SO YOU WANT TO BE AN EXPERT WITNESS

Roger L. Boyell says forensic engineering is a great job—if you can take the pressure

ROGER L. BOYELL has narrowly escaped getting run over by a mobile crane, had rifles pointed at him while investigating an airport radar facility, and has been nearly asphyxiated in an abandoned photo lab. Then there was the time he had to climb a slippery ladder to an electrical panel above a giant sewage tank.

"I needed two hands on the ladder, another on my camera, another on my briefcase, and another holding my nose," Boyell laughs. "What went through my mind was 'hazardous-duty pay required.' "

He's part of a growing cadre of engineers who are trading steady paychecks and corporate environments for the often solitary and occasionally adrenaline-inducing position of expert witness. It's their job to evaluate engineering systems, products, and devices and explain them in layman's terms in a courtroom.

Boyell, an IEEE senior member, has a bachelor's degree in electrical engineering, a master's in applied science, and an MBA. It all testifies to a generalist's training that he says finally made him "a dinosaur" in his previous bailiwick, the defense industry.

It turned out, however, to be the perfect background for a forensic expert."I still use things I learned as a college freshman and sophomore," he says. "Heat transfer, mechanical advantage, electricity, and magnetism—but applied to real-world problems."

To make it in this business, you have to know a lot about something and a little about nearly everything else. "Qualifications have become more demanding for experts, as criteria for what's admissible as evidence have tightened up," says Marvin Specter, executive director of the National Academy of Forensic Engineers. Some states require that experts have professional licenses.

ELEMENTARY? Roger L. Boyell solves legal puzzles by taking his engineer's bag of tricks [below, left] into the field. *PHOTOS: BILL CRAMER*

In 1978, after 20 years developing acoustic tracking and electronic warfare systems in Philadelphia, Baltimore, and New York, Boyell got his first taste of forensic work when an attorney tapped his expertise for a case involving civil radio communications. He turned the gig into a regular sideline, consulting with clients after work and during personal and vacation days. Finally, in 1998, he became a full-time, self-employed consultant.

Forensic experts can earn as much as lawyers. Boyell charges $200 an hour, working anywhere from 20 to 80 hours a week, though only about half the time he spends on his business is billable. There's marketing, advertising, bookkeeping, professional seminars, and other overhead.

The work is not to everyone's taste. Even before testifying, a forensic engineer must undergo a rigorous oral examination by the court to ascertain his level of expertise in the pertinent subject matter. Then he gets grilled by lawyers for the opposing side.

"If an adversarial lawyer can't demolish your technical argument, he will attack your personal credentials," Boyell says. "You have to be prepared to defend everything in your life that's been on the public record—even this article. It feels like a combination of defending your thesis and interviewing for a new job. But there's a real satisfaction in knowing you contributed to the resolution of a contentious matter," he adds.

However, unlike cases in the television show "CSI,"

real-world cases don't always end neatly. "It starts as giving advice, then writing reports, and ultimately, you might be deposed or take the stand during a trial. Sometimes that process can take years, and then it's usually the big-money suits and criminal cases. But that happens in a fraction of the cases. Often, my report ends the matter."

An expert must put his client before himself but his professional ethics before even the client. His first duty is to the truth. In one case, Boyell was hired to prove that a hardware defect caused an electrical fire. Not only did he find no evidence of a defect, but he uncovered an errant extension cord that suggested the hardware in question wasn't even involved.

"If my findings are adverse to what my client wants me to tell them, that's the end of the job," he says. "But my real job is to stay objective." —Susan Karlin

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