communicate in the first place. In the course of his discussion, he identifies three primary ways in which a speaker or writer can influence an audience: through a genuine concern for the audience's interests (what Aristotle called 'pathos'), through his or her own credibility and sincerity ('ethos'), and through a sound understanding and well-reasoned argument ('logos'). As several of the essays in this section confirm, this advice remains as sound now as it was when Aristotle taught it over two thousand years ago, and can be employed with just as good effect by the contemporary technical writer.

CHAPTER 12

An Engineer's Rhetorical Journey: Personal Reflections

Richard T. Burton

I want to make it clear at the outset of this essay that I am not an expert in communication. What I am is a professional engineer. As it happens, I am also a university professor who conducts research, supervises graduate students, and teaches many courses. Until very recently, I also did senior administrative work. At all of these tasks, I have been successful, and I always considered myself an able communicator—or at least, I kidded myself that my abilities were acceptable.

Like many practising professionals, I had assumed that communication is something that just happens. I had long ago learned some grammar and composition skills in a basic English course, and I had built on those skills through years of professional activity. As a successful professional engineer and teacher, I was satisfied that I knew how to communicate effectively—after all, engineers are expected to do so every day, both in writing and in oral reports, and you don't get very far in university administration without being able to write acceptably or make your point at meetings.

In fact, I was like most everyone else. Most of us take for granted that we can communicate; after all, we can talk sensibly to our friends and colleagues, present an occasional toast at a wedding, order something over the phone, and express our displeasure when something goes wrong. We are also able, for the most part, to successfully manage the communication demanded by our careers. By this measure, we are successful. Like most people, I was confident in my ability to make myself understood and to engage my audience effectively, and my success in my chosen profession was all the evidence I needed to convince me that I was as good a communicator as I needed or wanted to be.

That is, until relatively recently. Over the past few years, I have had the humbling pleasure of teaching a required course in communication to undergraduate engineering students. The course I was given to teach was unlike anything in my own undergraduate experience, where an introductory literature class or a 'technical writing' class that consisted of naming the parts of a report was

considered sufficient to teach us how to communicate. Instead, the course that I was set to teach was one firmly grounded in the principles of rhetoric, a discipline that I had never even heard of until the moment I was assigned the class. It was to be a life-changing experience for me.

In keeping with what I would soon learn about rhetoric, the focus of the course was to teach the students how to 'discover, in any given case, the available means of persuasion' (Aristotle, 1954: 1355b). In other words, our goal in teaching the class was much more than to provide guidelines for writing technical documents; instead, the course was designed to train the students' judgement about how to position a message appropriately for a variety of audiences—to teach them to size up a situation and respond with an appropriate message tailor-made for that audience in that circumstance.

To my own surprise, the experience challenged, and eventually overthrew, many of my assumptions, both about communication in general and about my own communication in particular. Under the guidance of the course designer and other instructors who specialize in the study of rhetoric, I became very conscious of my weaknesses as a professional communicator, and I have learned to recognize and challenge some of the practices that I took for granted. I am aware that I have as yet only 'scratched the surface' of rhetoric as an area of study, and yet I know that the experience has changed—for the better, I believe—my approach to my own writing and speaking, as well as my approach to teaching. In the remainder of this essay, I want to share some of the discoveries I've made as a result of learning some basic rhetorical theory; I'm sure some of these examples will resonate with you. In the process, I hope to query the notion of what it means to communicate well, or to be a 'good communicator', especially within the professions.

Since rhetoric began as the study of public speaking, it is perhaps not surprising that my first rhetorical discovery came in that context. As an engineer, I am thinking in particular about seminars and formal paper presentations in my field. If you are familiar with such presentations, let me ask you this: When was the last time you really enjoyed a talk, or came out with something meaningful? When was the last time you encountered a speaker who seemed genuinely interested in communicating a message clearly rather than simply impressing a select and privileged few in the audience with a flashy visual presentation or a morass of jargon? Finally, when was the last time a speaker made the subject vivid and lively for you, without getting wound up in technical details?

Let me recast that same question from another perspective: If you were the author of such a presentation, did you take the time to really think about who was in the audience and what level of specialized jargon they could understand, or tolerate? Was your first thought about how you might clarify the information for the audience, or did you instead concentrate on a flashy computerized presentation or an impressive level of abstract conceptual language, and just assume that your audience would keep pace? If you thought more about your presentation than you did about making sure your audience understood you, here's some news: you just failed the most basic test of rhetorical effectiveness.

The idea that a speaker or writer has to think about the audience's needs, understanding, or level of interest might seem simplistic to someone who has mastered fundamental rhetorical principles, but it's a potentially revolutionary assumption for many writers and speakers. The sad part is that, though most of us may know we should work to accommodate our audience, most of the time we focus more on content than we do on making that important connection. Almost everyone can tell you that audience matters, but for every writer or speaker who can actually put this awareness of audience into practice, there are a hundred who can't.

Like most professionals, engineers are often guilty of assuming they are better communicators

than they actually are. Part of this assumption is based on the fact that, much of the time, their audience consists of other technical professionals who share the same views, use the same jargon, and have similar levels of professional experience. In such an instance, accommodating the audience seems an insignificant point, since the engineers' communication appears to serve them adequately. But let me digress a bit and explain to you about why I no longer take it for granted that engineers and other professionals can communicate as well as they believe they can.

The failure of audience awareness that I see among my fellow professionals is clearest when we have to communicate with those outside of our own professional community, who may not share the same knowledge, assumptions, or attitudes. The question for many of us is not whether we can adapt to the expectations and needs of a different audience and 'shift gears' appropriately; it is more an issue of whether we even know that such a shift is required.

Perhaps an example from my personal experience will help to illustrate what I mean. The area of 'controls engineering' in which I work has become so entrenched in jargon and mathematical complexities that it is almost impossible to describe even the most basic concepts to a non-control engineer. Thus, an important audience—industry—is very cautious about supporting research in this area or implementing the theory in a practical setting, mainly because they cannot understand what is being said. Such failures are costly, both in terms of lost financial support and in terms of delays in implementing some very powerful ideas, and these problems are the direct result of publications and presentations that ignore the primary audience and address only those whose understanding of the jargon and mathematics equals that of the researcher. I must admit that in the past I too have been guilty of overlooking my audience, but now that I have learned to think about their needs, I have made it my own personal objective to change the attitude of my colleagues in my own area of specialization. This hasn't been an easy task.

My personal discovery and appreciation of rhetoric have not been without some repercussions. The clearer your publications and discourses are, the more susceptible you are to critical review, because if the audience can understand your message, they are more apt to challenge or critique your ideas. But as intimidating as it can be to have your ideas debated and challenged, isn't simulating discussion exactly what you want to do? Who knows, the critic's challenge might just draw your attention to some detail or idea that you'd overlooked; in turn, that renewed attention might be the very thing that allows you to preserve your credibility in future publications.

I have always subscribed to this philosophy, but it was only in watching experts practise rhetorical communication that I realized how much more I still could do. By practising what I have learnt from my mentors, I have been able to stimulate—and welcome—more debate about my ideas than I was comfortable with in the past, and I even feel that I'm receiving a more positive reception when I speak in public. And yes, I have sometimes been found wrong in some of my ideas, but this has not been nearly as embarrassing a situation as I had expected.

My growing understanding and appreciation of rhetoric have also affected my work with graduate students, I believe for the better. I now expect them to be able to clearly explain their research concepts in terms that a person outside their area of expertise can readily understand. For some, this has been a very frustrating experience because they want to 'get on with it' and not spend time with this kind of detail. However, I have discovered for myself what rhetoricians already know: that in many cases, a strong reluctance or inability to explain concepts often masks a serious lack of understanding. Once we have identified the lapses in understanding and cleared them up, I feel that most of my graduate students do appreciate the effort to bring clarity to their communication,

especially when it comes to oral exam or paper presentation time.

It isn't my intention to be too negative about the abilities of students, engineers, or other professionals; in fact, I think they are often victims of their working environment, which in many cases actually endorses this kind of behaviour. For example, in submitting reports, memos, and theses, or in delivering presentations, an engineer is frequently required to follow 'in-house' standards or recipes for format and delivery. I am not referring here to the use of an outline structure, which can work very well in assisting a writer to organize ideas; instead, I am talking about templates intended to standardize the organization and content of certain routine tasks. These are, in some respects, a necessary evil: they are meant to provide some consistency in the kind and order of material presented, and to ensure that details are not left out. If they are measured purely in terms of efficiency or uniformity, these templates can be successful. However, this same uniformity can also stifle the writer's creativity or personality, rendering the report lifeless or even unreadable.

For all these reasons, I have never liked the template-driven approach, but until I began to learn about rhetoric, I couldn't articulate why I was resisting it. Now I realize the reason for my instinctive response: a template necessarily focuses the writer's attention away from the interaction with the audience and onto a standardized one-size-fits-all cookie-cutter structure. For inexperienced writers, the 'packaging' can even come to take precedence over the purpose of the communication, so that the only things that can be said are those that fit the template. As a result, the format that was intended to assist a writer in organizing and presenting information can actually distort important elements of the message by casting emphasis on unimportant details at the expense of more significant information.

To overcome the limitations of the template, we might do well to ask some questions about its origin and its value to what we're writing. For instance, who developed the report recipe, and why? Was the format developed in-house, specifically to accommodate our own circumstances, or is it some generic package that someone paid big bucks for? Does the template adequately serve our communication needs, or do we find ourselves having to skew our messages to fulfill the demands of the template? A knowledge of rhetoric can help us develop the skill and the confidence to dump the template in favour of a format that more effectively accommodates the needs of the audience, the shape of the message, and our own standards as writers. If you work in an environment that typically uses the template-driven approach, then of course you will want to run your work by your superiors for their comments, but if you can achieve your goal of a clear and effective message, everyone wins.

Another failure of professional culture when it comes to clear communication is the proliferation of jargon and acronyms. Engineers aren't alone in being unable to adjust their language use to the demands of audiences other than their peers. Everyone who works in a specialized field—from the physician who looks after you to the mechanic who fixes your car, from the salesperson who shows you the latest in personal digital assistants to the accountant who helps with your tax return—is steeped in specialized language, and it's a struggle for all of us to think outside of the buzzwords we've been trained to use. But thinking outside those buzzwords is exactly what we need to learn to do if we're going to communicate clearly to the audiences of non-specialists with whom we regularly interact. Think of the last time you purchased a computer, and recall the jargon that the clerk threw at you, when all you wanted to know was how to connect to the Internet. In effect, the rest was gibberish. How much gibberish do we routinely present to our own readers, without even being aware of it? The answer, I'm afraid, is often 'too much'. For example, I have just finished reading a graduate thesis that had over 25 acronyms on a single page. Even with a

reference page beside me, I could not decipher the writer's meaning, and I finally gave up. Too bad for me, you might say. But it's too bad for him if his thesis fails because the committee could not understand what he had written.

In the technical world, such examples are all too typical, and unfortunately, we have learned to tolerate them in too much of our communication. Writing to accommodate the reader's knowledge level is viewed by some as 'dumbing down'. Not so: in fact, it is the writer's job to communicate ideas clearly. Frequently, the audience isn't 'dumb'; in fact, often the only limitation they have is a limited knowledge of the subject matter and a lack of knowledge of the jargon imposed on them by a careless writer. Sadly, this fondness for obscurity affects the profession at all levels.

In my experience, one of the worst contributors to bad writing these days is email, which has proliferated to the point that it is becoming a nuisance. Email messages have replaced not only letters and memos, but also phone calls and even personal visits. Indeed, have you ever caught yourself sending an email to the person in the next office instead of simply poking your head around the door?

This email problem is exacerbated when the written message is so obscured by thoughtless errors that we can hardly make out the meaning. Who would think of sending a letter or report that contained no capitals, no punctuation, with every second word abbreviated and not a single verb to be found? Yet many people, including professionals who should know better, think nothing of dashing off an email message in exactly this form. Even if the recipient normally isn't fussy about matters of grammar, spelling, and capitalization, messages that completely ignore these details are actually much harder for the recipient to read and understand. In the end, what you're communicating loud and clear to your colleagues and clients is how little regard you have for their time and how little concern you have for the issue at hand. If the message is important enough to send and email, it's important enough to spend a couple of extra minutes to get it right. If you have trouble catching the errors until after you've sent your message, try sending it first to yourself. You might spare yourself some embarrassment.

Teaching this course has sensitized me to the challenges of accommodating my audience on several levels, and as a result I am acutely aware of their needs and expectations, of the message content, and even of the appropriateness of responding or sending the information in the first place. Indeed, I now spend much more time on the email messages I send out, because I have become more sensitive to what I read from others.

Like many other professionals, I had taken my communication for granted. But now I wonder what makes so many of us believe we are experts in communication, just because have some experience in writing reports and making a few presentations. I don't think of myself as an expert electrician because I can wire my home based on the building code (a kind of recipe); nor do I think of myself as a medical specialist because I can learn to take my pulse, blood pressure, and temperature. Why then are we so quick to think we have nothing more to learn about communication, when it's so clear that the opposite is true? I now believe that engineers and other professionals can benefit immeasurably by admitting that they could use some professional guidance to become better communicators, and that we could all profit from learning the basics of rhetorical judgement: how to understand the audience's expectations, how to adapt our message to those expectations, and how to present ourselves credibly.

The first step to communicating more effectively is to realize that recipes or cookie-cutter procedures are not enough if you want to understand what you're doing and why. Nor is it enough to run your report through a spell-checker and grammar-checker. Though these can help to catch errors, by themselves they won't make your writing effective. Report or memo templates, too, can offer rudimentary guidelines, but becoming

an effective communicator, like becoming a skilled and effective engineer, requires much more thoughtful consideration. The second step is to answer in your own mind the following: Who exactly is your audience? What is the point of the message you want to share with them? Finally, what exactly is your expertise in the material being delivered (in essence, what is the source of your credibility)? If we actually take the time to think through the answers to these questions before we create a message, we can improve our communication significantly.

In all fairness, engineers and other professionals are beginning to recognize the importance of becoming better communicators. Those who are self-employed or who deal with the public, for example, come to realize the importance of understanding the audience's needs and of talking to them in language they can understand. If they don't learn these things, they do not survive for long in business. I just recently talked to a self-employed engineering entrepreneur who reported that miscommunication had cost him several contracts, and who observed that it was only after a great deal of soul-searching that he could admit to himself what the problem was. This same realization seems to be growing across the professions, as companies large and small invest in communication training for employees at all levels. What other professional workshops see CEOs and custodial staff learning the same material together?

Of course, if you're after real improvements in your communication skills, the trick is to pick the right course. Getting a new set of recipes is not the answer to improving communication skill—what you need is a better understanding of the dynamics of the interaction between speaker, audience, and message. Before you invest time and money, investigate a bit: Does the workshop include some sound base of principles that will help to develop your skills of assessment and response, or does it simply provide more templates and recipes?

One last discovery that I have made in the last few years is the realization of my deficiencies as a teacher. Don't get me wrong: I have always considered myself a good instructor and have received very positive feedback from my students. However, teaching a communication class quickly becomes very humbling because of the way it shines a spotlight on your own classroom practices. Unlike in other courses, in the communication classroom your delivery and your message are one and the same; truly you must demonstrate what you are saying in your own practices, or your credibility and indeed the message itself can soon evaporate. If you fail, you will not only have lost your own credibility but also have lost your audience for the whole subject. I have come to realize the dangers of having a communication course taught by someone who is not an outstanding practitioner in his or her own right. Fortunately for me, my mentors and teachers of rhetoric were experts, and because of their guidance and my willingness to accept an approach based on sound theory, I received the best student evaluations I have ever had over a span of some 30 years. I have seen for myself that a solid foundation of rhetorical principles works, and as a result I feel that I have made a contribution to these students' communicational well being which will stay with them the rest of their lives.

I feel that I have always applied the basic elements of the 'rhetorical triangle' of speaker–audience–message to all my lectures, papers, and presentations without knowing formally about the triangle. However, it has only been since I understood the interrelationship between the elements and their importance that I have became aware of areas where I could improve my communication. Were my expectations from the students driven by sound reason or by convenience and past practice? Because of my exposure to rhetoric principles, I now ask myself these questions each time I give a lecture, assign a problem, or grade an exam.

I began this discussion with a promise to share some of the discoveries I've made as a communicator, and I would like to end by returning to this idea. In writing this essay, I have in some sense

turned the spotlight on my own skills. I am an academic with many years of experience, and have admitted—perhaps even illustrated—my own limitations as a communicator. Writing about communication when I'm still learning to master the fundamentals of rhetoric myself is a task full of risk, and I realize that I may have blown my credibility. But I am hopeful that by taking these risks I have tempted you to learn more about what it takes to be a better communicator, and in so doing, that I have taken the first steps to becoming a better communicator myself.

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CHAPTER 13

Science

Neil Ryder

On Langua Communic

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