

# The Accidental Engineer

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Dana Buckley doesn't fit the outdated image of a math-churning, glasses wearing, pocket-protected engineer.

With her passion for kinematics, the study of motion, she's more about applying math than just adding up numbers.

As a safety engineer at the Toyota Technical Center (TTC) in Saline, Mich., since 2012, Buckley's world is a series of crash tests, crash test dummies and the lives they can help save.

Truthfully, she's surprised she's working in the automotive industry. She grew up loving animals over engines.

"I never expected that exactly what I wanted to do would be offered by a car company," she says. "I never pictured myself as a typical engineer. I'm not the kind of person who sits around and solves math problems all day."

After graduating from Worcester Polytechnic Institute (WPI) in Massachusetts, Buckley hoped to build prosthetic limbs for amputees. Before that, she wanted to be a veterinarian. Before that, she wanted to be a spider (at least until she was 8).

But here she is at Toyota. So how did that happen, and why is she perfect for the job? These three stories can shed some light:

### **Story 1: Dana Buckley Finds Toyota**

In 2012, nearing her degree in biomedical engineering, Buckley wandered into a Toyota recruitment booth at the Society of Women Engineers conference in Chicago.

She went to the conference to talk only to medical development companies. But when she saw Toyota, curiosity struck.

So she walked up to the booth and asked one question: "Who gets to crash the cars?"

"I knew that, in a company like Toyota, someone has to crash the car for testing," she says. "Maybe it was a dumb or bold question, but I thought, 'can I do that, too?' Turns out that now, I get to crash the cars."

And by crashing cars, she gets to help people. And that's all she really wanted to do.

She's proud that the Sienna – the first car she worked on – earned a 5-star overall crash test rating from the National Highway Traffic Safety Administration. After that, she worked on the latest Tundra. Now she's working on the driver's side crash safety on the 2016 Tacoma.

So, looking back, asking who gets to crash the cars may have been bold. But it wasn't dumb.

### **Story 2: Dana Buckley Crashes Her Own Car**

While Buckley ran errands last winter, a car ran a stop sign and smashed into the front passenger side of her 2012 Camry.

As soon as she figured out she wasn't injured, Buckley's inner engineer took over. She turned off the car, got out and began exploring the damage.

"I was a little shaken up," she says, "but I had to see how the hood crumpled. I had to figure out why the bumper sheared off."

At TTC, all crash videos are carefully examined for weeks. No such luck for her personal crash.

"I immediately wanted to look at the video," she says. "In my head, I assumed there *had to be* a video."

As she was eyeing up the damage underneath the car – on hands and knees in the dead of a Michigan winter – a cop came along with some questions about her post-crash behavior. She had to explain a few things about her job.

But that’s the same curiosity that fuels her work.

“The most important aspect of engineering is asking questions,” Buckley says. “You’ll never have all the answers, but if you don’t ask the questions you can’t even start to figure it out.”

### **Story 3: Dana Buckley and the Elephants**

Buckley decided to attend WPI when she found it required students to participate in a science project outside their major. She looked at the list and saw a program using science to evaluate the quality of life of elephants in Thailand.

“I was the only person at my school to pick the elephants,” she says. “They’re so cute and they’re so smart, I don’t know how anyone *didn’t* pick the elephants.”

That trip to Thailand equipped her with tools that help her in her job today.

“I was amazed that someone could walk into an elephant preserve, put in all these quantitative values and get a reading of an elephant’s happiness,” she says. “That’s totally different from most engineering experiences. That’s something I really enjoy. I love figuring out how we can creatively solve a problem. Engineering is not always straight forward. Having a diverse way of thinking is really beneficial.”

So, with her team, she would measure how much space or water or food the elephants had available. They found that elephants used for tourism were less healthy than those used for agriculture. At the end, they submitted their findings to the Thai government.

She isn’t sure what the ultimate result of the study was, but still, those numbers had the power to improve the lives of the elephants.

That potential for improvement is sort of why Buckley decided to come to Toyota, where her work directly affects millions of people, even if they don’t know it.

“Every single person who gets into a car is a person I’m helping,” she says. “I can’t imagine being in a career where I don’t have a direct connection with the people I’m helping.”