Stephen Wolfram's New Kind of Science Communication

By Jamie Hutchinson

Last May the reclusive physicist and high-tech CEO Stephen Wolfram finally let go of his long awaited and oft delayed bid for greatness, a big-city-telephone-book-sized tome entitled *A New Kind of Science* (Stephen Wolfram, LLC, 2002). Judging from the book's mixed reviews so far, the jury will be out for some time on whether Wolfram's kind of science really is new or even good. (And the reviews are just a small part of the extraordinary publicity associated with the book.) But one thing seems very clear at this early stage: Wolfram's is a new kind of science *communication*. New, refreshing, and a little disturbing.

While precedents do exist for any single aspect of Wolfram's mode of getting his ideas across, I'll venture that no scientist ever combined Wolfram's mass appeal, novel graphics, self-publishing (with almost fanatically exacting standards), marketing and PR machinery, and reputation among insiders as a mysterious figure of other-worldly brilliance, seemingly destined from childhood to do something big. Add to that the sheer audacity of the claimed scope and impact of *A New Kind of Science* and you have what might unscientifically be called a phenomenon.

A Genius Speaks to the Masses

The British-born Wolfram began publishing physics papers as a teenager, finished his physics Ph.D. degree at California Institute of Technology at age 20 (then imme-diately joined the faculty there), and a year later became the youngest recipient of a MacArthur genius grant. After stints working on "complex systems" at Princeton and the University of Illinois, he quit academe and started Wolfram Research, Inc., maker of the popular technical computing software *Mathematica*. The company made Wolfram rich, allowing him the time and resources to immerse himself in the subject that fascinated him most: intellectual playthings called *cellular automata* and their potential for explaining natural phenomena that have defied traditional mathematics.

Figure 1. *A hexagonal two-dimensional cellular automaton used to model snowflake growth. Copyright 2002 Stephen Wolfram, LLC.*

Cellular automata are arrays of differently col-ored cells (black and white on a square grid, in the simplest case) that can unfold into intricate, complex, even random patterns despite being governed by just a few strict, elementary rules (see Figure 1).
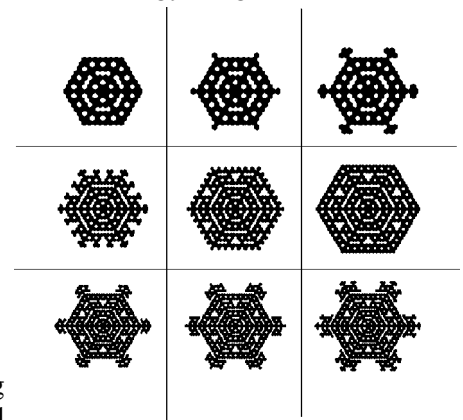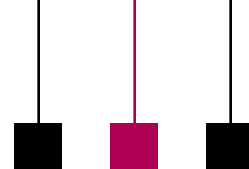
This Issue

It hasn't happened since July 1999: In November I received *two* letters to the editor! Because both generated considerable discussion, I borrowed a heading, *Commentary*, from the *Transactions* and assembled each letter with its responses and rebuttals into a Commentary section; see "Commentary on *Ethos*" on page 10 for a new look at the word, and "Commentary on English Language Testing" on page 14 for some in-depth opinions on testing engineers.

AdCom

The next meeting will be online 25-26 January 2003 and then 17-18 May in Dallas, Texas, prior to the STC conference. If needed, there may be another teleconference in July. The final meeting of 2003 will 20-21 September prior to IPCC 2003 in Orlando, Florida.

The November/December *Newsletter* on our Web site as a PDF file has active e-mail, Web, and table-of-contents links. Issues are posted about one month after distribution of the print version.

Potpourri

4–1. That's the score; four correct and one wrong answer to whether *who* or *whom* belongs in this sentence: "It goes straight from the designated starting person to ___ever his or her most distant known ancestor is." The answer is *who* because it is the subject of the dependent clause and not the object of the preposition *to*; the entire clause is the object. The score was 2-3 for five grammar hotlines. Perhaps PCS members should monitor the hotlines, or hotline monitors should be PCS members, or….

Deadlines are the 15th of the odd-numbered months.

Before *Snoopy* and Walter Wager, Madeline L'Engle opened *A Wrinkle in Time* (1962) with "It was a dark and stormy night." Visit *http://www.people.cornell.edu/pages/jad22* for other good opening lines.

Recent euphemisms reported by John Leo in *U.S. News & World Report*, 25 November 2002:

Activity intolerance:
   Lower back pain
Linguistic domestic violence:
   Criticism of a spouse
Traffic-calming road insertions:
   Speed bumps
Unacknowledged repetitions:
   Plagiarism

A typical pencil can survive 17 sharpenings and write a line 35 miles long. That's about 45 000 words. Dixon Ticonderoga Co. via *The Washington Post*, 15 October 2002.

The two 7400-foot-long tunnels, each 18 feet 10 inches in diameter, will allow trains to travel between downtown Minneapolis and the Mall of America in about two years. *Minneapolis Star-Tribune*, 30 October 2002.

New York automobilists propose to make a stiff fight against the law placing the speed limit at 20 miles an hour. If they cannot go faster than that, half of the pedestrians marked for slaughter may escape. *The Washington Post*, 4 November 1904.

The new edition (2002) of the *Shorter Oxford English Dictionary* contains these words and expressions: *economic migrant, go commando, Klingon, mind-meld*, and *wannabe*. *The New York Times*, 12 November 2002.

Elizabeth Weise Moeller

What's in a Name?

This is a question members of the PCS administrative committee (AdCom) debated heavily during our meeting in Portland, Oregon, in September. The primary question is whether our name, the IEEE Professional Communication Society, accurately reflects who we are and what we do. There are a couple of reasons for exploring this issue.

First, if you recall my wrap-up of the May AdCom meeting in the July/August 2002 issue of the *Newsletter*, I talked about reinventing PCS. We are working on adding new products for members and, in doing so, are spending quite a bit of time exploring who our members are, what they do on a day-to-day basis, and what we can help with.

The second reason is name recognition. PCS is often confused with the IEEE Communications Society (CS or ComSoc). ComSoc focuses on hardware (e.g., switches and routers), techniques, architecture, and protocols for moving data across networks. Within the IEEE, many people do not know or understand what it is that our members do. Once educated, they are pleased to hear about an IEEE society like us—it's just a matter of helping to clear that confusion.

The question then becomes, Should we change our name? There is precedent for changing our name. In the March/April 1997 *Newsletter*, Rudy Joenk provided a history of the name of our society. PCS was founded in

Products...
mission...
field of interest...
name...

1957 as the Institute of Radio Engineers (IRE) Professional Group on Engineering Writing and Speech. In 1963 the American Institute of Electrical Engineers merged with the IRE to form the IEEE. The IRE Professional Groups became the basis for today's technical societies and councils within the IEEE. At that point our name became the IEEE Professional Technical Group on Engineering Writing and Speech. In April 1964 the name was changed to the IEEE Group on Engineering Writing and Speech. In early 1972 our society officially became the IEEE Group on Professional Communication. Finally, in January 1978, when the IEEE urged groups to become societies, we became the IEEE Professional Communication Society. In 1996 then-president Mark Haselkorn suggested changing the name to the IEEE Technical Communication Society. That change never made it out of the discussion phase.

We are much closer to changing our name today than we were in 1996. The first step took place in Portland at our AdCom meeting where we revised our mission statement. At this writing [late November], we are still fine tuning the mission statement and its accompanying goals. The next step is to clarify our field of interest statement for the IEEE. Finally, we will discuss changing the name of the society. When the potential new name is announced, all members will receive a letter and be provided an opportunity to comment. Once the society approves the name and field of interest changes, they will be taken to the Technical Activities Board meeting in February in Dallas, Texas. If the changes are approved by TAB, they go to the board of directors for consideration at their June meeting. If the board of directors approves the change, PCS will be renamed, effective January 2004.

By the time you read this column you may have already received a letter from me. If not, expect it very soon. Please take the time to think about this change and what it means for the society. You will be given instructions on how to comment, and all comments from members are welcome and encouraged.

"Fault has been found with these articles that they are hard to read. They were, perhaps, hard to write."

—*Oliver Heaviside*

If this copy of the *Newsletter* you're reading isn't yours, consider joining the Professional Communication Society as either a member of the IEEE and PCS or an affiliate of PCS. Visit our Web page (*http://www. ieeepcs.org/membership.htm*) for information; applications are online. On the other hand, if this copy is yours, please lend it to a friend.

New Kind of Science

(continued from page 1)

Wolfram argues in *A New Kind of Science* that cellular automata and other such rule-based contrivances (see Figure 2)—what he calls "simple programs"—hold the keys to understanding complex behaviors like
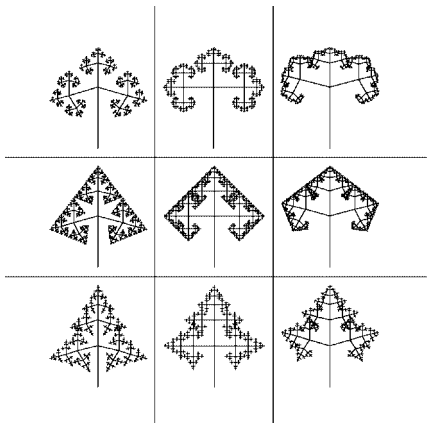

Figure 2. *Another simple program similar to a cellular automaton, called a substitution system, models leaves through iterative branching. Copyright 2002 Stephen Wolfram, LLC.*

weather, the shapes of leaves, and financial markets. But Wolfram doesn't stop there. His climactic announcement is a whopper of an idea called the Principle of Computational Equivalence, which will blur any quick distinction you might be tempted to make between, say, a human brain and a rock. Wolfram also believes in an Ur program—likely no more than a few lines of well written code—that directs every detail of the evolution of our universe. And he believes he can crack it.

You can imagine the furrowed brows down at your local science department.

For all I know, the furrowed brows are right. But as an avid (and, I confess, unschooled) reader of science books and periodicals, I read *A New Kind of Science* with brows happily raised. This was not Feynman, Gould, or Hawking repackaging his professional work for nongeniuses (something all of them have done exceedingly well). This was a genius unveiling his grand opus to the other geniuses, and I was reading right along with them—not because I'm a genius but because the author included me, too, in his audience. What's more, Wolfram predicts that amateurs will make important scientific discoveries by following the approach described in *A New Kind of Science*. We'll be able to discover the programs governing quirky behaviors like pigmentation patterns in animals or collisions of subatomic particles.

Wolfram's prose style is plain and lucid, though formulaic. He constructs his arguments with a patience and spaciousness—and plenty of built-in redundancy— that allow the reader to comfortably climb from rung to rung. He integrates text and graphics with a seamlessness that Edward Tufte would admire. And those graphics! Tidy yet richly detailed, those pictorial representations of Wolfram's programs invite the eye as well as the mind. The printing and design are exquisite. The notes section, all 350 pages of it, reads like a survey of science history dating back to ancient Babylonia, though critics who point out its lack

> He integrates text and graphics with a seamlessness that Edward Tufte would admire.

of scholarship are certainly right. This is a book I plan to reread, in short takes and long, for years to come.

The Image and the Word

Wolfram's heavy use of graphics drew a slap on the wrist from Nobel physics laureate Steven Weinberg, who reviewed *A New Kind of Science* for the *New York Review of Books* (24 October 2002). Weinberg vowed, "I am an unreconstructed believer in the importance of the word, or its mathematical analog, the equation," and went on to accuse Wolfram of choosing the dark side in the "ancient struggle between…cultures of the image and cultures of the word."

That's too dramatic. Words, equations, and images are tools we use and misuse both to understand the world and to contest our varied understandings of it. Weinberg's complaint that "the culture of images has had the better of it lately" reflects an age when another tool (the computer) has made it easier to observe, analyze, and predict nature through imaging, visualization, and simulation.

What Wolfram has done, with the help of predecessors like Alan Turing, John von Neumann, and many others, is to raise the usefulness of computers to another power. Physics historian Lillian Hoddeson points out that Wolfram uses the computer for more than the typical scientific applications of a new technology: "Wolfram is

making one of the grandest applications, perhaps, because computers can conceptualize (in their way) as well as observe" (personal correspondence). In that sense, Wolfram's use of computers is closer to Newton's use of calculus than to the manner in which most scientists now use computers in their daily work.

Wolfram's computer-generated graphics are indispensable to conveying his computer-age concepts. And despite being computer generated, the graphics are presented and explained with great craftsmanship. Like Da Vinci's and Durer's drawings, Richard Feynman's diagrams, Edward Tufte's charts, and Felice Frankel's photography, *A New Kind of Science* is a powerful example of how pictures can enhance the communication of scientific and technical concepts and information.

And Wolfram has not neglected the word by any means. Whatever you say about his prose style, you have to admit he gets the job done. That's not dumb luck, either. The general notes section of the book devotes several paragraphs to explaining the decision behind every aspect of Wolfram's prose, from his fondness for conjunctions at the beginnings of sentences to his avoidance of "whimsical descriptions." Most striking is his claim, without a hint of irony, that it was impossible for him to maintain clarity of style without sacrificing modesty of tone. Think about that for a minute.

A Hot Commodity

Reviewing *A New Kind of Science* for the British journal *Nature* (16 May 2002), Jim Giles observed: "Wolfram the entrepreneur, it seems, goes hand in hand with Wolfram the scientific visionary." Giles refers to the book's pitches for present and future versions of Wolfram's *Mathematica* software, pitches that Wolfram also made in the promotional lecture I attended. It's clear Wolfram believes the best, and perhaps only, tool for doing the new kind of science is *Mathematica*.

The multiproduct marketing campaign doesn't stop there. Visit the impressive Web site devoted to *A New Kind of Science* (*http://www.wolfram science.org*) and you'll find posters, seminars, and something called "A New Kind of Science Explorer" for sale. The Explorer "allows you to experience the discoveries of the book on your own computer, repeating Wolfram's experiments and trying ones of your own….Ideal for personal study, recreation, or classroom

Figure 3. *Wolfram's employee Matthew Cook proved that this "Rule 110" cellular automaton is a universal computer. That is, it can be used to perform any computation. Copyright 2002 Stephen Wolfram, LLC.*
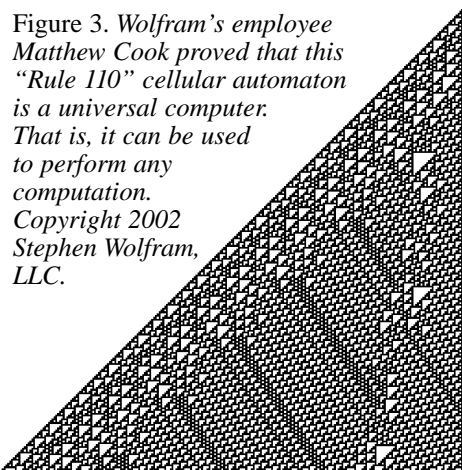
use.…Windows/Macintosh…." And the kicker: "BUY ONLINE."

Consider this marketing campaign alongside Wolfram's well documented, keenly privatized view of science. In addition to his personal withdrawal from professional scientific discourse, according to Giles's review Wolfram gagged an employee who attempted to enter that discourse to share important ideas of his own that were developed in Wolfram's employ (see Figure 3). Several commentators have pointed out the lack of due credit given to others in *A New Kind of Science* (see, for example, Melanie Mitchell, *Science*, 4 October 2002; Brian Hayes, *American Scientist*, July-August 2002; and W. Edwin Clark's Web site at the University of South Florida: *http://www.math.usf. edu/~eclark/*). Indeed, it appears that a central and oft-repeated assertion of the book—that Wolfram discovered the amazing potential inherent within cellular automata and other simple programs—is either a big exaggeration or downright false.

In light of what these reviewers have pointed out, the following claim from the copyright page of Wolfram's book is all the more brazen:

Discoveries and ideas introduced in this book, whether presented at length or not   represent valuable property of Stephen Wolfram, LLC, …appropriate attribution should be given.…Certain material in this book may be proprietary and may for example be or become the subject of U.S. or foreign patents.
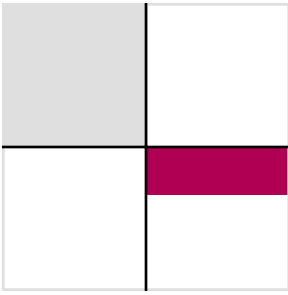
And those are just a few of the several hundred words of legal claims made on that page.

It's absurd to think that Newton could have claimed gravity, or Einstein relativity, as his own. But that level of hubris is clearly part of Wolfram's makeup. Moreover, Wolfram's scientific advances (if they are indeed his) straddle the line between invention and discovery: They are codes. And we live in an age when both invented and natural codes—whether they run our computers, keep pests off our soybeans, or determine our susceptibility to disease—are viewed as highly prized commodities.

For me, Wolfram is a much less appealing fellow human than the volunteers of the open source software movement or the many brilliant innovators who have freely given their programs to the public domain (Donald Pederson, Donald Knuth, Linus Torvalds, and Richard Stallman, for example). Wolfram's popularization of science is less genuinely democratic than campaigns of the National Science Foundation or the Search for Extraterrestrial Intelligence Institute (SETI, *http://www.seti.org*). And Stephen Wolfram, LLC, represents the antithesis of the open, collegial exchange of ideas that has sustained science for centuries.

So, kudos to Wolfram for a beautiful, engaging, and provocative book, and for making his kind of science friendly—even if his motives and methods are too much like those of Bill Gates in making software friendly. Let's just hope the fine print, like those software user licenses nobody ever reads, doesn't one day reveal the friendly face to be nothing more than a mask.

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From the Editor

(continued from page 2)

Information for Authors

One thousand words makes a nice page-and-a-half article, though longer and shorter articles may be appropriate. Proposals for periodic columns are also welcome. Write about what you know, things that you're familiar with. If you live outside North America, consider writing about technical communication in your country. You needn't be a PCS member to contribute.

If you use a wp program, **keep your formatting simple;** multiple fonts and sizes, customized paragraphing and line spacing, personalized styles, etc. have to be filtered out before being recoded in *Newsletter* style. Headers, footers, and tables lead the casualty list. **Embed only enough specialized formatting and highlighting (boldface, italics, bullets) to show me your preferences.**

If you borrow text—more than a fair-use sentence or two—from previously published material, you are responsible for obtaining written permission for its use. Ditto for graphics. Always give credit to the author or artist.

The *Newsletter* issues on our Web site can be used as examples (*http://www.ieeepcs.org/newsletter.html*).

I prefer to receive articles by e-mail; most WordPerfect, Word (except XP), RTF (rich text format), and ASCII files are acceptable. My addresses are in the boilerplate at the bottom of page 2 along with our copyright notice.

Deadlines

The 15th day of each odd-number month is the deadline for publication in the succeeding odd-number month. For example, the deadline is 15 March for the May/June issue, 15 May for the July/August issue, etc. You won't be far off (and never late) if you observe the Ides of March, May, July, and so on.

PCS Members at Sections Congress

The Regional Activities Board (RAB) of the IEEE triennially sponsors a Sections Congress to provide leadership and program training for geographically based delegates and to develop recommendations for the future of the Institute. There are nearly 300 Sections worldwide.

Several PCS members were at the 2002 Congress in Washington, D.C., 17-21 October; I was just there (being the *Newsletter*'s ace reporter) but others attended the sessions in a variety of official capacities:

• *David Kemp,* IEEE Canada strategic planning committee chair

• *Henrich Lantsberg,* vice chair of the Russia Section (largest in Region 8 with 800 members)

• *George McClure,* speaker for Region 3, IEEE-USA, and the ethics and member conduct committee session

• *Janet Rochester,* incoming chair of the Philadelphia Section

Former IEEE president Joel Snyder presented a 2001 RAB award to Henrich Lantsberg on 17 October "with deep appreciation for his sincere interest, for his inspired leadership, and in recognition of his long and dedicated service.…I praise your

Right: *David Kemp*
Far right: *Janet Rochester*
Below: *Henrich Lantsberg at the White House*

Above: *Joel Snyder presenting RAB award to Henrich Lantsberg*

hard work in helping your Section achieve growth in membership and in active Chapters."

Among the consensus recommendations of the Congress were several aimed at fiscal responsibility of the Institute; several to improve conditions for student members; several to improve membership data and expand e-mail facilities; and one (for the Technical Activities Board) where PCS has already started: "Provide a more diverse and robust selection of Web-based tutorials, including emerging technologies, as a free membership benefit."

Peter Reimold and Cheryl Reimold

How to Write Readable Reports and Winning Proposals

Part 5: Persuasive External Proposals

Writing a formal proposal for an external customer can be a daunting task that sends people scrambling for help. In particular, standard formats and canned sections seem to offer safety.

Unfortunately, these safe approaches are almost guaranteed not to work because they violate the core requirement of a persuasive proposal: a precise fit between benefits offered and perceived needs of the customer. Since each customer's situation is special, no all-purpose strategy can be effective. Instead, you need an individual approach.

Two Keys to a Winning Proposal

What are the things that really work with proposal readers? Here are the two that come up most often:

- An executive summary that states the benefits of your solution strongly and ties them clearly to the customer's needs

- A proposal body that backs up the claims of the executive summary crisply and without techno-babble

Your first step is to study the customer's needs as expressed in the request for proposal, if there is one. (Otherwise, do your own thorough research on the customer's situation.) People usually spend too little time on this stage of proposal preparation; instead, they waste it on writing up a lot of irrelevant detail in hyper-technical language.

Next, identify the solutions you can offer for the customer's needs and describe them in a trial executive summary. Then use that summary as your guide in developing the rest of the proposal.

Typically, components include transmittal letter, executive summary, background and overview, technical objectives, work plan, related experience, key personnel, facilities and equipment, schedule, cost or budget, and conclusion. However, the actual titles and order must carefully follow any guidelines laid out in the request for proposal.

Four Temptations To Resist

What makes writers spend a great deal of time, only to produce unfocused, overdetailed proposals? We have observed four common reasons:

1. Getting overwhelmed by the demands of format. People fear proposals must be very formal and technically impressive. In truth, they just need to be persuasive—with no more technical detail than appropriate for the readers. In particular, remember that the front sections and conclusion are read by everybody on the evaluation team, so keep them brief and nontechnical. Reserve intricacies for the sections specifically labeled as technical.

2. Writing detail sections before formulating your main message in the summary. Beginning with the executive summary offers tremendous benefits, especially if the writing is a team effort. It focuses all details on key selling points. From the outset your document will be leaner and more relevant, and you'll have less cutting and editing to do.

3. Falling into features thinking. Especially if you have not managed to fit your benefits to the customer's needs, you may be tempted to switch to a features-based approach to unload all your selling points. Go back to the beginning: Identify the key needs and work out the winning strategy to fill them.

4. Giving in to plain laziness. Pulling standard components off the shelf and slapping them together for a proposal, after changing a few names and other incidentals, seems so much faster and easier. It is—but what good does it do? You might as well not write a proposal at all; that would be even easier and faster, and would get the same result! As we said, proposals inherently must be tailored to the special needs of the customer. Those needs aren't sitting around on your shelf.

Cheryl and Peter Reimold have been teaching communication skills to engineers, scientists, and business-people for 20 years. Their firm, PERC Communications (+1 914 725 1024, perccom@aol.com), offers businesses consulting and writing services, as well as customized in-house courses on writing, presentation skills, and on-the-job communication skills. Visit their Web site at http://www.allaboutcommunication.com.

> Effective proposals state relevant benefits strongly in the executive summary and back them up crisply in the detail sections.

Scientists and Engineers Never Do Anything

If you browse through most of the research literature, especially in scientific or technical fields, you might be tempted to draw this conclusion: Researchers never seem to *do* anything. When relating an event as simple as *We measured the temperature*, they are likely to remove the agent at the benefit of a passive voice. But even the sentence *The temperature was measured* has little chance of finding its way into print; the authors are likely to remove the action, too, and end up with *A measurement of the temperature was carried out.*

Readers of this *Newsletter* who wield the red pen as part of their job have usually learned to home in on passive voices and fix them at once, yet we may all do so for different reasons. Some of us defend the point of view that active verbs are more dynamic, making for a more interesting style. Others argue in favor of conciseness. When I help scientists and engineers write more readable journal articles or research reports, my chief concern is not so much style as accuracy. In other words, I am more concerned by the missing agent than by the use of the active voice or the first person, even if the three are linked.

As usual, though, researchers pursue a good intent when using the passive voices that lead to what we might consider weak, wordy, or inaccurate sentences. The reasons given by the participants of my training programs seem to fall into two categories: cultural influences on the one hand and intended objectivity on the other.

Cultural influences also seem to be twofold. Many participants simply were taught in school to avoid the first person when possible, lest they sound arrogant. Others developed the passive-voice habit from their reading or from their mentors (Ph.D. degree supervisors being typical culprits). Cultural influences, being powerful, quickly lead to myths: "You just can't do that in a paper" is a frequent reaction to my proposing a first person construct, even when the journal's (alas, seldom read) guidelines for authors encourage such active verb forms.

> Let us clarify the agent when the agent matters.

Those participants who get over the cultural shock start advancing more rational arguments. "Look," they might say, "it doesn't matter who measured the temperature; what matters is the measured value, so let's focus on that." Agreed, but with two comments. First, the passive voice *The temperature was measured* does not focus on the measured value either; a better sentence might be *The measured temperature of 28ºC indicates...* . Second, sometimes the agent does matter to the readers, for example when the verb implies human judgment or responsibility (as in *decide*, *believe*, or *recommend*).

My favorite ambiguous phrase is *It is believed...* . When I ask a group of training participants who the implied agent might be, I often hear several people answer at once, "Well, it's obvious, isn't it?" To some of them, however, it means *The authors believe*; to others, *The scientific community believes*.

Clarifying the agent when the agent matters thus becomes our endeavor—one that scientists and engineers may be more receptive to than dogmatic statements such as "Avoid passive voices" or "Write in the first person." How we clarify the agent is important in its own right but is not the priority. Phrases such as *The authors believe*, for example, sound wordy to my ear, but they convey the agent accurately, so I may propose but never insist that they be changed to *We believe*.

Interestingly, researchers who grew fond of impersonal constructs sometimes propose adding a reference call as an easy fix: They thus write *It is believed [5]* in an attempt to mean *The authors of [5] believe*. Unfortunately, the latter is but one way of interpreting the former. All the reference call really says is "You will find more on this belief in [5]."

Let us regard passive voices more as a symptom than as a cause. Let us be alert to them, but not automatically turn them around into an active voice. Some passive sentences are useful, for they allow us to focus on a topic by placing it in subject position. Some are ineffective and would remain so if merely converted to the active voice with a subject such as *we*. Those need to be rewritten entirely, for clarity, accuracy, and conciseness.

Dr. Jean-luc Doumont teaches and provides advice on professional speaking, writing, and graphing. For over 15 years, he has helped audiences of all ages, backgrounds, and nationalities structure their thoughts and construct their communication (http://www.JLConsulting.be).

Commentary on *Ethos*

Bruce Howarth of Sydney, Australia, asked about the use of *ethos* in "The Challenges of Persuasion" by Jason Palmeri and Paul Tuten in the November/December 2002 PCS *Newsletter* (p. 6)

"According to *The New Oxford Dictionary of English*, the accepted meaning of ethos is 'the characteristic spirit of a culture, era or community as manifested in its attitudes and aspirations.' I don't see how this can be interpreted in the sense you give: 'All speakers must gain ethos (credibility and authority) with their audience.'"

Paul Tuten (Tampa, Florida):

"Aristotle described three means of rhetoric (the art of effective or persuasive speaking or writing): ethos, logos, and pathos. Taken in reverse order, pathos is an emotional appeal; logos refers to persuasion based upon logic; and ethos is an appeal based on the character of the speaker making the persuasive case. As such, it would appear that ethos is an accepted and appropriate term within the domain of persuasive communication. Its use within the domain dates back thousands of years.

"*Merriam-Webster's Collegiate Dictionary* extends the Oxford definition of ethos to mean 'the distinguishing character, sentiment, moral nature, or guiding beliefs of a *person* [emphasis added], group, or institution.' This definition is in keeping with our intended meaning and message. In regard to using *respect* or *rapport* as a more common expression, in my view ethos is not definable by any other single term.

"To be effective as a persuasive speaker in my field, audiences must be confident in my knowledge as a VPN [virtual private network] subject matter expert, believe that the information I provide to them is reasonably balanced, trust that I have their best interest in mind, and like me as an individual (because people buy from people they like). In short, the term ethos covers succinctly (as defined in the discipline of rhetoric and *Merriam-Webster's*) what otherwise takes multiple terms: credible, knowledgeable, trustworthy, likeable, etc."

Jason Palmeri (Columbus, Ohio):

"As a rhetorician I am always very concerned to speak and write in ways that are clear and persuasive to my audiences. In this case, your [Dr. Howarth's] commentary suggests that Paul and I may not have done enough to explain our use of the term ethos (especially considering the fact that its specialized meaning within the discipline of rhetoric differs from its use in the wider language). I hope you will find that our article on building ethos [this *Newsletter*, page 11] more clearly conveys the meanings we are ascribing to this term.

"While ethos dates back to classical Aristotelian rhetoric, it is still frequently used in both scholarship and textbooks in such diverse fields as composition, business and technical communication, and speech. Furthermore, ethos strikes me as a particularly appropriate term for our purposes since it specifically refers to the ways in which speakers persuade their audiences by using language to construct an image of themselves as knowledgeable, trustworthy, and likeable (among other things).

"I hope that we have been able to clarify some of our reasons for choosing this term. I appreciate your taking the time to write to us. In the future, we will take special care in defining the terms we take from the classical rhetorical tradition."

Bruce Howarth:

"I feel the authors are both right and wrong. Right, because their usage of ethos is well established in some circles. Wrong, because those circles don't cover all of the *Newsletter*'s readership. Even among rhetoricians, my initial impression is that ethos is used mainly in the U.S. Thus, it would have been better to introduce the term more carefully."

Paul Tuten:

"I think Dr. Howarth's point is reasonable regarding the unfamiliarity of the term to certain readers of the *Newsletter*. My assumption was that the PCS community largely comprised professionally or academically trained communicators who work in technical (IEEE) fields. Perhaps, however, a significant percentage of the readership is the reverse: technically trained or educated specialists whose role turns more toward communicating their expertise. This is my background and how I came to join PCS. Accordingly, we will be more careful to define the jargon of rhetoric in future articles even if the term seems to be widely used and understood to us."

Six Building Blocks of *Ethos*

By Jason Palmeri and Paul Tuten

In classical Aristotelian rhetoric, *ethos* is one of three primary persuasive appeals. Quite simply, it is a speaker's attempt to persuade an audience by appealing to the quality of his or her character. In contemporary technical presentations, appeals to ethos retain their centrality. To be persuasive, technical presenters must demonstrate that they have the authority and credibility to speak upon the subject. In short, they must be perceived as both knowledgeable and trustworthy.

While technical presenters typically build ethos by recounting their qualifications at the start of their talk, we suggest that effective ethos building in persuasive presentations demands a more sophisticated approach. One must develop ethos both early and often; that is, the establishment of credibility and trust is an ongoing process. It begins before the actual presentation and continues throughout the entire delivery. To this end we offer six building blocks for constructing ethos. In crafting these components we draw upon our experiences in delivering persuasive presentations and researching (as well as analyzing) the presentations delivered by others for persuasive purposes.

1. Have Someone Else Introduce You

Ideally, prior to your speaking your audience should already have come to the belief that you are an authority

> Always make sure that your delivery does not impede your audience's ability to understand and to believe what you say.

on your topic—that you have the skills, experience, and certifications of an expert. Yet, while your audience wants to know that you are an expert, nobody likes a blowhard or egomaniac; audiences are unlikely to be impressed by your delivering a mini-resumé at the start of your talk. You are faced with a problematic situation: how best to establish your credibility early?

An effective strategy is to have someone else introduce you. Better still, you should arrange to be first introduced (though perhaps not formally) when you are out of the room. We refer to this as the "rock star phenomenon," whereby everyone is already aware of you and your positive characteristics prior to your entering the room. For example, before Paul enters an executive briefing to give a presentation, the event manager sets the stage by telling stories that make him appear to be some kind of whiz kid, exclaiming things such as "We all will be working for Paul one day." As such, by the time Paul gives his talk, much of his ethos has already been established; from the moment he begins, he speaks as an expert.

2. Tell Humorous Stories About Your Work with Technology

Although it is better to have someone else recount your qualifications, you must still reinforce your expert status during the presentation. After all, audiences often have short memories

and they may forget your qualifications unless you find subtle ways to remind them. The most engaging way to demonstrate your expert qualifications is to tell a humorous story about your past work "in the trenches" with the technology you are discussing. For example, in explaining the disadvantages of modems as a connection device, a humorous anecdote about your modem's catching on fire due to a lightning strike when you were 13 years old underscores the message of how susceptible modems are to failures of all kinds. Whereas this story works primarily to keep the audience engaged in a discussion of remote access solutions, Paul also utilizes it as a subtle reinforcement of his expert status by reminding the audience that he has been involved in networking and remote access for a long time (despite his youthful appearance).

3. Don't Fear the Negative

Many sales presenters focus almost exclusively on the benefits of their product or service, often excluding or significantly minimizing the negatives. While it is certainly good practice to emphasize the beneficial aspects, audience members may refuse to trust overly positive presenters, seeing them as untrustworthy spin doctors rather than as experts providing consultative value. When presenting to customers (either internal or external), we must remember that our audiences often already know the potential negatives of a given technology. Thus, audiences tend to trust the presenters who can

proactively address potential negatives with the technological product or service. Of course, in discussing problems, the presenter should try to suggest potential solutions.

4. Share Expert Authority with Key Audience Members

Often the persuasive presenter is not the only technical expert in the room. For example, in many executive briefings we have found that the senior decision-maker often brings along a number of trusted confidants (some of whom are extremely savvy) to offer opinions on the quality and veracity of the presentations. Those professionals often confrontationally seek to demonstrate their superior expertise by asking difficult questions or making counterarguments. To avoid or to diffuse the situation in which audience and presenter compete to claim the ethos to speak about a particular technology, we suggest that presenters draw on the authority of the audience experts in making their points. In some cases, this can be as basic as recognizing their knowledge by addressing them in the course of the conversation. A simple "as Bill already knows" or "as Susan is obviously aware" before making a technical point can transform a relentless detractor into an enthusiastic supporter.

5. Develop a Comfortable and Confident Delivery Style

Many books have been written about effective presentation delivery, concentrating on eye contact, voice modulation, posture, etc. While much of this standard advice can be quite use-

ful, none of those delivery techniques will work unless it appears natural and genuine. Thus we suggest that presenters must first and foremost develop a delivery style with which they are comfortable—even if it breaks a few rules. For example, we have found presenters violating standard speech communication advice by wandering around the room in interactive meetings or by avoiding extensive direct eye contact; yet they consistently gain superior ratings for delivery because their presentations are given in a manner that appears confident and unrehearsed.

The key is in the power of appearing genuine. While it may be acceptable to violate a few standard rules to enhance believability, we do not advocate anarchy in speech delivery. Rather, we suggest one simple rule: *Always make sure that your delivery does not impede your audience's ability to understand and to believe what you say.* For example, we have seen presenters who talk extremely fast in their presentations, as they also do in everyday conversation. Although this fast-talking technique does appear genuine, it often confuses the audience, especially when their first language is not English. As such it violates our basic rule and should be avoided.

6. Always Leave Them Wanting More

Many presenters try to build their ethos as experts by giving voluminous technical detail about their

> The key is in the power of appearing genuine.

topic—by telling the audience everything they know. In addition to boring or confusing nonspecialist audience members, overly detailed presentations can actually backfire for the creation of ethos by leaving the impression that the presenter is using jargon to cover for a lack of knowledge: If you can't explain it simply, you probably don't know it all that well. Thus we suggest that presenters summarize the most important points about the technology in relatively simple language, focusing particularly on how their audience can usefully apply it. If, however, the audience poses very specific technical questions, then the presenter should be prepared to speak as if he or she had just swallowed a router configuration manual or some highly complex schematics. By providing a general summary and then making the audience request the more specific details, presenters can establish their authority as user-centered experts—as people who can provide understandable technical information to meet the specific demands of their audiences.

Paul, an AT&T employee and information systems doctoral student, is a subject matter expert and frequent presenter on networking technologies, specifically virtual private networks. Jason is an experienced professional writer/trainer and a graduate student in rhetoric and professional communication at Ohio State University. Paul can be reached at tuten@ nova.edu; Jason is available at palmeri.2@osu.edu.

Bad Content Is Bad Content

By Elizabeth Weise Moeller

Last night my New Media class was discussing the use of animation on the Web, primarily the use of Macromedia Flash, but we covered other types of animation as well. As the discussion turned toward what types of information are appropriate for Flash, the students gave me the jumping off point for this column. It's something I've been saying to clients for years, but it was nice to hear students say it as well. Bad content is bad content, no matter how pretty it is. This is especially true in organizations trying to communicate technical or product information.

The discussion reminded me of a presentation I gave at an Internet breakfast in early 1997; I was one of three speakers on a panel. This was such a unique concept at the time that our local newspaper sent a reporter. The quote the editor chose to pull out for emphasis was something I said in response to a question: "There's a lot of fluff on the Internet. You don't want to be part of the fluff." So, here I am six years later, and I am still telling people that bad content is bad content, no matter how pretty it looks.

Let's start with some definitions. Bad content is simply that—bad. It is often poorly written and lacks purpose or informational value. More often than not it is outdated information. If the content is a photo or drawing, it is often out of focus, poorly

digitized, or lacks clarity. One example of bad content is the following text that appears on a real company's home page:

[Company name] is a multi-platform vertical portal matrix to add value to the consumer Internet experience by simplifying the convergence of brands and services. The company is currently developing the interest of strategic partners and is raising capital for expansion.

People put bad content on their site because they feel that any content is better than no content. Or, in the case of the example company, they are trying to impress but they muddle their message in the process.

...knowing what your users need and what method they will use to find it.

Looking pretty is simply that—looking pretty. These are sites that are often *designed* by someone who hopes you have some sort of sublime experience while visiting the site. These sites often contain the latest and greatest bells and whistles, such as Flash animations. Examples of sites in this category can be found by visiting Cool Home Pages (*http://www. coolhomepages.com*) and choosing the Ultra-Hip category.

Web visitors want to see a site done well. At first glance, the graphical look and feel tell a visitor whether this site is worth exploring further. During that first glance the visitor needs to immediately be able to learn who you are and what you do. When visiting the vertical portal matrix

company cited, I was immediately put off by the language. If I can't tell what they do in the first 30 seconds, especially after reading a sentence like that, why should I bother exploring the site further?

If a Web site passes the first-glance test, visitors will start digging for information. I think that many companies forget that people explore various sites looking for information. Many sites do not need to entertain—they need to present information the visitors need. When the information is buried in unintelligible text, or is nonexistent, visitors go to other sites to get what they need, or they pick up the phone and call.

The content issue brings us back to a basic theme in technical communication—understanding the needs of the audience. Who are the audience for the site and why are they visiting? In many of my recent presentations and conversations with clients, I told them they need to stop thinking about their Web site as a marketing task they don't really have time for. They need to think about ways the Web site can help them. The first thing I always suggest is to make a list of the questions they receive by phone on a regular basis. It usually takes a receptionist only a few days to create a fairly comprehensive list. Now categorize those questions by audience type and put the answers in the appropriate sections of your site.

While doing this you need to think like a person visiting your site. You

Commentary on English Language Testing

Carol A. Long (Southampton, England)

"In the *Newsletter* coverage of IPCC 2002 in the November/December issue (p. 29) was a summary by Marjorie Davis of the presentation of Thomas Orr and Akihito Takahashi.* The idea there of an 'engineers' international English' is most welcome but the idea that graduate school should preselect students on the basis of one test worries me greatly. We need engineers to have the ability to communicate in an international world (English seems to dominate there) and it makes sense to provide a model for that. It does not follow that one test against that model is the only method of proof of capability.

"The great value in postgraduate engineering studies is the improvement in the potential of a talented engineer on completion. Using more prescreening raises the bar to entry and reduces the capacity for improvement overall. I'd rather have an average engineer improve her wider understanding dramatically (say 40 percent to 70 percent) in a course than have an excellent engineer show little obvious improvement (say 80 percent to 85 percent). It is all about costs and benefits for the majority of students when looking from a business perspective. There may be a special few who can climb another floor in an ivory tower who need these courses, but wouldn't they get entry in any case? What we add to our various organizations' and nations' capa-

bilities through this education is the key reason to do it. As much as I enjoyed postgraduate engineering studies, the real benefit in my abilities is what it adds to the world's wider wealth and well being.

"If there is a direct relationship between passing a particular (relatively minor and limited scope) test based on one test method before entry and broad success in a much wider field later, we need to look at the bigger picture. Are we narrowing our definition of *engineer* beyond what is sustainable and true? Are we rigging the scales of success to favor one type of person and exclude others? Is our education system closed to a diversity of success because it defines *success* in only one narrow way? Is the course adding any real value (making the average much better) or just providing space and time to let the best be best? Have we ignored the opportunities in the early part of a course for people to have their skills and minds improved as a platform to later study? If we insist that entry be open only to those who fit a particular educational profile, we miss out on cross-discipline insights and similar gains. There was a time when graduate study was available only to those who came from a particular path in traditional education. Today we see accepted mature candidates, access-course attendees, credit transfers, equivalency of study between pure and applied, and accreditation of prior learning.

> We need engineers to have the ability to communicate in an international world.

"If the testing for vocabulary used more than one testing model, I would not be so concerned, but as there is only one model I wonder what talent we are not allowing to enter graduate school as new students. Research in teaching and learning shows that people respond differently to different sorts of testing. People with similar capabilities get different results depending on which type of test is applied. This means we cannot take simple views of test results—people are too complex.

"Creativity and diversity seem to be linked (if the theories about balanced teams are to be believed) and so both are needed for success. Narrowing the intake of engineers to people with one type of success does not add to diversity. Pre-entry tools and measures are simply that: indicators at the start of a course. I hope educators strive to make the most of the students whom businesses need, educating and turning out much improved engineers.

"So, I challenge all educators of graduate school engineers to look to three things: Don't make your entry requirements narrow and closed at a time when others are looking for broader answers; don't use simple entry measures for complex people; and add big value, not small refinements."

Marjorie Davis (Macon, Georgia):
"I certainly would never, ever want to intimate that one exam of written

English be used as the sole entry criterion for engineering graduate school! From my experience, most U.S. graduate schools require from nonnative speakers some sort of proof of written English skill, usually the TOEFL [Test of English as a Foreign Language], as just one portion of the admissions criteria. I only meant to suggest that a test such as Orr and Takahashi are working on, which would identify a core group of words related to the engineering discipline, would be far superior to the rather generic TOEFL.

"All of us in engineering education (at least, all the colleagues whom I know) are dedicated to the idea of educating engineers who are well prepared to enter practice and to serve the world in their important roles. Assuring that they have the minimal language skills to work in English is part of that dedication. We are in agreement about the importance of engineers in our world and societies."

Carol Long:

"Thanks for responding. I am aware that I reacted to what you wrote in a broader context. I want more diversity in engineering (in its broad definition) and for engineering not to be sidelined but respected. Let me explain why those buttons are so hot; you may find the U.K. perspective valuable in what you do with international students.

"There seems to be a growing reliance on 'league tables' in U.K. education based on government measures. The colleges higher in those tables get bigger rewards: better public relations to attract students and stronger government support. A number of the measures are encouraging narrow and formula-style interpretations. That is why I worry.

"One of these government measures is the education level of students at entry. This has had the effect of leading some colleges to cherry-pick students with high entry grades to get themselves further up the tables, which means that some students are not being admitted to appropriate courses for no real reason beyond beating the measures. There is also some debate in higher education about the value of the teaching in some of these courses; questions are raised about what value they add. Are the measures suggesting a good course (challenging, changing, and growing its students) when it is actually an average course reaching predictable results based on its good intake?

"There is also a difficulty in recruiting top-grade students into engineering courses in the U.K. Engineering is not seen as 'cool,' so limiting the intake on one measure is plain daft.

"The need for English ability in courses at English-speaking colleges is not just for the course but also to allow students to do well in the com-

> Assessment tools are primarily meant to measure learner progress, not to limit one's access to learning.

munity in which their college is based. Some of the research into U.K. degree course-drop-out rates during the 1990s suggested that this community aspect was a greater factor than previously thought. TOEFL does have the advantage that it has become widespread and covers general English. An engineering-biased English may actually make life harder for students to fit into wider college life. On the assumption that students have enough engineering to be in a postgraduate engineering course and enough general English to make a life in the college, perhaps there is a better way.

"One of the best things that happened to me in one postgraduate course was the challenge to define a term I thought I understood from previous studies. That whole class learned from each other and learned that the perspectives we had on that term had clouded its meaning. The danger with a TOEFL-like test of engineering terms as an entry requirement is that those challenges are less likely to form part of the course. Another danger is that we deny entry to those who have the skills we need but not the test result mandated.

"This skill or qualification thing seems to happen in my area a lot. (Computing is still trying to sort this out, so perhaps I'm more sensitive to it.) A number of times I've known engineers (and myself) faced with having to prove skills gained though other routes by taking yet another test to get on the next logical step in career development. All this costs

time and money. I may face a similar challenge this year that could mean three tests for three professional bodies based in different countries because they don't yet recognize my postgraduate course in the topic as sufficient for their undergraduate level qualifications, nor do they recognize each other's tests. All this to prove I'm suitably qualified to do something I already do. Discouragingly, when I have the qualifications, I'll probably be told they are not worth much and what I really need is 'fashion-statement qualification.' No wonder there are so few qualified people.

"I am an advocate for courses that add real value and build potential in engineers: adding capability, specific skills, subject knowledge, and breadth of view. I also argue that when recruiting engineers we must look at the whole person, not one narrow measure. People's lives often don't fit the norm. I've spent a bit of time in hospitals over the last few years and it has struck me how insular the outlook of some of our younger medical professionals has become (outlook on life as well as the way they make professional judgments). Many medics come from the same colleges, have similar precollege academic profiles, and are trained in the same way in the same hospitals by the same senior members of staff (who also were trained that way). This seems to be so ingrained in some that their ability to think outside the box is limited. Mine is obviously a generalized impression but I fear engineering could go the same way if

we (educators and more senior engineers) are not aware of the situation.

"When education delivers diversity and the problem solving skills engineers need, there will be no reason for any of the negativity that engineering faces today. For that reason, I'm glad that colleges are investigating ways of including students from other nations and cultures. I just want us all to be careful that we don't go looking for easy measures of complex skills."

Thomas Orr (Aizuwakamatsu, Japan)

"First let me say that I really appreciate Carol's concerns. Really! I have always been a strong supporter of educational opportunities for all people, of all ages and backgrounds. It is neither beneficial to the student nor to society to limit access to learning based on past difficulties if the student has the ambition and the ability to learn now. I applaud your concern about admission policies that make poor judgments for the wrong reasons. We share the same views completely.

"In fact, my entire career has been devoted to this very thing: opening up more opportunities for students— in my case, nonnative speakers of English who are frequently penalized for not being able to speak English as easily and competently as a native speaker, even when they possess the ability to learn and the motivation

required to make it happen. In most cases, not having access to appropriate English training was their only crime, and I'd like to do my best to remove this hindrance to their success.

"Rejecting a foreign student from engineering school because he or she didn't have access to effective English training or was evaluated by the wrong measure is a great tragedy, not only for the student but also for us who could benefit from the development of better, more environmentally friendly products and services that a native speaker of English may never have dreamed of. Why limit progress?

"My research in corpus linguistics to develop useful English training materials and assessment tools is not intended to exclude, but rather to provide engineers and other professionals with focused educational products that more accurately specify the English required for particular purposes so that students don't waste time studying the irrelevant.

> ...focused educational products that more accurately specify the English required for particular purposes.

"How common it is for international students to spend huge sums of money, at great sacrifice and debt to family back home, to earn required credit for the most trivial of courses with questionable value to their careers. If a particular group of foreign engineering students needs help with their English so they can read and write engineering documents, why waste their time and money on

requirements to learn the art of politically correct essay writing on gay rights and abortion?

"Designing and delivering English language training that learners genuinely need is my goal, and any assessment tools that go with it are primarily meant to measure learner progress, not to limit one's access to learning.

"A TOEFL score may be one criterion for university admission decisions, but it is not appropriate for making decisions about which civil engineers from Japanese companies should be sent abroad to work on major international construction projects. The English for success at the job site and for success on campus are vastly different. That is one reason why Japanese companies have strongly encouraged our research. They need more accurate assessment tools than TOEFL or TOEIC [Test of English for International Communication] to help them make better decisions on foreign job assignments. The data we are providing for the development of Test of Professional English Communication for Engineering (TOPEC Engineering) will make a much better assessment tool that Japanese companies can use.

"Engineering students and practicing engineers also value the backwash effect: Once we identify the fundamental English that engineers need most, this not only helps build better tests, but it also provides the engineering profession with more appropriate study material to assist nonna-

tive speakers of English better prioritize their learning.

"In the research we presented at IPCC 02, we explained that we were not seeking to identify technical terms. There are already plenty of technical dictionaries that do that. Rather, what we want to do is identify the most essential English that engineers need to read those dictionaries, as well as all the other documents they will encounter in the course of their work.

"If university tests are developed from our research, we expect that

they will be used mostly for determining whether a student can comprehend engineering lectures and textbooks. Students who can't may then be provided with appropriate training in the areas where they are weakest so that eventually they can receive engineering training via English and not fail. Not having appropriate assessment tools and not providing appropriate training is unfairly restrictive by default because international students would fail engineering school after one semester and be denied access to the learning they seek most: engineering."

Net Notes

(continued from page 13)

know your business inside and out and the terminology you use. When answering those questions, do so in a manner that your audience will understand. In many cases, organizations receive fewer phone calls after doing this. One of my clients saw fewer phone calls but a dramatic increase in attendance at a weekly event when a topical listing was placed online and kept current.

One word of caution: Just as an overly designed site with little content can backfire, so can a poorly designed site with great content. Part of creating a well defined site is knowing what your users need and what method they will use to find it. Therefore your navigation needs to be clear. In addition, a poorly

designed site will often fail the first-glance test. A good Web site has a clean, professional, and current design—a design that shows the company pays attention to its site and is willing to keep it current for the benefit of its customers.

Pretty Web sites may work for some. But if the content isn't there, what's the point?

Elizabeth Weise Moeller is president of PCS. She owns Interactive Media Consulting, LLC (+1 518 587 5107, beth@imediaconsult.com), a World Wide Web and Internet training firm in Saratoga Springs, New York, which provides Web-site design and Internet training for businesses in the northeast.

Using Captured Windows Wisely

The other evening the Professor curled up in her recliner, sipping brandy and perusing the online information for the new software she had installed on her laptop. She noticed that the online help took a long time to load and had many images of windows that she had seen in the product. With increasing irritation, she noticed that the printed manual also contained many captured images, some of which were *not* the same as the product windows.

The Professor knows that product interfaces can change at the last minute, too late to make corresponding changes in the information. She also knows that captured images can cause problems for translators because the text in them is art and cannot easily be edited. So why, she wondered, would writers choose to use so many images that take up significant storage and memory and that might be obsolete before the product even hits the shelves? The next day she had a chat with some visual designer friends about the pros and cons of using captured windows in technical information, and she gained some insights to share with you.

You must think carefully about whether captured windows offer enough added value and usability to outweigh the potential problems. Why do you want to show a picture of an application window? Is it unavailable to the user to view on the computer? Is there something on it that the user won't be able to find

Are captured windows as graphics warranted by added value?

easily? (If so, then perhaps there's a usability problem that needs to be addressed!) Is your information so dense that you feel it needs visual relief, but you can't think of an original graphic to use? If the captured image is being used just to break up the space, there are other, less expensive ways to do this.

There are situations where it *is* important to show images of the product interface:

• The users of your documentation are computer novices who are unlikely to know the terminology used to describe the interface and its components (such as menu, toolbar, scroll bar).

• Your information is a tutorial to familiarize users with new features of the product interface.

• Users need to know how a window might change during a procedure or as a result of their actions.

• The appearance of the window dictates how users must proceed.

If you have a good reason (or better yet, more than one) to depict a product window in your information, here are some ideas for making it as effective as possible:

• Capture only the significant part of a window.

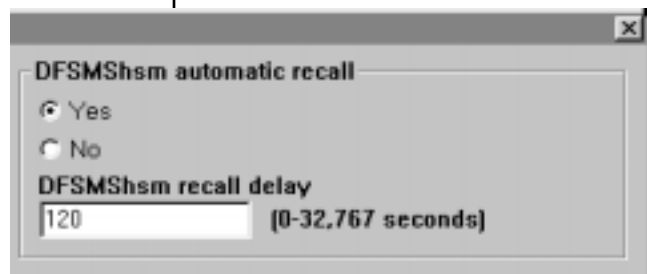• Use contrast to emphasize the significant elements.

• Use call-outs to label elements in the window.

Capture Only the Significant Part of a Window

Minimize the size of your captured
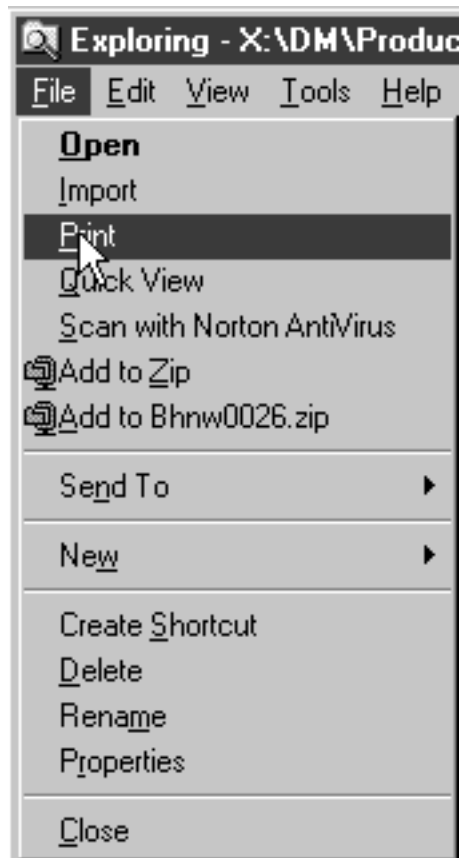
Screen 1

Screen 2

image by capturing only that portion of the window necessary to illustrate your information. The Professor has heard that many users prefer to see an entire window rather than just a piece and, in fact, would prefer no captured image at all to one that shows only part of the window. The visual designers said that they think users feel this way because fragments of windows do not give enough information about the context, or where to look in the actual window to find the pictured fragment. You can satisfy both your need to keep file sizes small and efficient and your users' need to understand the context by including in the capture the corner of the window nearest to the significant element, as in captured screens 1 and 2.

Following are some other suggestions for creating meaningful and useful graphic aids with captured windows. You might not be able to refine your captures using the tools you have, but your graphic designer can help customize the captures to achieve the following results.

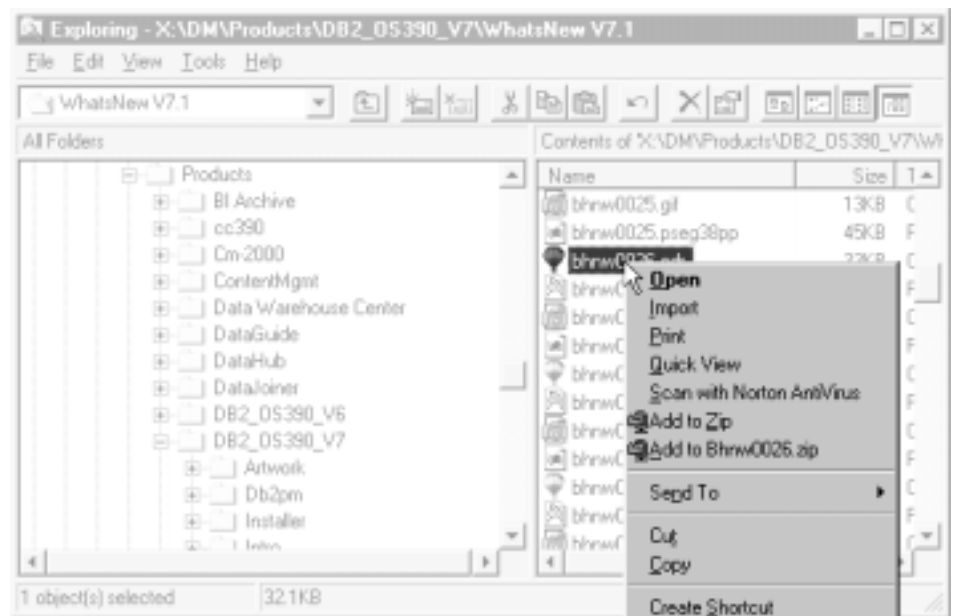### Use Contrast to Emphasize the Significant Elements

If it is important to show the entire window while emphasizing one area, you can show the entire window with everything except the important part grayed out to a medium contrast and only the important part at full contrast, as in screen 3.

To reduce the amount of space, memory, and load time needed, try making the overall screen capture fairly small, with the important part of the
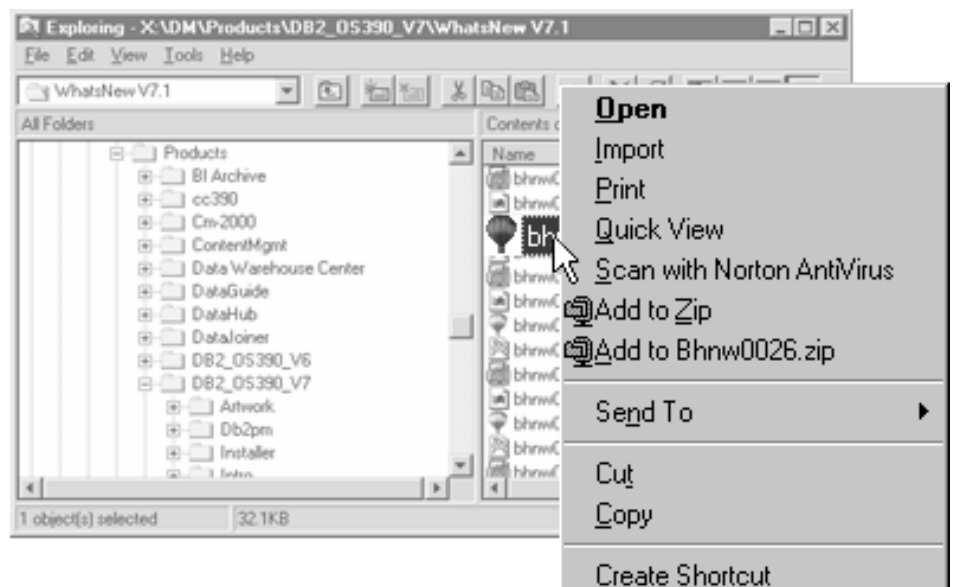
screen enlarged to a readable size, like a map inset. Screen 4 uses this technique to highlight the part where the user should focus.

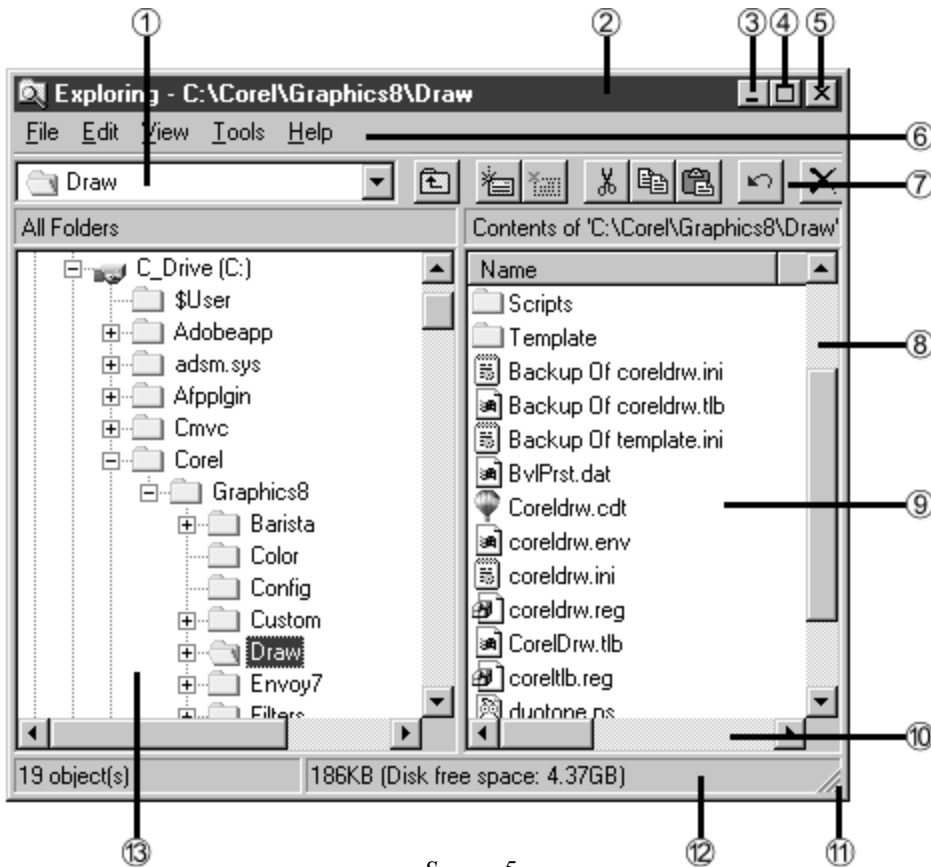### Use Call-outs to Label Elements in the Window

If you think it is necessary to include descriptive text about the elements in
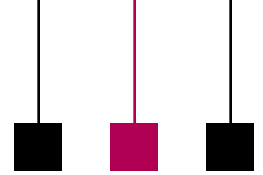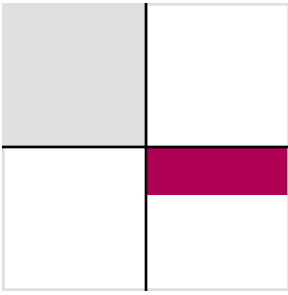

Screen 3

Screen 4

the window, draw lines from those elements to points outside the window and attach numbers to these lines. Include a numbered list below the graphic called "Notes to figure," using the same fonts for the numbers as was used in the figure. This way, the descriptive text is in the body of your document and will be translated with the rest of the text, as with screen 5.

These are just some of the ideas that the Professor gleaned from her discussion with her visual designer colleagues. If you want to use captured screens in your information, be sure to talk with your visual designer, who can help you decide when to use captured screens and how to optimize their usability and efficiency.

Copyright 2000 by IBM Corporation. Used with permission. Professor Grammar is an advisor to the IBM Santa Teresa Laboratory Editing Council. Each month she sends a lesson to the technical writers at the Laboratory. Many of the Professor's lessons are based on tenets described in the Prentice-Hall book Developing Quality Technical Information: A Handbook for Writers and Editors, recently authored by the Council.

Screen 5

Notes to figure

1. Lists currently selected folder in Tree view
2. Title bar
3. Minimize button
4. Window/full screen mode toggle button
5. Window Close button
6. Menu bar
7. Toolbar
8. Vertical scroll bar
9. Contents list for selected folder
10. Horizontal scroll bar
11. Window resizing tool
12. Status indicator
13. Tree view

Engineer's Terminology…

- A number of different approaches are being tried: We still don't have a clue.
- Extensive report is being prepared on a fresh approach to the problem: We just hired three kids fresh out of college.
- The entire concept will have to be abandoned: The only person who understood the thing quit.

PCS Members Elevated to Senior Status

Congratulations to these Professional Communication Society members who achieved IEEE Senior Member status in 2002:

REGIONS 1-6 (U.S.)

Andrea Ames
Cindy Blair
Neal S. Fenster
Ron Hume
Jay Kralovec
Carlton C. Miller
Kathryn Riley
Charles Nils Smith
Basil J. Youakim
Muriel Zimmerman

REGION 8

Jean-luc Doumont (Belgium)
Rolf Ernst (Germany)

REGION 9

Roman Altamirnada (Panama)

REGION 10

Sakari Mattila (Australia)

If you have 10 years or more of professional communication experience you can apply for IEEE Senior Member status. The forms are available on the Web: *http://www.ieee.org/organizations/rab/md/smforms.htm*. For more information or help in completing the forms contact (PCS) *marj.davis@ieee.org*.

IEEE Virtual Museum Exhibit

Powering the Electrical Revolution: Women and Technology is a new exhibit in the IEEE virtual museum that highlights the contributions made by such well known women as Ada Lovelace and Grace Hopper and additionally focuses on women who worked as telegraph and telephone operators, factory workers for electrical manufacturers, computer programmers, and as consumers of electric products. It also examines women's present and future involvement in technology. To view the exhibit, visit *http://www.ieee.org/museum*.

Online Article Purchase

Individual IEEE articles from any available IEEE conference proceeding or journal can now be purchased online through IEEE Xplore™. Members can purchase one-time access to articles with a credit card for USD 13 (USD 35 for nonmembers) each. The service does not include IEEE Standards, which can be purchased through the IEEE Catalog and Store.

To use IEEE article purchase online, visit *http://www.ieee.org/ieeexplore*. For more information, contact Barbara Soifer, *b.soifer@ieee.org*.

IPCC 2003

Communication in the technical and professional realm involves giving shape to knowledge. As communicators and engineers, we synthesize information from many sources to create new practical knowledge. Engineers and subject matter experts give shape to knowledge, while professional communicators give form to knowledge gained from such experts. We also creatively mine databases for inapparent knowledge. We respond to feedback from users, too, by reshaping existing knowledge. In these ways and more, we play a crucial role by transforming shapeless data into useful knowledge.

We invite you to explore how professional and technical communicators and engineers give shape to knowledge in a wide range of technical fields. Share your knowledge, experience, and interests. Join us at IPCC 2003 in Orlando, Florida, 21-24 September 2003 at Walt Disney World Coronado Springs Resort.

Headlining the plenary speakers at the conference is our keynoter, **Peter Kincaid** of the University of Central Florida Institute for Simulation and Training. We also look forward to hearing from **Dan Jones**, the Ronald S. Blicq Award winner for distinction in technical communication education, and **Bill Horton**, the Alfred N. Goldsmith Award winner for distinguished contributions to engineering communication.

See the call for papers on page 23 of this *Newsletter* and visit *http://www.ieeepcs.org/conference/* for more information.

IEEE Member Digital Library

The new IEEE Member Digital Library allows IEEE members to access individual online articles from IEEE-published journals, magazines, and conference proceedings with one convenient subscription. Subscribers pay a monthly fee of USD 35 to access up to 25 articles and papers per month from the current year and the last five years of publications. Access is through the IEEE Xplore™ online delivery platform.

"This new offering will greatly enhance the scientific and education goals of the IEEE," said Raymond D. Findlay, IEEE president. "IEEE publishes the most highly cited information in electrical engineering and computer science, and online access to a wider range of information will greatly enhance our members' careers."

The Digital Library provides direct online access to the articles and papers in IEEE journals and conference proceedings without requiring subscriptions to the individual publications. For more information visit *http://www.ieee.org/ieeemdl*.

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Drexel Distance Learning Courses

The Drexel University e-Learning program has become an IEEE Education Partner. IEEE members can continue their life-long learning with graduate-level credit courses provided by Drexel at a 10 percent discount.

Current online programs include an M.S. degree and certificate programs in information science/systems and management. Drexel also operates a fully wireless cybercampus.

Applications, course prerequisites, and systems requirements are detailed at the Drexel Web site for IEEE members. At *http://www. ieee.org/EduPartners*, choose Drexel among the university partners. You must use your IEEE member number to receive the 10 percent discount.

To learn more about the partners program contact Sasha Eydlin, *s.eydlin @ieee.org*.

STC Conference

The Society for Technical Communication will soon present its 50th annual conference for technical writers, usability specialists, Web designers, and others involved in technical communication. Seminar topics will include manual production, online-help design, and internationalization of communication products.

The conference will be in Dallas, Texas, 18-21 May 2003. Information and a sign-up form are available at *http://www.stc.org*.

Call for Papers

IPCC 2003 - The Shape of Knowledge

International Professional Communication Conference
Orlando, Florida, September 21-24, 2003
Presented by IEEE Professional Communication Society

The Shape of Knowledge
Orlando 2003

CodeOrlando.com

Communication in the technical and professional realm involves giving shape to knowledge. As communicators and engineers, we synthesize information from many sources to create new practical knowledge. Engineers and subject matter experts give shape to knowledge, while professional communicators give new form to knowledge gained from such experts. We also creatively mine databases for inapparent knowledge. We respond to feedback from users, too, by reshaping existing knowledge. In these ways and more, we play a crucial role by transforming shapeless data into useful knowledge.

Conference:

We invite you to explore how professional and technical communicators and engineers give shape to knowledge in a wide range of technical fields. Share your knowledge, experience, and interests. Please join us at IPCC 2003 in Orlando, Florida, September 21-24, 2003.

Topics:

We are looking for individual papers in three broad areas, with suggested topics listed below. We are also interested in papers and workshops of general interest to our membership of professional and technical communicators and engineers.

Sources

• Collecting information
• Identifying sources
• Managing information
• Managing knowledge
• Repurposing

Users and Applications

• International environments
• Organizational challenges
• Simulation and training
• Research methods
• Potential research areas
• Usability
• New technologies
• Special environments such as cell phones and PDAs

Shaping

• Language use
• Rhetoric
• Document design
• Information modeling
• Theories and their applications
• Professional development
• Interface between academics and other professionals
• Ethics
• Mining information
• Repurposing

Submissions:

Proposals for individual papers and workshops,
IEEE Professional Communication Society,
should be postmarked by March 15, 2003 to:

Paul Dombrowski, IPCC 2003 Program Chair
Department of English
P.O. Box 161346
University of Central Florida
Orlando, Florida 32816-1346
E-mail: *pdombrow@mail.ucf.edu*
Visit our Web site for information about the society, conferences, and membership: *http://www.ieeepcs.org/conference/*

Alias the AdCom

The administrative committee (AdCom) invites comment from PCS members about any of the society's activities. All the AdCom members have an electronic alias at the IEEE that automatically forwards e-mail to the member's actual electronic address.

You can address the whole AdCom at *adcom-pcs@ieee.org* or any of the members individually at the addresses listed in the table. The year in parentheses marks the end of the member's term. This list appears in the first *Newsletter* issue each year.

If you would like to obtain (or update) an alias of your own, go to the IEEE Web page, *http://eleccomm.ieee.org/ personal-aliases.shtml*, and follow the procedure there (you will need your IEEE membership number).

In addition, Rudy Joenk, *r.joenk @ieee.org*, is an ex officio member of the AdCom.

Bill Albing (2005) *bill.albing@ieee.org*	Robert Krull (2003) *krullr@ieee.org*
Kim Campbell (2003) *k.s.campbell@ieee.org*	Bernadette Longo (2005) *blongo@ieee.org*
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George Hayhoe (2005) *g.hayhoe@ieee.org*	Julia Williams (2005) *juliawilliams@ieee.org*

Members are always welcome at AdCom meetings. See the meeting schedule in the editor's column.

◆**IEEE**

PCS IEEE PROFESSIONAL COMMUNICATION SOCIETY

Newsletter