°	4 - 20 - 36 - 52 - 68 - 84

Polish in reverse order of cut.
Cut and Polish the Table.

"Always do what is right ... it will gratify some people and astonish the others",

— MARK TWAIN —

Sapphire FACETING GUIDE NO. 92

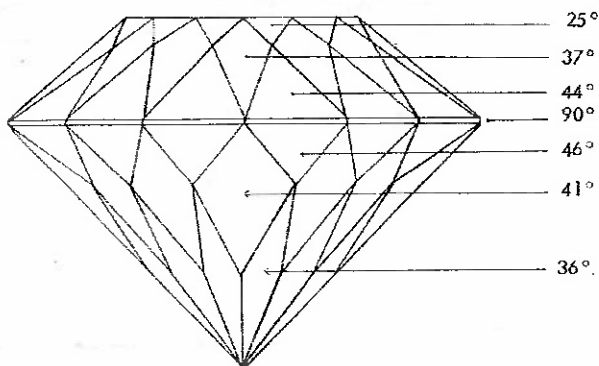


SPECTABRIL

DESIGNED BY REG THOMPSON THOMPSON'S GEM STUDIO

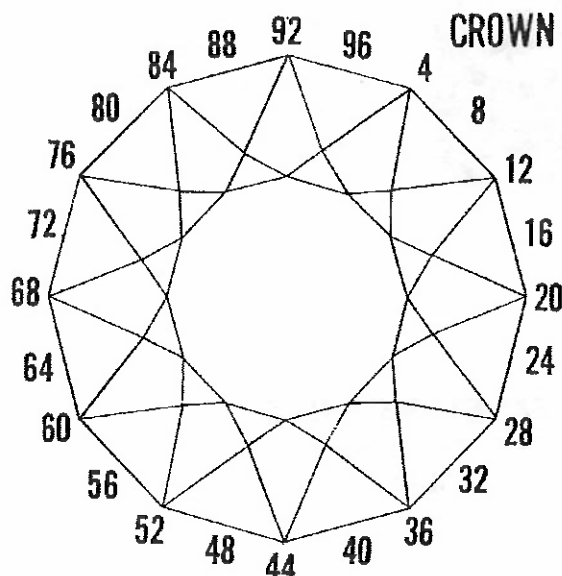
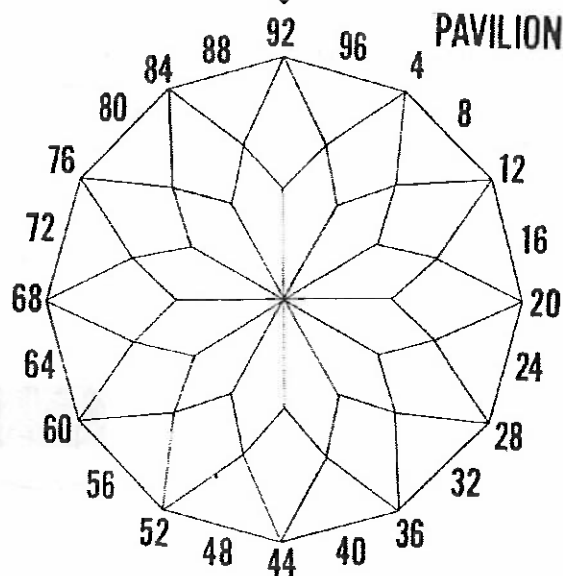
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All angles given are for cutting YAG. It is recommended that the pavilion be cut first, starting with the faceted girdle, girdle facet, main facet and culet facet. Polish in reverse order of cutting. Polish faceted girdle at $89\frac{1}{2}^\circ$. Transfer dop and begin cutting the crown. Cut the girdle facet, main facet and star facet. Polish in reverse order of cut. Then cut in the table and polish.



This 12 sided brilliant creates the optical illusion of having scalloped edges. The 12 sides also add to the ease of mounting this cut in the normal 4 and 6 prong mountings.

Any color of clear YAG can be used. Finished stones size should be between 6 and 12 mm, with 10 mm seeming ideal, as the greatest spectrum is returned in that size.



	ANGLES	INDEX
Girdle	90°	96 - 8 - 16 - 24 - 32 - 40
	46°	48 - 56 - 64 - 72 - 80 - 88
	41°	92 - 4 - 12 - 20 - 28 - 36
		44 - 52 - 60 - 68 - 76 - 84
	36°	96 - 8 - 16 - 24 - 32 - 40
		48 - 56 - 64 - 72 - 80 - 88

ANGLES	INDEX
44°	96 - 8 - 16 - 24 - 32 - 40
	48 - 56 - 64 - 72 - 80 - 88
37°	92 - 4 - 12 - 20 - 28 - 36
	44 - 52 - 60 - 68 - 76 - 84
25°	96 - 8 - 16 - 24 - 32 - 40
	48 - 56 - 64 - 72 - 80 - 88



WHICH DO YOU WANT... MORE FIRE / MORE LIFE?

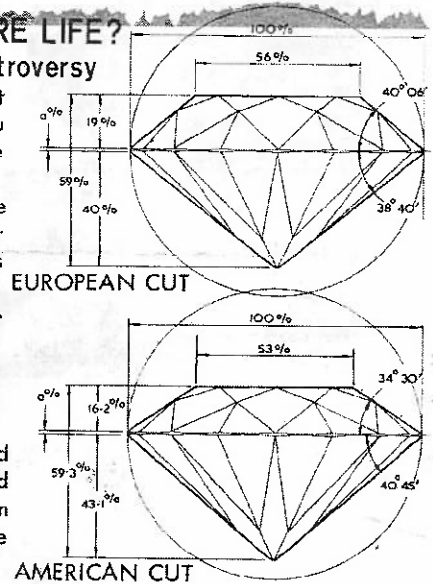
Join the European & American Brilliant Cut Controversy

Life is the amount of light that bounces back up out of a stone. It stands to reason that the more light you let in, the more can bounce back out. A wider table lets in more vertical light.

Fire results from the dispersion of light, that is, the breaking down of light into the entire spectrum so that sparkles of red, yellow, blue and all the dazzling colors of the rainbow shine out of the diamond.

Cut a fine, large diamond to ideal American proportions for a round brilliant. Sell this 'perfectly cut' stone to a European gem dealer. And there's a good chance he'll recut it; even though it means losing weight!

To most European experts, our ideally proportioned stone is as old-fashioned as an old mine cut diamond might be to us! To get greater life, Europeans Gem Cutters will increase the 53% standard American Table proportion to 56 through 63%.



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