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# What You Learned in College Is Limiting Your Growth As a Technology Professional

If you are an engineer, scientist, or technologist, at some point in your career, you will realize that what you learned in college is not enough to establish a successful, long-term career. Advancing your career, whether you want to remain technically focused or you want to become a manager, demands that you take off the technology blinders and give up the habits that you perfected as a technologist.

The typical path for engineers, scientists, and technologists once they leave school and enter the workforce is as follows. You begin your career as a technical *individual contributor*. You focus on your own individual contributions and you do your best to do a good job.

If you are successful as an individual contributor, often, you are given additional responsibilities, perhaps as a team lead or project manager of a small project. At some point, after having been given this additional responsibility, you realize that you are not as successful as you thought you would be. People do not listen to your directions, your project schedules slip, your meetings are difficult and ineffective, and you are stressed. Plus, you are not doing nearly as much technical work as you were doing before your "promotion." You begin thinking, "Just let me get back to my engineering work. That used to be so much more fun."

This situation is often the result of believing that what you learned as an engineer will also make you a good and successful manager or leader or long-term technologist.

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*The Fully Integrated Engineer: Combining Technical Ability and Leadership Prowess*, First Edition. Steven T. Cerri.
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You assume that the behaviors that made you a successful individual contributor will also make you successful as your career advances. They will not.

The first step in getting out of this fix and moving to success is to understand that there is something missing from your current abilities, and, therefore, something needs to be added. You need to make a shift. In order to make this shift, you must understand what you are doing now and what you need to add in order to change your behavior. This book will provide you with that information. It will highlight behaviors that make you a good engineer but will keep you from being successful long-term in related endeavors. It will also provide you with insights into what new beliefs and attitudes you need to add in order to be successful long-term.

When you were trained to be a successful engineer, scientist, or technologist, you learned to look and pay attention to hard, quantifiable, unambiguous, and repeatable data that you generated, analyzed, and counted on to do your work. This is what school taught you and this is what it means to be a competent engineer, scientist, or technologist.

But, as your career grows, you need to grow, too. If you want to be someone who can fully contribute to a team, who can manage projects and others, and who can lead a team or organization, the information that you will have available will often be, at best, fuzzy and less than ideal. In fact, in the non-technical world of effective communication, contribution, management, and leadership, there is often no way to turn that fuzzy, unreliable, and less than adequate data and information into clear, reliable and sufficient data that can lead to certainty in decision-making.

Successful engineers are looking for reliable, unambiguous, quantifiable data. Successful team contributors, leaders, and technical managers know they have (at best) fuzzy, unreliable data. The world of the engineer is built on certainty. The world of the long-term engineer, the manager or leader, is built on the understanding that some decision must be made with a level of uncertainty.

The role of engineers is to build the product, or to solve the problem, based upon quantifiable parameters and data. On the other hand, the role of technical managers or leaders is to drive the organization they lead into an unknown future and to bring together the resources at their disposal/command even when that outcome may seem unreasonable or unreachable to others.

Most engineers believe they can count on improving and perfecting their skills and advancing their careers by taking one step after another, doing what they were taught in school. They believe advancement is a logical step-by-step process into the future.

However, advancing your career represents a broadening of perspective and often involves a **phase shift** in your thinking. And that phase shift is a shift to embrace ambiguity and the lack of a precise, right answer to all questions and problems. It will require making decisions without as much "real" data as you would like. In a nutshell, it will require the application of judgment.

In fact, as an individual technical contributor, you are paid for providing the "right" answer. As a long-term technologist, or manager, or leader, you are paid for the application of your judgment when there is no "right" answer but only answers that work, some better than others.

## This Book Is Your Safety Net

Even the best performers learn to fly using a safety net. The best safety net is not someone who has observed what you are going through from the sidelines. The best safety net is someone who has lived what you are living, right now.

I began my career as an aerospace engineer, with a Bachelor of Science in aeronautical engineering, advanced through geology to a Master's Degree in geophysics, and an Masters of Business Administration, and then became a technical manager, a systems engineer, and general manager of a division of a large software company. I have worked in the aerospace industry and the geophysical industry. I have worked for the US government, the Department of Defense, as well as a commercial printer company. As someone who has worked through the issues of being a technologist in the role of technical manager and leader, I know that it is not an easy world to navigate. It is more like a satellite traversing an asteroid field.

Everyone who wants to be a professional at some point in their career needs a safety net. And this book is one of your possible safety nets. It can help you understand where the surprises are, where the difficulties will occur, and where to find the dark and light corners. It can help to traverse to the other side, to the clearing, where your decisions move the team and the project forward smoothly and effectively.

This book will bring the safety net of my experience to teach you how to make the necessary changes on your own in the shortest amount of time and in the most elegant way possible. Depending on where you are in your career and what you want, different chapters of this book will appeal to you more or less. Take what you can use. Leave the rest for later.