

# UNSTRUCTURED PLAY



What happens when engineers get together for a party? They build things and break stuff

BY PETER J. WOLF  
PHOTOGRAPHY BY HARRISON HURWITZ

In the interest of full disclosure, I need to point out that I am a recovering engineer myself. So for me, all this jargon means flashbacks to my undergraduate years and too many “free-body diagrams” (which are, much to the dismay of engineering students everywhere, not nearly as sexy as the term might suggest). My former life turns out to be a double-edged sword here—as it turns out, I can keep up my end of the conversation just enough to get me in over my head.

The “P” in PK Associates.

Paul, who graduated from the University of Colorado, must have been at least somewhat conflicted the following week as he watched the Diamondbacks lose the National League pennant race to the Rockies in four games.

I am of the opinion that, on this particular point, it would be unwise to draw any parallels whatsoever to real-world construction projects. Let’s just leave it at that.

I AM SURROUNDED BY ARCHITECTS, CONSTRUCTION engineers, contractors, and a number of other people who are in some manner involved in commercial building. These guys—and it’s mostly guys in this crowd—are intense. They’re focused on the job at hand. They talk of compression members and tensile strength, stress and strain, torsion and buckling. They are performing complex calculations and creating sophisticated matrices of possible outcomes—all without the use of paper and pencil, never mind calculators and spreadsheets. And they seem to be having a hell of a good time doing it. No doubt the open bars and ample supply of Cathy’s Rum Cakes help. This is no job site—we’re at The Big Break, the 15th anniversary shindig put on by PK Associates, a structural engineering consulting firm located in Scottsdale. And for these guys, this is “work-life balance.”

As I am handed one business card after another, I recognize nearly all of the firms’ names. Not because I’ve done business with any of them, but because I’ve seen these names before—usually in enormous type on the sides of construction trailers or massive banners draped across soon-to-be buildings. These are the names and logos that make up our city’s environmental wallpaper. Lots of building means lots of PK clients, and three to four hundred turned out for the Big Break, despite some unexpected distractions. “I don’t get it. We sent out a ‘Save the Date’ card in June,” jokes Principal Cliff Paul, “and the damn Diamondbacks have to go win, and have a game!” For those interested in the playoffs, the tension in the room is divided between the main event and the television in Cliff’s office.

Five years ago, PK Associates celebrated their tenth anniversary with the Egg Drop. Clients were invited to create small protective shelters from nothing but drinking straws and tape. A raw egg was placed inside the shelter, and the whole thing was dropped from the second floor mezzanine. The Big Break carries on the tradition of engineering know-how, playful competition—and primal lust for destruction. Here, competitors create bridges from toothpicks and glue. The rules are abundantly clear, as is the deadline for submissions, yet nobody is surprised by the handful of obviously “illegal” designs or the fact that 17 of the 35 submissions arrived late. Nobody makes too much of a fuss. Sure, first prize is the winner’s choice of a trip to either Puerto Peñasco or Telluride, but this is all fun and games, just a friendly competition among longtime colleagues. Yeah, right.

What makes The Big Break such a truly brilliant event is that it taps into the way these people are hardwired. You can’t throw down this sort of gauntlet and not expect them to take it seriously. PK worked closely with Cindy Ritchie (whose firm Mindstream PR handles, well, PR for PK) and visual communication designer Tom Blanck (of tmbpartners, of which the aforementioned Ritchie is, well, a partner) to come up with the concept and nail down the details. “The nice thing about doing a project like this,” says Blanck, “is we actually put it in their lap ... to understand what a structural engineer has to do. Because typically they don’t think ‘structure’—they just think beautiful structure. Without these guys,” Blanck continues, gesturing toward the PK studio behind us, “none of these buildings would exist—they have to think like these guys think.”

Blanck is not disappointed with the results. There’s a great deal of experimentation going on here, as evinced in the range of bridge designs. And some surprising results, too, both in terms of load-

Three, in fact.

Do not expect to find such amenities at your typical job site.

Quite possibly the least stressful multi-tasking these people have done since grade school.

The traditional gift for which is not eggs at all, but tin or aluminum. For what it's worth, steel — a decidedly more appropriate gift for this crowd — is traditionally given for the eleventh anniversary. For the fifteenth year of bliss, crystal — not wood and Elmer's — is suggested.

A recipe for certain disaster, it would seem, and yet I'm told there were a few defiant contraptions that finished the evening with their delicate occupant undisturbed.

Assuming, of course, he doesn't make a habit of school night partying, which is what's happened here.

Doran has since reported that although there was no free lunch awaiting his return to work, "the bragging is still going on." When, two weeks after the Big Break, RSP's Bob Weigel ran into PK Principal Jack Koehler at a social function, everybody wanted to know, says Doran, "how did an architectural firm out-perform all the engineering firms?"



carrying capacity and the competitors themselves. Several of the more successful bridges are coming from the business side of the industry, for example, rather than the engineering side. And not always from the veterans, either—a point nicely illustrated by the entry from Haydon Building Corporation. At first, this appeared to be a father-son project. But Project Manager Mike Rohrer set the record straight, giving all credit to his son Doug: "I had nothing to do with it." Doug, a student at Mesa's Red Mountain High School and member of their engineering club, says he's considering a civil engineering career—a good move, it seems, based on his performance here tonight.

Cliff Paul is a big believer in the value of experience, so it seems entirely fitting that the winner of The Big Break is Chris Doran, Senior Project Architect with RSP Architects. "There's a place in the world for specialization," says Doran, "there aren't many generalists left. I'm one of those." Which is fortunate for the newbies in the RSP office, as Doran is in charge of their mentoring program. "Like Frank Lloyd Wright," Doran notes, "I think you learn by doing." Tonight, others learned a little something by what Doran's team has done. Weighing in at a svelte 64.2 grams, their bridge withstood 111.7 pounds—with a resultant load ratio of 1.74. Doran and his team at RSP have the next five years to look forward to as the reigning champs. But if the respect they have garnered from their peers is immeasurable and enduring, there are other, more tangible, immediate rewards, suggests Doran. "I think my boss is going to buy lunch for us," he says, a faraway look in his eyes as he ponders his newly won rock-star status.

In fact, during PK's in-house competition held the previous week, the winning submission came from the Construction Administration division. The engineers, says Paul, didn't take it well. "It killed them, actually," he says.

Indeed, it's the foundation of the "PK Way," the philosophy behind their approach to project management.

The weight limit for the entries was 100 grams.

The ratio is calculated by taking the maximum load the bridge supported and dividing by the actual weight of the bridge. Because the rankings are based on this ratio, rather than merely the maximum weight supported, a distinct advantage goes to those designers whose bridges are both strong and lightweight. In other words, brute force is not necessarily the best solution.