Born Again Engineer

By John A. Mercer, Jr., P.E., SECB

Have you ever responded to an "altar call" to align your life and faith with God, family, and vocation? Our faith traditions may be slightly different, but I think that we are all due to be at bat very soon. This will apply to both newly graduated and veteran engineers.

Rebirth of the *International Building Code* (IBC) has been announced. The IBC 2009 has hit the streets, and now it is once again time for us to visit the old ways and compare them with the new. The three-year publishing cycle is starting once more, so that all reference standards may be revitalized with *new and intriguing theories and "simplified methods" of determining illogical pseudo loads* for a whole spectrum of structural systems

Why can't we just use proven rational methods from the recent past based on what actually happens? For example, there is discussion to eliminate the wind load method for all building types from ASCE 7 in a future version. That is the easiest method to understand rationally.

Fortunately, we have associations that have dedicated volunteer members who spend time developing programs for both technical and business issues. The CASE/RMP Toolkit is for business. NCSEA's Winter Institute offers solid technical training. SEI provides a wide variety of publications and educational opportunities. However, due to ever-changing codes and specifications, their chores are never done, new members are needed, and the next generation of dedicated professionals focused on the profession is necessary to continue developing such programs.

Computers are a powerful tool for the structural engineer. Remember years ago, when you wrote your first spreadsheet solution? Mine was in VisiCalc, then Multi-Plan, which later evolved into Microsoft Excel. How did you feel with all of that POWER at your disposal? Great, wasn't it? Today with computers, if it can be modeled it can be built; but at what cost, and at whose risk?

Today's technology wasn't even a dream when I started my engineering career. I never would have guessed that technology would also become double-edged. "Black box" engineering is always knocking, so be on guard. Software companies continue to develop programs with all sorts of bells and whistles, not dictated or requested by the profession, but driven by their own commercial interests. Plainly spoken, there isn't a software clearing house for the good, the bad, or the ugly.

3D modeling software is being developed outside of the profession and marketed to our clients, with little understanding of the process and creating unrealistic expectations, yielding an artificial demand. BIM is a wonderful tool, but it is just a tool, not a magic bullet. 3D CAD with structural modules solves our visualization and clearance issues and accommodates bi-directional exchange with our analysis and design software. "Building Information Modeling" still happens primarily between our ears, not on a computer screen.

The roof truss fabrication industry took over specialty engineering functions of component design utilizing proprietary software. Employees with technical educations control the component design process. Now, to cover their structural failures, risk has been shifted to the Registered Design Professional via language changes in their industry standards.

One challenge for the SER is a change in the code-referenced industry document TPI 1, Chapter 2, for metal plate connected wood trusses, which dictates the responsibility of the Registered Design Professional. I commend the Bender-Woeste article on page 24 that discusses this issue.

So what is it going to take for the structural engineering community to survive the building code cycle? For one thing, more input from you, the practicing structural engineer. Perhaps you could join an association and volunteer for a committee or two. Perhaps the code cycle needs to be extended to five or ten years, instead of three. Perhaps the structural engineering community needs to educate its clients.

In the meantime, back at the office, we will continue to satisfy our clients' wishes, provided that the results remain safe and affordable. How can we adjust to new requirements imposed by the component industry standards and avoid liability? Continuing education will need to be given priority on everyone's radar. Perhaps our engineering universities need to begin teaching what is and has been missing.

Perhaps the committee members who revise the codes and standards should also be charged with providing online, on-demand tutorials and training webinars. These kinds of offerings should be included in the price of the new documents, not sold as additional revenue generators, thereby perpetuating change.

It is once again time for the practicing structural engineer to become "born again," re-educated with fresh knowledge and reinvigorated to take charge of our profession. Face the challenge! ▪

Your Turn

What is the proper role of building codes in structural engineering? What about computer software? How should design responsibility be apportioned between the SER and a specialty engineer? Should the current three-year code development cycle be retained, or should it be lengthened to five or even ten years? Please submit your responses and see what others have had to say by clicking on the "Your Turn" button at **www.STRUCTUREmag.org**.

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