8.9 Troubleshooting Cutting

Despite the encouraging words in previous sections about how easy and fun gem cutting can be, the process is not trouble free. You may make an actual mistake (see below) or you may just have the vague sense that the stone is just not "right." This section describes a number of ways of getting back on the straight and narrow road to cutting success, and presents a variety of strategies for avoiding trouble in the first place.

8.9.1 Making Mistakes

Face it. Sooner or later, you are going to make a mistake.

You are going to cut into a beautiful piece of gem rough at the wrong index or the wrong angle. For some of us, making such mistakes happens all too soon and all too often. What can a reasonable person do?

When the worst happens – when you have made a serious error in cutting – you should stop the machine and sit back for a moment. Take a deep breath and try to relax. Your initial feeling of despair at having destroyed the stone is almost always misplaced.

Examine what you have just done and try to understand how it occurred. Many times, a minor error is compounded by rushed efforts to correct for it: the instant cure can often be worse than the problem. This is particularly true if the cause of the mistake is fatigue or eyestrain. You should also record in your notebook all the incorrect settings and any additional factors that contributed to the error (see Section 8.8).

Once the situation is clear, you can begin to examine recovery strategies. There are always a number of possibilities, even for the most severe of errors:

1. If you have sufficient raw material for both the pavilion and crown, you can merely shift the design down the length of the rough, re-cutting the entire stone without reducing yield (see also page 166). While time-consuming, this option completely eliminates any evidence of your mistake.

2. If there isn't enough extra rough, you can always opt for the same cut in a smaller size. Such a decision should not be taken lightly, however, since the yield plunges rapidly with decreasing diameter (Section 7.8). Unless it is a competition or collector stone, other strategies are almost always superior.

3. Depending on the nature and depth of the missed cut, you can just leave it in place and polish it as though it was part of the plan. Many gem designs, particularly the brilliants, are capable of disguising fairly serious errors just by their sparkle. Examine any commercially cut stone to soothe your doubts about this. Purists would argue that the gems available in most shopping malls consist entirely of cutting errors.

4. An interesting option is to alter the gem design to accommodate your "special feature." This can be as simple as cutting the crown a little shallower to eliminate the problem. For the reasons emphasized in Chapter 11.7 and on page 304, this will not work as well with the pavilion. Note also that many designs have optimized angles. Changing them may have serious consequences for the final appearance of the gem (see Chapter 10.5). The GemCAD and BOG programs (see Chapter 15.3) can help you assess the effects of any changes.

5. Alternatively, if the cut allows it, you can place similar "errors" symmetrically around the stone (this is one reason for recording the settings). If possible, you should try your "enhanced design" in GemCAD before proceeding.

6. Finally, you can treat the damaged stone as a pre-form for a completely different gem design. Careful selection of the alternative can result in zero lost yield.

8.9.2 Avoiding Mistakes – Look Before You Leap

The best strategy for dealing with mistakes is not to make them in the first place. This is not meant to be a silly or condescending remark. There are straightforward ways to help ensure that you don't do something dumb. For example, many faceters develop a rhythm to their work, regularly checking the cutting diagram and the machine settings before setting stone to lap.

Think of it like driving: when you come to a four-way stop, you halt, look right, then left, and then probably right again before proceeding (my British, Australian, and other right-hand-steering friends may now mutter indignantly). In the same way, you can set the new cutting angle or index, check back with the diagram, and then once again verify machine settings before committing to the cut. A convenient holder for the sheet of faceting instructions, coupled with good lighting and a comfortable workplace (see page 298) makes these steps a natural and easy part of the hobby.

Wykoff's book recommends the acronym CHIA – Cheater, Height, Index, Angle – to help you remember what to check. As a continual and friendly reminder, you might even consider acquiring one of those terra cotta chia pets for your work area. Your favourite green-topped farm animal, cartoon character, or president will flourish under your well-planned lighting. Note, however, that CHIA is not the recommended order for changing your faceting machine settings (see "Angle First, Height Second" on page 153 and further advice on page 297).

Intelligent Consistency

The well-known nineteenth century essayist, philosopher, and poet Ralph Waldo Emerson famously stated that "a foolish consistency is the hobgoblin of little minds" (*Self-Reliance*, 1841).

Note that he wasn't a well-known nineteenth century faceter.

In fact, establishing a rhythm to your cutting can be one of the more relaxing and "zen" aspects of the hobby. It also prevents the most common types of errors, such as incorrect angle, index, and mast height settings.

As the well-known twentieth century faceters, Glenn and Martha Vargas, somewhat less famously stated: "orderly, repetitive operations pay in reduction of errors…" (*Faceting for Amateurs*, 3rd Edition, 1989, p. 157).

Ok, so it's not poetry, but it is great advice.