Start Small, Think Big:

From Small Molecules to Microscale Chemistry to President at a Small College

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Going to college, like many students, I had big dreams about what my future career would look like—making big money as a chemical engineer, which then turned to making big discoveries in the lab when I changed my major to chemistry. Somewhat ironically, my actual career has consistently revolved around thinking small.

Graduate school research focused on small molecules, specifically boron hydrides and substituted organoboranes. These compounds have unusual NMR spectra that required triple resonance techniques, development of new theory, and the use of computer simulation to simulate NMR lineshapes—all of which were at the very edge of what was possible from 1976 to 1981.

Moving from graduate school to my first job (at a small college), my research turned to microscale chemistry—more specifically, how to expand what was possible to do in the inorganic laboratory by using smaller quantities of chemicals. Building on work in the Organic Chemistry lab by Ronald Pike, Dana Mayo, and Sam Butcher, my colleagues and I developed a much broader range of possible experiments, laboratory equipment, and experimental techniques that took advantage of the lower costs, greater safety, and reduced waste made possible by the microscale concept. Again somewhat ironically, microscale chemistry led to some very big results—the publication of five books and dozens of papers, and the establishment of a national center and an international network.

My academic career has always been at small colleges, but I have moved up to play broader roles—from department chair to dean to academic vice president to president. In each case, we were able to prove that small institutions can do very big things and achieve big results. The insights gained in the chemistry lab and in teaching chemistry transferred well to these new roles.

Steve Jobs' #6 Rule of Success says: "Start small, think big. Don't worry about too many things at once. Take a handful of simple things to begin with, and then progress to more complex ones. Think about not just tomorrow, but the future. Put a ding in the universe." In my career, I have come to understand that most great things start small.