

Preface

On March 21, 1949, I attended a lecture given by Linus Pauling.... That talk was the best talk by anyone on any subject that I had ever heard.... The talk was more than a talk to me. It filled me with a desire of my own to become a speaker.¹

— Issac Asimov

At the first stop of a tour in Japan, Albert Einstein gave a scientific presentation that, with the accompanying translation, lasted four hours. Although his audience appeared to be attentive the entire time, Einstein worried about their comfort and decided to pare back the presentation for the next stop on his tour. At the end of the second presentation, which lasted two and a half hours, the crowd did an unusual thing in Japanese culture, particularly in that era. They complained. For Einstein, though, the complaint was a compliment—this crowd had wanted him to deliver the longer version.²

When was the last time that you sat through two and a half hours of a scientific presentation and wished that it would go longer? Unfortunately, such responses to scientific presentations are rare. Granted, Einstein was a brilliant scientist, but just because one is a brilliant scientist or engineer does not mean that one is an engaging presenter. Consider Niels Bohr, the great physicist who won a Nobel Prize for his proposed structure of the hydrogen atom. Despite being an inspiration for many physicists,³ Bohr had difficulty communicating to

less-technical audiences. For example, his open series of lectures in the Boston area drew progressively fewer and fewer attendees because “the microphone was erratic, Bohr’s aspirated and sibilant diction mostly incomprehensible, and his thoughts too intricately evolved even for those who could hear.”⁴

So what is needed to become an excellent scientific presenter? This question is difficult to answer, because the presentation styles of excellent scientific presenters vary so much. For instance, Albert Einstein was humble and soft-spoken in his delivery, while Linus Pauling’s delivery was dynamic and charismatic. Just because different presentation styles achieve success does not mean that any style is acceptable. For every exceptional scientific presenter such as Einstein or Pauling, ten weak presenters make their way to the podium to bore, confuse, or exasperate their audiences.

One failing that many weak presenters share is that they present their results without preparing the audience enough for those results. What occurs then is that the audience does not understand or fully appreciate what has been presented. Another common failing is that many presenters show a host of slides that follow the defaults of Microsoft’s PowerPoint program, but that do not serve the audience or the situation. For instance, many slides shown at conferences contain mind-numbing lists and distracting backgrounds, but do not contain well-worded headlines or key images that would orient the audience to the work.

So how should scientists and engineers present their work? Given the diversity of audiences, occasions, and topics, establishing a set of rules for how to give a strong scientific presentation is difficult. For that reason, most rules that do exist, such as *tell them what you’re going to tell them, tell them, and then tell them what you told them*, have exceptions. For instance, this often quoted strategy does

not fare well with an audience that is strongly biased against the results.

Rather than present a list of simplistic rules, this book examines the styles of successful scientific presenters. Included as models are Ludwig Boltzmann, Albert Einstein, Richard Feynman, Rita Levi-Montalcini, and Linus Pauling. In addition, the book presents the experiences of other scientific presenters, such as Heinrich Hertz, J. Robert Oppenheimer, and Chien-Shiung Wu, whose initial presentations were weak, but who became strong presenters later in their careers. Moreover, the book looks at a third category of presenters, who because of obstacles never gave great presentations, but did rise above those obstacles to make successful presentations. Heading this category is Marie Curie, who overcame stage fright, hostile audiences, and her husband's tragic death, to communicate her work.

In addition to examining successes, this book considers what causes so many scientific presentations to flounder. To this end, this book considers ten critical errors that undermine scientific presentations at conferences, lectures, and business meetings. Some errors such as a speaker losing composure (Error 10) are weaknesses that everyone recognizes as errors. Other errors, such as displaying slides that no one remembers (Error 6), are such common practice that many presenters mistakenly assume that no alternatives exist.

By showing you the differences between strong and weak presentations and by identifying, for you, the errors that presenters typically make, this book places you in a position to improve your own presentations. The ultimate goal of this book is much higher than simply instructing you in how to present your work successfully. This book's goal is to give you enough insight that you can effectively critique, reflect on, and learn from your own presentations until they become outstanding.