A little more than 50 years ago, Jim Albaugh sat in his second grade class transfixed by the rhythmic signal transmitted to Earth by Sputnik. Little did he know that a few decades later he would help put satellites into space—and other, much more complex things.

Originally, Albaugh had hoped to build dams, but by the time he graduated, most of the country’s dams had been or were nearly finished. So he turned to rocket science. In 1996, he was president of Rocketdyne when it was acquired by Boeing and he was made president of Boeing Space Transportation, a group that he grew and merged with others to eventually form the sprawling Integrated Defense Systems unit. Later, he was selected to lead an equally Sisyphean task—integrating Boeing’s military aircraft and space units. He succeeded in part by building better products, but also by assembling strong teams.

“At Columbia, we learned the power of teamwork in engineering and in problem solving,” said Albaugh. “I also learned the discipline of engineering, the rewards of hard work and, most important for my role today, that everyone has something constructive to add to any discussion or debate. Diversity of thought brings strength to Boeing, as it does to any organization. This is one of the most important things I learned at Columbia.”

Today, Albaugh is executive vice president at Boeing as well as president and CEO of the company’s commercial airplanes unit. In less than two months, between December 2009 and February 2010, Albaugh oversaw first flights of Boeing’s two newest models: the 787 Dreamliner, the world’s first major commercial airplane to incorporate lightweight composite materials to increase fuel efficiency, and the 747-8F, the largest airplane Boeing has ever made.

Despite the countless technical questions that must be solved in order to successfully design, build, and fly machines such as these, they remain, at heart, complex, human-oriented systems that rely on thousands of people doing their jobs to near perfection in an uncertain business environment. Assembling one is much like assembling a complex business unit from others, equally complex groups. This, says Albaugh, is precisely why an engineer is the ideal person to lead a mammoth undertaking like Boeing.

“Without a technical background, having a view of the future and leading a large business is difficult,” he said. “I often say—and my apologies to the business school—I can teach an engineer to be a businessman, but I don’t think I can teach a businessman to be an engineer.”

It’s also a challenge that Albaugh seems to relish. With the potential for risk lurking behind every headline about the recession or terrorism or global warming these days, it takes a steady hand to make Boeing successful in the global marketplace. It also takes the kind of leadership that shows others will follow.

“The essence of leadership is making yourself and your team better every day,” he said. “This means challenging yourself, setting high expectations, and holding yourself personally accountable. These are all things I learned at Columbia.”