Putting the Engineer Into Popular Entertainment

An Award-Winning Thriller Makes a P.E. the Hero, Highlights Leadership

By Stefan Jaeger, Author of The Jackhammer Elegies

If you try to count the number of movies that feature an engineer as a major character, you will probably not get off the fingers of one hand before you start Googling for hints. Just to get started, there is Arlington Road (the engineer, played by Tim Robbins, is a terrorist), Falling Down (the engineer, Michael Douglas, goes berserk), Mr. & Mrs. Smith (the cover profession of the assassin, Brad Pitt, is an engineer), and Law Abiding Citizen (the engineer cracks and goes on a rampage of revenge). The problem with these is that terrorist, wacko, assassin, and out-of-control vigilante are not exactly positive role models that you want to invite home for dinner and introduce to your kids.

Television also provides slim pickings. Back in the ’60s, you could watch My Three Sons, in which Fred MacMurray played a widowed aeronautical engineer bringing up his three kids on his own. The father’s profession certainly played as a prominent backdrop, but the focus was the family and their comic and dramatic situations. Moving forward to the 21st century, the show Prison Break put a structural engineer and his technical knowledge on center stage, but you have to suspend some disbelief to accept the premise: a structural engineer intentionally commits a crime to get into a jail to save his brother who has been unjustly sentenced to death. The engineer protagonist had designed the prison and has now completely covered his chest and back with a tattoo of the drawings so he can use that knowledge to plan an escape.

Amid this sporadic history, the most repeated refrain I have heard from engineers in my twenty-eight years of working with engineering associations—the National Society of Professional Engineers (NSPE) and now the American Society of Civil Engineers (ASCE)—is “Why can’t we have a TV show L.A. Engineer?” (For those of a younger generation, L.A. Law was a popular TV series in the late ’80s and early ’90s that featured a cast of characters from a law firm in Los Angeles.)

Sex, violence, intrigue, and oddballs

The problem with popular entertainment (or the attraction of it, depending on your point of view) is that you often have to toss in sex, violence, intrigue, and oddball personalities to get an audience. For a civil engineering firm setting, for example, that might imply you have to make the firm’s engineers corrupt, or have bad designs kill people, or fill the office with philanderers to give the L.A. Law treatment. The possibilities are of course limitless, but that might not be the image you would want to project for professional engineers.

Nevertheless, that refrain of L.A. Engineer stayed with me, and given my ongoing interest in writing fiction, I began to wonder whether I could create something to address the popular entertainment void for engineers. After a long and interrupted road, that speculation resulted in my thriller The Jackhammer Elegies, which features a civil/structural engineer as the main character and hero. The novel won a 2013 SET Award from the Entertainment Industries Council, which honors film, television, and other genres that inspire “interest in science,
engineering, technology, and math through media and entertainment.” Additional 2013 winners included the TV shows *The Big Bang Theory*, *NCIS*, and *Grey’s Anatomy* episode “Idle Hands,” and the movies *Iron Man 3*, *Star Trek into Darkness*, and *World War Z*, among others.

**Not Without Precedent**
The effort is not without precedent. A number of other novelists have written on engineer-related topics, and a number of those authors have been engineers themselves. One example from the late ’90s is *Engineered for Murder* by consulting engineer Aileen Schumacher. This mystery features a structural engineer heroine who helps solve a puzzling murder, with Schumacher then following that up by giving her protagonist additional starring roles in a series of novels. In his 1984 novel *Skyscraper*, civil engineer Robert Byrne paints a picture of corruption and questionable design choices that threaten structural failure for a New York City skyscraper.

Going back to the Cold War ’50s, aeronautical engineer Nevil Shute (a pen name) wove scientific and engineering principles into his stories. His novel *On the Beach* looks at life after a nuclear holocaust that brings mankind to its knees.

Acclaimed civil engineer writer **Samuel C. Florman,** P.E., New York Alpha ’44, chairman of Kreieler Borg Florman General Construction Company in Scarsdale, NY, and author of *The Existential Pleasures of Engineering*, wrote an eloquent article on “The Civil Engineer in Fiction” in the August 1959 issue of ASCE’s *Civil Engineering* magazine, where he focused on non-engineer writers.

**Symbol of Progress**
Florman notes that one of the earliest works showcasing civil engineers is Rudyard Kipling’s story “The Bridge Builders” from *The Day’s Work*, first published in 1898. Florman relates how Kipling saw the civil engineer (in this story building an imposing bridge in India) as a symbol of an era of progress that will vanquish poverty and drive superstition from the earth.

The building of railroads across the United States provided civil engineering themes for a number of early writers, Florman reports. Zane Grey’s *The U.P. Trail* and *The Winning Seabees*, starring John Wayne and Susan Hayward, was a fictionalized account of the creation of the U.S. Navy’s “Seabees” during World War II. The film’s dedication—“to the Civil Engineer Corps and the Construction Battalions” (or CBs)—put construction engineering in the same breath as patriotism and bravery.
Jaeger accepts the SET Award for his book *The Jackhammer Elegies*.

*The Magic Mountain* by Thomas Mann cast the main character of his masterpiece as a recently graduated ship-building engineer. It is as though Mann needed such a protagonist to contrast the practical, two-feet-on-the-ground image of the engineer with the surreal world of the mountaintop sanatorium, where the hero has been separated from conventional work-day aims and must deal with fundamental questions of human purpose, the passage of time, and mortality.

**The making of a P.E. thriller**

As for my novel *The Jackhammer Elegies*, the full genesis from concept to publishing spanned about two decades, interspersed with other fiction projects and undergoing some widely spaced revisions. I started planning my novel in the '90s, getting my initial plot hook from a story I heard about of a New York City professional engineer who had been caught in an elevator after the first World Trade Center bombing in 1993 and his ordeal in getting out. A fictionalized version of his experience became the opening scene in *The Jackhammer Elegies*, where the location is transported to Rosslyn, VA (across the river from Washington, D.C.), and the man trapped is Scott Carter, a structural engineer who had designed the steel frame to the building. In the novel, that powerful basement blast rocks Carter from his everyday life into the media limelight—and ultimately into the crosshairs of a technically cunning terrorist.

Carter’s knowledge of the building’s structural framework helps him alert the city about potential collapse, but that turns him into the conduit of threats from the mastermind of the attack, alias Jackhammer. Carter becomes a consultant to the FBI as it investigates the engineering angles to the case, teaming up with Special Agent Michelle Taylor, whose striking presence pulls Carter into the complications of a growing love. The partners soon find themselves matching wits with an elusive mastermind targeting the lifelines of a city’s public works.

A first draft took about two and a half years, but marketing the book to literary agents got put on hold with the tragedy of 9/11. The dark mood of the nation meant no one had an appetite for stories involving a terrorist attacking a building, and it would take years before movies and fiction ventured into the subject matter of 9/11 itself. I put my book on ice and worked on other projects, taking *The Jackhammer Elegies* out of the drawer for some revision in 2003, and then getting serious in 2011 with a major revision and upgrade.

**Keen Conviction**

Besides trying to build an engaging plot, I hoped to paint the world of civil and professional engineering through Carter’s character and his active participation in ASCE activities. Like so many civil engineers and P.E.s I have met over the years, Carter holds a keen conviction that engineers need a higher profile in society. He champions infrastructure renewal and sustainability, qualifications-based selection of engineering services, and raising the bar on the education required to get a P.E. license in the future. As a leader, Carter also speaks out in public forums to raise the overall stature of engineers.

In the same way that a John Grisham novel provides insights into the legal profession, I tried to weave in aspects that show the world in which Scott Carter travels, be it engineering licensure and licensure boards, private practice firms, or promoting engineering careers to students during Engineers Week. At one point in the novel, Carter tells of his forays into grade school classrooms to highlight engineers’ contributions to society, where he uses a parody of *A Christmas Carol* to show what a fearful world we would live in without the work of engineers. The vulnerability of our nation’s infrastructure also becomes an overriding theme.

In these sidelights to the overall plot of the book, I did not want to whitewash the profession and portray Carter as an idealized figure. He fights self-doubts about his move into management to achieve a higher salary when his true passion is design, and health issues can at times undermine his confidence as he faces the stresses of his hunt for the terrorist. As one professional engineer reviewer of the novel
said, “The book . . . portray[s] the engineering profession with all of its strengths, weaknesses, and foibles.”

You may be asking yourself whether I am an engineer. I am not, but I did start my adult life with a physics and astronomy degree, so I have enjoyed the ability to relate to technical questions even though my work with engineers has generally been focused on professional and policy issues. I also share a trait that is generally assumed to be statistically common with engineers—I am a strong introvert, and the experience of getting more in the public eye through presentations and outreach about my novel has put a focus on some important leadership skills.

As engineers examine what it takes to serve society in the future, as described in such documents as the National Academy of Engineering’s The Engineer of 2020 and ASCE’s The Vision for Civil Engineering in 2025, it becomes clear that technical expertise will not suffice for the engineering profession to make its needed mark. Engineers cannot simply be the problem solvers of the past but must also be the problem definers, realizing that decisions entail not only science, but also the science of society, including the triple bottom line of sustainability—the environmental, economic, and social dimensions.

Active Part
Taking an active part in public policy forums and espousing the engineering perspective sometimes entails working against intrinsic introvert preferences. Approaches for dealing with that have been outlined in a number of mass-market books, most prominently in the bestseller Quiet: The Power of Introverts in a World That Can’t Stop Talking by Susan Cain. The book outlines how introverts draw their energy from the internal world of ideas, emotions, and impressions and that they can sometimes be over-stimulated by the external world. They need to limit their social experiences in order not to feel drained and generally prefer to have time to formulate thoughts before they speak, sometimes wishing to put their thoughts in writing before jumping into debate. Also, introverts generally do not like drawing attention to themselves. That said, introverts can be as outgoing socially and in presentations as are extroverts; how introverts feel afterwards distinguishes them—often spent rather than newly energized.

With such inclinations myself, self-publishing my thriller The Jackhammer Elegies basically blew my cover, since keeping to myself about my book would, of course, have defeated the whole purpose of putting engineering more in the spotlight. So I had to overcome my innate dislike for reaching out to individuals to promote my book. I also had to go on the offensive in seeking speaking engagements, interviews, and social media interaction. To be quite honest, at first that was rather distasteful, but what I had to remember was that despite my strong Meyers-Briggs introvert rating, these characteristics are just preferences, not mandates. One simply has to force oneself to enter these situations, and practice eventually makes them more palatable. In fact, the power of repetition and exposure ultimately makes what was once a challenge a rather enjoyable experience. That serves as a key lesson for engineers. No matter what one’s personality genetically, one can make a conscious effort to override one’s tendencies and take a large step to playing a more active leadership role in society. I personally went so far as to team up with an extrovert ASCE colleague and produced a presentation for ASCE’s regional leadership conferences that highlighted how one can leverage one’s personality preferences to become a better presenter and a better leader.

Intricate social games
In popular entertainment, one example that illustrates the need for engineers to possess more than just a mastery of the technical aspects of their work is the 1996 French movie Ridicule, which takes place in late 18th century France and was nominated for best foreign language film. To get royal financial backing for a needed drainage project to protect the health of his landed tenants, a poor French lord and civil engineer must learn to play the intricate social games of wit at the court at Versailles. Throughout the movie, the main character is referred to as Mr. Engineer, and while his technical plans gain little attention, how he displays his communications skills becomes the crucial factor in making an impression for public works funding.

My own increased role as a public speaker allowed me to come full circle on the original motivations for my novel. When I accepted my 2013 SET Award in Los Angeles for promoting science, engineering, technology and math in my book, I reiterated to the audience the call I had heard throughout my career: “Why can’t there be a TV show L.A. Engineer?” I let the audience know that even though the TV show is not yet a reality, the pickings are now a little broader in fiction, and perhaps a movie with a positive engineer hero will be just the thing to catch the public’s imagination.

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