The Voyage of Creative Risk

The limitations that we face as designers as builders and as human beings, are largely self-imposed. We can accomplish the goals we set given the willingness to go into unknown territory with a faith in the outcome and a knowledge that obstacles on our path are primarily in our own minds. Creative risk is extending creativity into unknown areas with the faith that, by doing something in a new way, not yet experienced or even imagined, we will gain significant results. The realization of a log home is just one example of a goal that can be reached given a new attitude and dedication.

Most people's conception of log homes come with a host of limitations. It is not surprising and it is completely understandable. If we focus on the past, we inherit the limitations of those that went before us. For example, log homes are usually dark inside and boxy in shape. In some ways they are a perfect metaphor for traditional ways of thinking about the world--boxy, or rigid, and dark inside, or lacking in light or zest. That is because the world tends to shut down the spark of creativity in people. We learned it as children: "Be careful, you'll hurt yourself." "Boys don't... or girls don't..." Well-meaning but misguided.

When Dan approached me with his concept for a log home, I knew for certain that he was willing to, as he put it, 'move outside the box.' And although, perhaps even I had a few conditioned thoughts saying, "You can't do that", my deeper belief was saying, "Sure we can do that-- let's get started." The first challenges were obvious. Given that he desired to build with large diameter Western Red Cedar logs, that the split level home he had envisioned raised a whole set of challenges related to differential settling. The curvilinear forms he had imagined, which he presented to me as a rough sketch challenged the long and straight character of large logs. He and his wife, Laura wanted it to be bright and open with an expansive quality inside.

The response to dealing with varying levels was to design the home as a 'piece en piece'. Conceptually, building 'piece en piece' is a relatively simple process: scribe-fit logs are stacked horizontally between posts and a continuous log over top of the posts carries the loads from above. But the Dan and his wife, Laura, like virtually all my clients, are drawn to log partly because of the look and feel of the traditional notched corners. Placing posts at all corner locations was definitely a compromise that they, like most clients, were not prepared to accept.

This raises the whole question about compromise. While it is inherent in the design process that decisions almost always involve a series of choices between often conflicting variables, it is how the choices are perceived that, as much as anything else, determine the overall design of a house. In other words, our perception determines what we believe our choices are. If we believe that in order to have an inexpensive house we must stack all the bathrooms and we want an inexpensive house, then the decision to stack all the bathrooms will inevitably influence the resulting house design. Or, if we believe that log homes are dark and confining, then we may choose a stick- frame over a log home even though we love the feel and character of wood. Our choices will be limited by our perception. And our perception is defined by our beliefs.. If we wish to move outside the box, if we wish to live a life that is meaningful and speaks of our greater potential, then we must be willing to examine how our perception influences our reality and change our perception in order to achieve a greater reality. If we want a home that is bright,

expansive, irregular in shape, multi-leveled, and constructed of log, then we must first give up the perception that it can't be done in log. We must open our minds to a greater range of possibilities in order to experience a greater probability.

So the choice is not always whether to have a one level notched corner home or a split level 'piece en piece', or post and beam, but how can we interface two or more construction methods, or what are the ways we can deal with differential settling. This may entail doing part of the house with full scribe-fit notched corners and part of the house 'piece en piece' with various points of interface. If this is done such that the interface is a simple vertical plane then the resulting 'slip joints' at the point of differential settling are relatively easy to execute. Occasionally, a single plane of interface might compromise the design. For example, I a few years ago I designed the Frisco Nordic Center in Colorado. A couple of years later I was requested to add a new, and therefore, settling, washroom structure resulting In a "T"-shaped building. Therefore, the new roof extended over the existing roof. I had the new ridge beam cantilever over the existing roof so that the new roof virtually floated over the existing, and the settling was picked up by simple flashing and counter flashing at the valley.

In the Dan and Laura's home, I decided to avoid complex interfaces because of the complexity of the evolving shape of the house and to deal with the problem of differential settling in an entirely new way. The design had three principle corners where notched corners would be most appropriate and desirable for their appearance. With conventional notched corners, the entire roof structure settles with the walls. In this case a settling roof structure would have meant complex and therefore potentially troublesome slip joints at numerous interfaces, so I chose to let the walls settle while keeping the roof fixed. This was achieved by interesting hollow structural steel columns within the log work itself at or near the notched corners that carry the roof load by way of log lintels or tie beams (see photo). The differential settling occurs between the tie beam and the top course of logs or windows below in the manner of a 'piece en piece'. Therefore, it was relatively simple to execute. The log tie beams are used on the bearing walls only. The rake walls settle with a simple slip joint where the top of the wall abuts the roof.

The creative process extends far beyond the aesthetic design. Creativity is a quality of our mental processes not the result of our endeavors. It is the ability to imagine and describe possibilities. It extends well beyond art to any human endeavor. We can be creative in the way we manage our home, our finances, our time, anything. Finding creative economic solutions to design challenges are an essential part of the creative process. It does not mean that economics drive design decisions: that is a function of the project budget as a whole. It does mean that given a number of design solutions to a functional challenge, we can apply creativity to the ways that something can be built on site. It is one thing to design something that is a piece of art. It is another to design the same thing so that it can be built efficiently, and therefore cost-effectively.

In 'piece en piece', as with any post and beam type of construction, the integrity of the building shell is most vulnerable where the horizontal logs meet the logs posts. The log posts must keep the horizontal logs aligned vertically, allowing them to settle and slide down as they dry out, yet keep the weather out. I have seen and used various types of splines and weather-stripping, most of them very successfully. What I sought in Dan and Laura's home was a simple and economic system that could be repeated for the dozens of log/post combinations. The solution was a single mortise and tenon connection employing two courses of conventional door weather-stripping (see photo). While I have been impressed with the craftsmanship of double mortise and tenon joinery, I believe they are usually unnecessary and very expensive, especially if replicated numerous times. A single one inch deep mortise houses the horizontal logs and has only two surfaces in contact with the horizontal logs. This means less opportunity to get 'caught up' and resist sliding down the mortise as the logs dry out.

The second component, the weather-stripping was even easier. When searching for a solution to a problem, one should not only survey what has been done before, but examine existing

resources directly related to the problem. How others have solved a problem may or not may be the best solution to the problem at hand, but identifying related resources may point directly at a creative solution. In this case, simply going through the catalogue of a local weather-stripping manufacturer and distributor gave me a simple, economic solution. A low cost weather-stripping used in standard exterior doors which utilizes a vinyl fin which is friction fit into a saw kerf meant cheap installation and no adhesives or fasteners. It was so simple I decided to double up, creating better resistance to thermal bridging. The second difficulty inherent with the concept of 'piece en piece' is the tendency of the horizontal logs to hang up.

That is because the system relies on the weight of the logs themselves to slide down the post as they shrink. This may been fine for the bottom courses, especially if the post spacing is wide, which have several logs and therefore considerable weight on top of them. In both the circular areas of Dan and Laura's home, the posts are closely spaced. Therefore there is little weight bearing on the top courses of logs as they shrink. A small amount of friction at a post can hold up a log. I have been into homes where, although the original scribe-fitting appeared excellent, huge gaps could be seen between the logs because of 'hung up' logs.

This can be countered by applying a consistent downward force on the logs so that as they shrink, they are forced down against the log below. I achieved this by placing springs in compression between the tie beam and the top log course, thereby exerting the constant downward force. Innovative solutions are not always simple. There were a few variables need to be considered: firstly, the amount of force that the spring exerts while in compression; secondly, the travel , or differential length, of the spring compressed and uncompressed; and thirdly, the overall length of the spring. Because I like to keep the trim between the tie beam and top course to 5-1/2", there wasn't a lot of flexibility. In other words, the force had to be appreciable while the travel was short. I consulted with a local spring manufacturer to see if my needs could be met. In the full wall applications with long runs, I chose an off-the-shelf spring with the tolerances I required. For the majority of the applications, I had springs manufactured at a very reasonable cost. Most of these where inserted above full-width windows which rested on two or three courses of scribe-fit logs. Each window unit has approximately two hundred and fifty pounds of force over each of the side jambs which is transferred to the logs below at the most critical locations, adjacent the vertical posts. All the logs that used this system have settled properly. In two applications where springs were inadvertently left out, the logs have hung up and have had to be physically forced down after the fact.

Undoubtedly, the most unusual and challenging aspect of Dan and Laura's home was the large bay in the Living Room. Fortunately, 'piece en piece' construction lends itself to bays in a way that conventional scribe-fit construction cannot. Because of the circular forms inherent in the concept of the house, I designed a circular vault over the bay. Making the bay sixteen feet in radius meant it was gradual and graceful, and located the huge upturned bearing log post so that it would separate the kitchen and living room areas. It also put the apex of the roof vault at what I considered an optimum point visually on the exterior, so that the curving roof would be very stunning yet not obtrusive.

I took the bay concept one step further. I have always been intrigued by the possibilities in post and beam construction for creating unusual form because linear elements have more flexibility than planar elements, but I usually see little creativity applied, especially with logs. There is nothing to stop a designer from manipulating the posts in such a way as to create more visual

interest than by simply standing up them up vertically. I chose to lean the bay posts out at an angle of ten degrees: the walls of the bay, mostly glass, actually lean out. Besides the engineering challenge, which was insignificant because the angle is slight and the roof imparts structural stability, the only real challenge was the mathematics. This is where CAD came in very handy. It allowed me to simply calculate the multitude of dimensions of the various components that make up the structure from the horizontal base logs to the log rafters and curved plywood rafters that make up the roof shell. It meant for some compound angles and some head scratching for the log builder, Tim Reid, but it all went together quite simply.

What initially appeared to be the biggest challenge of the leaning bay was tying it into the vertical walls on either side. An awkward wedge was being created between the two walls, one vertical, the other leaning out 10 degrees. I expended considerable metal energy on this one considering options , including twisted glazing, until Mother Nature came to the rescue, more specifically, the large diameter western red cedar logs we were using. I realized that instead of using two posts on each side of the bay one for keying in the vertical wall and one for keying in the leaning wall, I could use only one log for each side provided the diameter was large enough. I chose logs that flared to well over twenty-four inches in diameter so that one log could interface with a vertical wall on one side and a leaning wall on the other side.

Besides the more technical solutions that went into the home, of course, there are numerous other areas where solutions were inherent in the materials themselves. Using the large flared butts of logs upturned to provide ample bearing area for up to sixteen log rafters gave a unique and practical solution to a common problem. Removing the outer inch of wood from a log post between four and seven feet above floor level in the kitchen, gave a feeling of solidity to the post yet more of an open feel, while giving the bonus of highlighting the rich inner grain of the western red cedar. While I often slab logs backing against cabinets to provide more space and easier connections, we utilized this in other areas in the home to provide variety and additional richness. Going with a single coat of plaster over drywall instead of successive coats of mud and sanding cost the same amount but gave a rich look more befitting the natural texture of the logs.

There are countless other examples of design decisions that came about as the result of opening up the mind to possibilities and being willing to do things that were unique yet consistent with the concept of the home. All that was required was a faith in the outcome and the commitment to utilizing the resources to their potential. The rewards of such creative risk go beyond the major award the home received. The result is a home that is at once exciting and relaxing: that is, truly livable. Beyond the physical home itself comes an awareness, that by opening ourselves to our unlimited potential and maintaining an unswerving faith we create a greater and richer reality.