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## ***From Jars to the Stars: Q&A with author Todd Neff***

### **Q: What's this book about?**

A: How did a company that made jars end up building seven Hubble Space Telescope instruments and hitting the comet Tempel 1 with its Deep Impact spacecraft? And who are these people who do this kind of “rocket science” space engineering? In the case of Deep Impact, it turns out they're a creative, persistent, and fascinating group who made something extraordinary happen 83 million miles from Earth.

### **Q: How did the jar company hit a comet, then?**

A: There's a 328-page answer to that. But it boiled down to a combination of serendipity and gut instinct on the part of Ed Ball, who in 1956 came across the University of Colorado “Rocket Project” through sheer coincidence.

### **Q: And after that?**

A: Ed Ball had wanted to create an R&D group at the Ball Brothers Company's Muncie, Indiana headquarters, and hoped to acquire a small technology-focused outfit to jump-start the process. He found one—but it made weighing devices, had nothing to do with space or rockets, and it began collapsing almost immediately after Ball bought into it.

But the weighing-device company's boss happened to be neighbors with the Rocket Project's lead scientist, and Ed Ball put two and two together, hiring the physicist away. The startup built a pioneering sun-seeking satellite (the Orbiting Solar Observatory) for a maverick NASA scientist. From there, the company diversified into space instruments (all five of the instruments on Hubble right now were built by Ball) and, ultimately, modern spacecraft such as the Earth observers that provide imagery to Google Maps and other web sites.

### **Q: Why Ball Aerospace and the Deep Impact mission?**

A: I was science writer for the *Daily Camera* newspaper in Boulder, Colo., where Ball Aerospace was founded in 1956 and where it still builds most of its space hardware. I covered NASA's Deep Impact mission for the newspaper, and became fascinated with the human side of unmanned space, particularly with the work of the unheralded engineers behind the hardware upon which the American space program rides. I wanted to show that these are regular folks who happen to be very smart and work hard, and that being a “rocket scientist” is actually pretty cool. Deep Impact was Ball Aerospace's first attempt at a deep-space spacecraft—that is, one that leaves Earth behind. Plus Deep Impact involved, as NASA space-science chief Ed Weiler put it, “a cosmic explosion.”

### **Q: Does Ball Aerospace make jars, too, then?**

A: No, though Ball Aerospace & Technologies Corp. is indeed a subsidiary of the Ball Corp., a Fortune 500 company specializing in aluminum cans (they make billions of them a year—look for the Ball logo next time you sip a Coke). Also, it's important to add that this story is not just about Ball. The Jet Propulsion Laboratory, Ball's partner on Deep Impact, played a huge role in Deep Impact's success, as did the mission's scientists, led by University of Maryland Astronomer Mike A'Hearn, as well as NASA leaders.

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**Q: Just how technical is this thing? Is it, like, an engineering textbook?**

A: No. I wanted everyone to be able to understand what these “rocket scientists” actually do. But *From Jars to the Stars* does talk about technology, because to appreciate what the people behind Deep Impact truly achieved, you have to understand the hurdles they overcame. Many of those hurdles were technical. Just because something’s technical doesn’t mean it has to be dry—hence author Ben Bova’s praise of the book as “science journalism at its best: real, exciting and inspirational.”

**Q: Why should anyone care about ‘How Ball Came to Build a Comet-Hunting Machine?’**

A: NASA’s 2010 budget is about \$19 billion. The Deep Impact story offers insights as to where that taxpayer money – your money – goes. Space stokes interest in science, technology, engineering and math (STEM), which no one disputes are key fields if we hope to maintain America’s economic position in an increasingly competitive world. Plus it’s a great story.

**Q: What can those interested in the technology learn from the book?**

A: That technical brilliance alone falls short. That unmanned space is about much more than technology. That success in space is about persistence, creative problem-solving and plain hard work.

**Q: What are some of the key takeaways for business readers?**

A: Follow your gut, and don’t always punt on fourth down. Ed Ball felt that technology was the answer to turning around his aging family business. He bought the wrong company in Boulder, then by chance came across a group of people he sensed could build the right one. They did.

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