



## Profile



# Drawing from Experience

Growing up in the Bronx, NY, Rich Byrnes eagerly anticipated the publication of his favorite superhero comic books, and would rush home from the newsstand to redraw all of the figures. “One of my earliest ‘commissions’ in art was from a grade-school friend who paid me to illustrate a ‘Spiderman’ story that he wrote,” he recalls. Today, Byrnes, Director of Engineering at King Industries, a specialty chemicals, lubricants, and additives company in Norwalk, CT, has found a way to merge his two avocations of art and science — as creator of the chemical engineering comic strip “Boil’s Laws,” published on ChEnected, AIChE’s blog.

Cartooning is a new venture for the chemical engineer, who trained himself in more-realistic rendering and admired Michelangelo — the master who blended art and engineering.

“For many years I felt conflicted about art versus engineering,” says Byrnes. “Cartooning is a very practical way for me to merge my artistic side with my analytical side.”

Indeed, growing up in a family with seven children and limited means taught Byrnes to be practical. “As I considered career choices, I noted that there were a lot of ‘starving’ artists in the world. However, I never met a ‘starving’ chemical engineer,” adds Byrnes.

After earning a BS in chemical engineering from Manhattan College in 1983, Byrnes was commissioned as an officer in the U.S. Navy Nuclear Submarine Program, where he served on ballistic missile submarines and received a Masters level education in nuclear reactor theory and operation. After leaving the Navy, he joined DuPont in Wilmington, DE, as a process development engineer, working on the development of a fluoro monomer used in jet engine composite materials, and on the process scaleup for DuPont’s Krytox (“liquid Teflon”) lubricants unit. This experience led to his current role at King Industries, where he is responsible for the company’s process improvement and business development projects, as well as environmental, quality, and process safety management programs.

“Doing this work — given the limited time and resources that the engineer has to find lasting solutions to difficult problems — involves a fair degree of creativity and imagination — the same skills required in art,” says Byrnes.

He continues: “Chemical engineering fits nicely with art, since in many ways both disciplines are abstract. No one knows for sure what an atom looks like, or how molecular interactions really happen. All of this is quite abstract and requires imagination. Sounds like art to me.”

Boil’s Laws — the latest art project on Byrnes’ drawing board — came about thanks to a call for contributions for AIChE’s ChEnected blog. Byrnes pitched the idea of a

comic strip focused on chemical engineers in the workplace. “What better way to illustrate the engineering experiences humorously than through the eyes of young chemical engineers?,” says Byrnes. The cartoon’s pun-ny title, naturally, is a play on chemistry’s Boyle’s Law.

The strip’s central character — Bruno Boil — is a benevolent mentor (inspired by the memory of Byrnes’ own mentor, Bruno Muzzi), who plays foil to several neophyte engineers as they navigate the perplexing avalanche of technical information in their new working environment.

The most challenging aspect of the cartoon, says Byrnes, is identifying a topic that is relevant to today’s chemical engineers, and then finding a story that can be illustrated in four to six frames. Byrnes first roughs the strip out on scratch paper, and once satisfied with the layout makes the detailed drawings in ink on 14-in. by 17-in. paper. Byrnes says that it takes about 24 hours — often spread over the course of a month — to complete a comic.

Boil’s Laws is not Byrnes’ only project. “I draw and paint landscapes, portraits ... and I’ve tried all media — colored pencils, pastels, conte crayon, acrylic paint, and oil paint,” he says. One of his favorite recent projects is an acrylic painting called “We Shall Never Forget,” which he created for the Connecticut/Sikorsky Aircraft Fallen Heroes group and the Veterans of Foreign Wars (VFW). The painting, depicting the attacks on Pearl Harbor and the World Trade Center, along with the raising of the U.S. flag at Iwo Jima, was used as a fundraiser for the Families of the Fallen charity. Byrnes also provided the illustrations for CEP’s ongoing series of articles about social media.

Byrnes says that art and engineering are rewarding in different ways. “Through art, I can express my innermost thoughts and feelings,” says Byrnes. “Engineering is a much more external, group-expressive process, where teams of talented people are needed to accomplish goals.” In both art and engineering, says Byrnes, the ability to visualize and work with details is key.

“All people have a practical side and creative side,” says Byrnes. “Our practical side helps us find employment. However, don’t neglect your creative side.”

Byrnes encourages people to “be reckless” with their creativity. “Give yourself permission to enjoy doing things without regard to whether or not you are ‘good’ at it. When you do this, your creative skills advance significantly, you become more fulfilled as a person, and your practical skills, such as being an engineer, are enhanced. Give it a try.”

The archive of Boil’s Laws comics can be seen at <http://chenected.aiche.org/boils-law-comics/>.

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