CULTURE, COMMUNICATION, AND AN INFORMATION AGE MADONNA

BY JAMIE HUTCHINSON

If you don't know the story of Lena, you might be surprised to learn that copyright infringement and pornography haunted the Internet long before its commercialization in the last decade. Back in the early 1970s, engineers at the University of Southern California (USC) scanned a picture to use in their image processing research—work that would lay the foundation for the JPEG and MPEG standards and that was funded by the Pentagon in connection with ARPANET, the progenitor of today's World Wide Web.

The picture was a *Playboy* magazine centerfold. And the engineers didn't have permission to use it.

The Original Sin

Alexander Sawchuk estimates that it was in June or July of 1973 when he, then an assistant professor of electrical engineering at the USC Signal and Image Processing Institute (SIPI), along with a graduate student and the SIPI lab manager, was hurriedly searching the lab for a good image to scan for a colleague's conference paper. They had tired of their stock of usual test images, dull stuff dating back to television standards work in the early 1960s. They wanted something glossy to ensure good output dynamic range, and they wanted a human face. Just then, somebody happened to walk in with a recent issue of *Playboy.*

The engineers tore away the top third of the centerfold so they could wrap it around the drum of their Muirhead wirephoto scanner, which they had outfitted with analog-to-digital converters (one each for the red, green, and blue channels)

and a Hewlett Packard 2100 minicomputer. The Muirhead had a fixed resolution of 100 lines per inch and the engineers wanted a 512 × 512 image, so they limited the scan to the top 5.12 inches of the picture, effectively cropping it at the subject's shoulders.

After the tricky, tedious process was finished, someone realized that they had lost a line because of a software error. What's more, the timing of the A/D converters was off, making the output image slightly elongated compared to the original. Pressed for time, the engineers settled for the distorted version and simply replicated the top line to arrive at the desired 512.

Those three sets of 512 lines—one set for each color, created imperfectly on the spur of the moment, with no purpose in mind beyond the job at hand—would become a de facto industry standard. Recalls Sawchuk: "Visitors asked us for copies, and we gave it to them so they could compare their image processing and compression algorithms with ours on the same test image." Even after scanners became more widespread, reducing the dependence of other researchers on the tapes supplied by SIPI, the 512 lines continued to be a routine test for any process aimed at maintaining image quality while reducing the bit rate.

Lena Sjööblom, a Swedish native working as a model in Chicago in 1972, was *Playboy*'s Miss November that year. She would return to her native country, marry, and raise children before learning that her centerfold picture had become the ultimate laboratory rat. Not only that: Lena became for the engineers something like what Rita

FROM THE EDITOR

RUDY JOENK

Oops!
Our cover story, "Strunkenwhite," in the March/April issue was written by cybersatirist Bob Hirschfeld, who lampoons news and technology at his Web site *http://bobsfridge.com*. It was originally published in the 2 May 1999 *Washington Post* as "Taking Liberties; the Pluperfect Virus," but the article got a new name and lost its attribution when someone started circulating it on the Internet. Stan Reeves at Auburn University identified it for us.

Many of you may be the proud but perplexed recipients of a blue *Newsletter*. The March/April issue was accidentally printed with blue rather than green highlights and a lot of copies reached the post office before the error was discovered. Reprinting (at the printer's expense) is the reason your normal green issue was late in arriving. And because more than 1000 blue copies are out there, you probably don't have a collector's item, at least not in this century.

In some recent issues the Web and e-mail addresses of NET NOTES author Beth Moeller coalesced. The separate addresses are *http://www.imediaconsult.com* and *beth@imediaconsult.com*.

The *Guardian* newspaper (Manchester, England) issued a correction recently: "The article headed 'Wanna be a pop star?'…does make sense but only if the columns are read in the following order: 1,4,2,3,5,6,7. Apologies."

This Issue

We're back to full strength, sizewise that is. But we're always interested in new topics, new takes on old topics, and succinct tutorials. Consider writing one or more articles on your favorite subject.

On page 15 is the final installment of Vicki Hill's AUDIENCE QUEST. For the past year she has been putting a different spin on "know your audience." She has been describing techniques for attracting an audience by the qualities of the work: Build it well and they will come. We wish her well and look forward to further contributions.

AdCom

The first face-to-face AdCom meeting of the year was 27-28 April at Rensselaer Polytechnic Institute in Troy, New York. PCS secretary Ed Clark will report the meeting highlights in the July/August *Newsletter*. The next meeting will be a two-parter on 24 and 27 October in Santa Fe, New Mexico, along with IPCC 01. PCS members are welcome at these meetings.

To maintain your IEEE and PCS subscriptions, send address corrections by e-mail to *address-change@ieee.org*.

Potpourri

Claude Shannon died 24 February 2001. He was the mathematician and computer scientist who envisioned communications as strings of 1s and 0s and calculated ways to send the maximum number of these through communication media.

The Washington Post's new-name game: doughnut hole → breakfast chad; tryst → randyvous.

AN EXPERIMENT IN MEETING VIRTUALLY

GEORGE HAYHOE

A trial run and behavior protocols helped make our first online meeting successful.

As an experiment, the PCS Administrative Committee held its first electronic meeting on 20-21 January. There were two reasons for meeting virtually. First, we wanted to gain some practical experience with technologies that might be used by PCS committees, whose members are geographically dispersed and usually cannot meet in person. We also wanted to reduce the number of in-person AdCom meetings this year, to lessen the economic impact on AdCom members who must absorb a portion of the cost of attending those meetings. (Although PCS offers a travel subsidy to AdCom members, the subsidy typically covers only half to two-thirds of the cost.)

The Technology

The technology we chose is Microsoft NetMeeting, available for downloading at no cost. Although NetMeeting supports voice and video for one-to-one meetings, with nearly 20 participants involved in the virtual AdCom meeting, we had to rely on its chat, whiteboard, and application-sharing components.

NetMeeting's *chat* feature allows participants to talk in what is essentially real time by typing messages into a chat window. Messages can be directed either to all participants in the meeting or to an individual.

The *whiteboard* feature allows participants to draw or write on the whiteboard, and the others can view the words or pictures, and add their own contributions.

The *application-sharing* feature allows participants to view, manipulate, and even edit documents.

Although anyone can host a virtual meeting with NetMeeting by simply providing participants with the Internet Protocol (IP) address of his or her PC before the meeting begins, we were fortunate to be able to use the Boeing Company's more robust conference server for our meeting.

The Rules of the Road

When I informed the AdCom at our meeting in Cambridge, Massachusetts, last fall that we would be conducting this experiment with NetMeeting, we talked briefly about members' experiences with NetMeeting and similar products. We decided that we needed protocols to ensure that the meeting would be orderly and productive. Marj Davis, Bernadette Longo, and Luke Maki volunteered to look for models and draft protocols to use.

The document that resulted included advice for the moderator (such as preparing an agenda on PowerPoint slides to be displayed to all participants using the application-sharing feature, appointing an assistant to manage the list of people who want to speak on a topic, and providing scheduled breaks) as well as for the meeting participants (such as keeping comments brief and using emoticons and chat acronyms to reduce keyboarding).

The two most important pieces of advice for participants were:

1. Type HU for *hand up*. This is a signal (usually private to the assistant moderator) that you want to ask a question or make a comment. Wait for the moderator to recognize you.

2. Get your initial response onto the chat board quickly by typing only a phrase or two, followed by an ellipsis (three periods). The ellipsis is a signal that "I'm still talking" so others will wait for you to finish your comment before entering theirs. When you are finished with the complete thought, end with a single period or type *[end]*.

In addition to drafting these protocols, we held a trial run in which most of the meeting participants tested connecting to the server, used the features of the NetMeeting program, and experimented with the meeting protocols that Marj, Bernadette, and Luke had formulated.

Results and Recommendations

The plan was to meet from 11:00 a.m. to 3:00 p.m. GMT–5 on both Saturday and Sunday, 20-21 January. Those hours were intended to accommodate our AdCom members who live in time zones ranging from Oosterbeek, the Netherlands (GMT+1), to Santa Barbara, California, U.S.A. (GMT–8).

The meeting on Saturday went off more or less without a hitch, though a few participants lost their connections and had to log on to the server one or more times. On Sunday, however, we had to delay the start of the meeting about an hour because of problems with the server. These technical difficulties were inconvenient but not unexpected, and we coped with them fairly well.

We found that NetMeeting worked most effectively to exchange information and to discuss simple topics. For example, the committee chairs were able to present reports of progress in their areas of responsibility, and the group was able to talk about uncontroversial topics with little difficulty. But the technology worked less well when we needed to talk about complicated subjects, such as the society's financial status and plans for forthcoming conferences. The online chat medium simply didn't support the full, frank exchange of ideas needed when addressing topics of this nature because of the time delays required to key and broadcast the thoughts of each participant who wished to speak.

One major problem we hadn't anticipated was that those who type more slowly or who connect to the Internet at lower speeds are at a disadvantage in using this technology. Also, the time required to receive, digest, and respond to other speakers' comments tends to slow down the discussion, especially for such a large group (we had 18 attendees at times). As a result, we found it difficult to keep to the time limits that I had proposed for some agenda items and we were unable to address all the topics on the agenda within the eight hours scheduled for the meeting.

Those problems could be minimized if we were able to use telephone conferencing to supplement NetMeeting when addressing the more complicated and controversial topics. Unfortunately, that approach requires each participant to have two telephone lines, one for an Internet connection and the other for voice connection, and not everyone has two lines available. Where available, however, DSL effectively supplies those two lines in one.

Overall, the experiment was successful in many respects. We were able to make a lot of progress in conducting routine business. Nevertheless, the discussions weren't as satisfying as those at in-person meetings and didn't allow us to resolve some important matters during the meeting.

Will we have other virtual AdCom meetings in the future? The answer to that question will depend on the wishes of future PCS presidents. Perhaps the best use of the technology would be to consider committee reports using NetMeeting prior to future in-person AdCom meetings, freeing up our face-to-face time for the more complicated agenda items. I also think that the technology will have value for smaller groups such as PCS committees. Despite the problems and limitations we encountered, I'm glad we conducted this experiment.

The incorporation of telephone conferencing would expand the usefulness of online meetings.

Y**ou Know It's a "No Frills" Airline When…**

…They don't sell tickets, they sell chances.

…All the insurance machines in the terminal are sold out.

…Before the flight, the passengers get together and elect a pilot.

…You cannot board the plane unless you have the exact change.

…Before you take off, the flight attendant tells you to fasten your Velcro.

INFORMATION AGE MADONNA

(continued from page 1)

Hayworth was for U.S. soldiers in the trenches of World War II. The engineers invited her to attend a conference in Boston in 1997, where she signed autographs and posed for pictures with the troops. Over the years, there have been Web sites, poetry, and, if you'll excuse the pun, a tiff or two devoted to Lena.

Thou Shalt Not...

By 1991, SIPI had distributed Lena for a fee to researchers all over the world, and she regularly graced the pages of image processing journals, books, and conference papers. (Usually she was referred to as

Clockwise from top left:
Standard Lena;
Lena with a
Gaussian blur;
Lena converted
to polar coordinates;
Lena's edges;
Lena spherized, concave;
Lena spherized, convex.

"Lenna," following the Swedish spelling that appeared in *Playboy.*) *Playboy* had no idea of the transgression until the journal *Optical Engineering* put Lena on its July cover that year. Someone brought the cover to *Playboy*'s attention and Lena's rightful owner sent a pointed letter to the journal's publisher, the International Society for Optical Engineering (SPIE), requesting authorization for all further use of its images.

In his January 1992 editorial in *Optical Engineering*, editor Brian J. Thompson reported that an understanding had been reached with *Playboy* regarding the Lena

image, but he emphasized, in bold type, the general responsibility of authors to secure permission when they used other people's property.

According to SPIE publications director Eric Pepper, the understanding was reached when he called *Playboy* in response to the letter. "When I explained everything to them, they told us that they would not interfere as long as the use was for research and education," said Pepper, adding that "it was almost as if Lena had entered the public domain by that time. Almost, but not quite."

Even today, if you thumb through an issue of *Optical Engineering* or a related journal, you are likely to see more than one Lena, and sometimes dozens of her. According to my informal survey of the library shelves here, if the criterion is frequency of Lena, then the *IEEE Transactions on Image Processing* is by far the sexiest journal out there. A cursory search of the Web reveals countless sites using Lena for research demonstrations. Best of all, you can now get free what you used to have to pay for: The standard Lena is downloadable from several laboratory sites, not just SIPI. (But don't try this at work; it could get you into trouble.)

Despite the engineers' unpunished breeding of ever-new Lenas, the *Optical Engineering* incident seems to have awakened them to the law. "Absolutely, Lena raised awareness of copyright issues among our community," said David Munson, a University of Illinois professor who edited the IEEE journal during the early 1990s. "People talk a lot about copyright now, although not specifically in connection with Lena—especially if a big project is under way where lots of people are using the same database of images."

A Pinch and a Tuck?

There is an element of the arbitrary inherent within any standard. Whereas some acquire a permanence and universality that belies the arbitrariness of their origins, others go the way of the hogshead, an

obsolete British unit for alcohol and spirits. Which way will Lena go?

Chuck Rosenberg, a graduate student in computer science at Carnegie Mellon University who maintains a Web page devoted to Lena, explained to me that many researchers know the Lena image so well that they can easily evaluate any algorithm run on her. (Now, that's dedication!) For this reason, most people in the field seem to believe that Lena has served well as a standard. She is like the musician's A440, or the geologist's rock hammer that appears in photos alongside field specimens: a familiar reference that helps an audience of insiders make ready judgments. What's more, the image mixes areas of light and dark, fuzzy and sharp, detailed and flat—providing a stiff test for an image processing algorithm.

Even Rosenberg, however, feels that Lena has outlived her usefulness as she approaches 30. He cites improvements in imaging technology since the 1970s that have made possible much better standards than Lena. Others are more vigorous in their attacks. A May 1996 article in *Advanced Imaging* by Joan van Tassel quotes a criticism leveled at Lena by digital video expert Charles Poynton. Poynton enumerates the uncertainties about Lena's origin (the film used, the lighting conditions, the production process by which she went to press) and concludes that her status as a standard is a "sad statement about the field of image processing."

Jeff Seideman, the industry publicist who organized Lena's attendance at the Boston conference in 1997, has since identified the film and the camera used. An ardent Lena supporter, Seideman would like to see engineers and their societies working with the *Playboy* archives to reconstruct the rest of the missing information so that a new and improved Lena standard could be developed. So far, his call has fallen on deaf ears.

"The Female Face When It Looks a Certain Way"

Perhaps Lena's most serious shortcoming as a standard stems from the fact that she is also a symbol. And the funny thing about

"Lena raised awareness of copyright issues among our community."

symbols is how they can mean such very different things to different people.

Van Tassel's article quotes a woman researcher who posted the following to the *sci.image.processing* Internet discussion group: "The image is laden with a male fantasy version of female sexuality that needs no breast or buttock to speak of woman as a limited, defined version of a human being."

Photonics editor Sunny Bains seconded that emotion. "It's not difficult to feel isolated when you're a woman working in a male-dominated field," she wrote in *Electronic Engineering Times* in May 1997. "Seeing provocative images of women in learned journals can add to that feeling of non-inclusion." In consultation with her publishers, Bains decided to ban Lena from publications that she edits. She reported receiving letters of thanks from women, while no one complained that the policy compromised their work.

Theo Pavlidis, then a professor at the State University of New York–Stony Brook, was on the receiving end of such a ban in 1996 when PWS Publishing Co. (Boston, Massachusetts) published his computer graphics book, in which he planned to use Lena to illustrate color halftoning. "They insisted that any illustrations not involve pictures that could be considered offensive, such as the female face when it looks a certain way," recalled Pavlidis. But he wasn't too discouraged by the policy: "There's no point in upsetting people when you can make the same point using something else." Pavlidis said he chose pictures of objects like vases and flowers, "just to be safe."

David Munson addressed the same controversy as editor of the IEEE's image processing journal: "It was clear that some people wanted me to ban Lena from the journal," Munson said. "People didn't object to the image itself, but to the fact that it came from *Playboy*, which they feel exploits women." Rather than ban Lena, Munson wrote an editorial in which he encouraged authors to use other images.

While Lena remains the most popular test image in the field, her predominance has

declined in recent years. No one can say what proportions of that decline are due to the legal, technical, and cultural entanglements surrounding Lena, not to mention the sheer number of other samples now available. Suffice it to say, the relationship has grown somewhat complicated, and there are other fish in the sea.

For Purposes of Research

A final, serendipitous detail from the legend of Lena: She makes a fleeting appearance in Woody Allen's 1973 movie *Sleeper*. Allen, playing the hero who awakens in the year 2173 after 200 years of cryogenically induced sleep, is asked to identify some artifacts from the 20th century. One of the artifacts is a *Playboy* centerfold, the very

By a unique criterion, the IEEE Transactions on Image Processing *is by far the sexiest journal out there.*

one in which Lena appears in her floppy, feathered hat, standing before a full-length mirror, gazing back at the viewer over her bare right shoulder, eyes beckoning, mouth set in a Mona Lisa-esque smile.

"I'll just take this, you know, and study it later and give you a full report on it," says Allen as he folds the picture and slips it inside his robe.

Surely, no image since Mona Lisa has been studied harder.

The author (jhutchin@uiuc.edu) *manages the publications office in the Department of Electrical and Computer Engineering at the University of Illinois, Urbana. He is a member of the PCS Editorial Advisory Committee.*

FROM THE EDITOR
(continued from page 2)

If you think you think like Mark Twain, you may still have time to write a finish to one of his unpublished tales. See the contest at *http://www.buffalolib.org*. The full story, "A Murder, a Mystery, and a Marriage," written in1876, will be published in the 15 June *Atlantic Monthly* magazine.

Boulder, Colorado's Celestial Seasonings tea maker has created some new flavors, perhaps for communicators: Calming Illustration Mint, English Major Chamomile, and Vice President of Development's Choice.

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.

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 special-**ized formatting and highlighting (**bold-face, 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 (*http://www.ieeepcs.org/pub.html*) can be used as examples.

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

Deadlines

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

INTRODUCING *http://www.ieeepcs.org*

BY LARRY STRIANESE

As Web master for the IEEE Professional Communication Society I am pleased to announce our redesigned Web site. To create the new look, PCS hired Kelly Smith of RedHedz Design in Ballston Lake, New York. Kelly had recently designed a PCS brochure.

Once the new look was ready, we reorganized the information on the site. We placed a horizontal navigation bar at the top of each page below the logo. Each of its links takes you to a major area of PCS interest:

About PCS

The primary mission of PCS is to help engineers and technical communicators develop skills in written and oral communication. Find out more about the goals of PCS on the *About PCS* page.

Leadership

Learn about the PCS Administrative Committee (AdCom) on the *Leadership* page. Here you find information about the 2001 PCS officers, AdCom members, and other committee and ad hoc leaders. Schedules of meetings and summaries of the meetings that took place between March 1996 and January 1999 are also in this section. Highlights of recent AdCom meetings are reported in the *Newsletter*.

Send us your ideas for improving our Web site.

Membership

Refer your friends and colleagues to our *Membership* page. Here they can learn about the benefits of membership. Joining PCS is easy with the online IEEE application or the downloadable PDF affiliate application file.

Publications

All PCS members receive two PCS-produced publications. You can review abstracts from the *IEEE Transactions on Professional Communication* and previous issues of the *Newsletter* through the *Publications* page. Revisit articles that you enjoyed and supplement your research with the myriad topics discussed in these publications.

Services

PCS offers a variety of services and other publications that can benefit you or your organization. Take a look at the courses that PCS can deliver to your site. See the list of IEEE Press Books written by PCS members. Take advantage of the special services in Member Consulting on this *Services* page.

Activities

PCS sponsors several activities that encourage development among communication professionals. For example, it annually recognizes achievements through awards given to communicators. These awards are described and previous winners are listed on the *Activities* page. You can also browse past, present, and future conference locations and upcoming colloquia. Finally, discover the advantages of becoming a PCS volunteer.

In addition to the horizontal navigation bar, the home page also has a vertical navigation bar. Titled *Quick Links*, this bar provides links to the more frequently visited areas of the site:

IPCC 01

The 2001 conference will be held at La Fonda on the historic Plaza of Santa Fe, New Mexico, 24-26 October. IPCC 01 promises to be an exciting event with presentations spanning a wide variety of topics. These topics, or dimensions, include focuses on technological, professional, human, and communication aspects of our profession.

Suzdal Colloquium

Suzdal, Russia, is the site of our technical communication colloquium 15-16 August

with the Professional Communication Section of the Russian A. S. Popov Society. This colloquium is sure to be a dynamic gathering of scientists, engineers, and professional technical communicators from around the world. They will be discussing current and future techniques of professional communication. We invite you to join us in exploring the challenges and trends of modern communication in this wonderful setting.

PCS *Newsletter*

You can view an electronic version of the *Newsletter* on this site. We post the PDF file for an issue about the time the succeeding issue is distributed in print. Incidentally, the most popular pages for our site visitors are the *Newsletter* files.

Volunteer Opportunities

A great way to further your professional development and expose yourself to an outstanding group of energetic individuals is to become a volunteer. PCS is always looking for people to serve on standing committees, ad hoc committees, and conference committees. This is a great way to learn more about the Society and to network with individuals around the world.

Search *Transactions* Abstracts

You can search the abstracts from the 1996 through 2000 issues of the *IEEE Transactions on Professional Communication*. This database is a gateway to a wealth of communication knowledge. A keyword search will get you on your way to finding information on the topic of your choice. Soon we expect to add more *Transactions* abstracts.

Bulletin Board

The bulletin board provides space for you to announce events and promote discussion.

Our new appearance is attracting attention; increasing interest now amounts to an average of 150 visitors per day, and we hope to continue providing you with helpful and informative content. If you have a suggestion for the site or cannot find information from the previous version of the site, send e-mail to me at *lstrianese @ieee.org*. We welcome feedback.

The author is a technical writer at MapInfo Corporation in North Greenbush, New York, where he develops documentation for data visualization products. Larry has maintained the PCS Web site since February 2000.

"You will find it a very good practice always to verify your references, sir."

— *Martin Routh*

DILBERT by Scott Adams reprinted by permission of United Feature Syndicate, Inc.

QUOTE ME ON THIS

Copyright IBM Corp. 1998, 2000

The Professor was feeling industrious recently and decided to clean out some old boxes in the back of a closet. In so doing, the Professor stumbled upon some of her old college papers.

Forgetting the task at hand, the Professor took the papers to her favorite armchair and settled down to read them while sipping her favorite sherry. The first time she read through her papers, she got a hearty chuckle over her own earnestness and naiveté. Ever vigilant, the Professor quickly noticed something all of the papers had in common (besides exceptional writing!).

The Professor was shocked to see her own overuse of that often overused punctuation mark: the quotation mark. In her professional capacity, she spends a great deal of time eliminating them from technical documentation.

The Professor poured a second sherry and thought about what advice she could offer her students to help them eliminate unnecessary quotation marks. Being the Professor, she could quickly summarize her thoughts into two main rules:

Pause to consider before adding quotation marks.

Words that seem to require emphasis probably do. Here's an example:

1. From the "Start" menu, click "Settings" and "Control Panel."
2. Double-click "Network."
3. On the "Identification" page, click "Change."
4. In the Computer Name field, type a unique identifier for this workstation. For example, "W65E4R84."

What's wrong with this example? Not much, except that quotation marks are used to highlight everything from menu names to text the user enters. Clearly, the writer of this information knew that both the names of interface elements and the text that a user enters should be emphasized or highlighted in some way, but wasn't sure enough to look in her IBM Style Guideline to determine the correct emphasis.

Quotation marks do not emphasize words or provide a mechanism for winking at the reader.

Before you use quotation marks to surround a word or name, consider the word carefully and consult the IBM Style Guideline. It tells you to use bold to emphasize menu names, menu items, push buttons, icons, and field names. Text that a user enters should be in monospace font, while window names and notebook page names require no emphasis.

After applying IBM style to our example, we now have this:

1. From the **Start** menu, click **Settings => Control Panel**.
2. Double-click **Network**.
3. On the Identification page, click **Change**.
4. In the **Computer Name** field, type a unique identifier for this workstation. For example, `W65E4R84`.

Use quotation marks for their intended purpose: Quotation marks surround direct quotes or cross references to chapters or subsections within a document. They do not emphasize words or provide a mechanism for winking at the reader.

In technical documentation, you should rarely have to type quotation marks; technical material does not usually include quotes. References within the same document are coded as cross references, which our tools resolve, and in so doing, insert the quotation marks for us.

Admittedly, some software programs require variables or options that the user must surround with quotation marks. As technical writers, we must explain how to use these quotation marks syntactically. This brings the Professor to her corollary rule.

Corollary: Refer properly to quotation marks.

The Professor doesn't often repeat herself, but she would like to do so now. Quotation marks surround direct quotes. A quote is the text between quotation marks; the marks themselves are not quotes.

THE JOURNAL EDITOR: GATEKEEPER OF INFORMATION

BY HERBERT B. MICHAELSON

Will we see a balance between relatively slow, refereed, archival journal publishing and fast, unrefereed Web publishing?

Few authors of technical manuscripts fully understand the journal editor's role in the decision to publish. The editor acts as an information gatekeeper for the professional community, allowing the best papers to pass into the public record and closing the gates to the lesser contributions. The methods of choosing referees (or reviewers) vary considerably among editors, however, as do the ways of arriving at a publication decision. Moreover, with the advent of self-publishing on the Internet, an author tends to become his or her own gatekeeper.

In scholarly journals for the past 300 years, editors have generally appealed to three referees for independent, authoritative appraisals of a manuscript. An editor may send the three reports verbatim to the author, or may instead offer comments based on the reports, or may even accept or reject the manuscript without any detailed judgments of the merit of the work.

Some editors tend to rely wholly on the assessments of referees. Others give more weight to their own opinion of the quality of presentation and of the technical content.

In general, much depends on the editor's personal network of contacts. Besides formally dealing with referees, an editor can casually trade notes with colleagues about a manuscript. An editorial board may influence the decision to publish, as may the editor's own judgment of the needs of the readership. A paper that offers an important contribution can be rejected because the subject is simply not appropriate for that journal and its readers.

The editor's work as gatekeeper can also be influenced by a heavy workload of manuscripts and by limitations of space in the journal. Under these circumstances a paper that usually would be acceptable might have to be rejected.

The authority of editors as gatekeepers threatens to decline in the future because of the proliferation of Web sites where authors can offer their results unappraised and unedited. In fields where quick dissemination of new research is important, the Web seems an ideal vehicle to some authors. Of course, this channel of information lacks the prestige of a hard copy journal, where high editorial standards give more weight to the papers and the authors' reputations. Citations in other hard copy journals add to this prestige.

On the other hand, Web authorship leads to fast cross fertilization of ideas in a community of Internet readers and authors. The rapid growth of these networks seems a threat to the future of the scholarly journal and its gatekeepers. And it also threatens the future of considered judgments in the scholarly process and the role of gatekeepers in filtering out low quality work.

The author, now retired, was for many years an associate editor of the IBM Journal of Research and Development. *He also served as editor of the* IRE Transactions on Engineering Writing and Speech, *forerunner of the PCS* Transactions. *Herb is an IEEE Life Senior Member;* herbm@datatone.com.

PROFESSOR GRAMMAR

In summary, dear students, hold the quotation marks. You can quote the Professor on that.

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 Developing Quality Technical Information: A Handbook for Writers and Editors, *recently authored by the Council.*

JUGGLITO ERGO SUM

RONALD J. NELSON

A person can become more relaxed as he or she masters patterns and considers new challenges.

Dedicated to Claude Shannon, Juggler and Unicyclist

Descartes' famous dictum, "Cogito ergo sum" (I think, therefore I am), is the sort of saying that has become something of a cliché. As such, it invites the creative mind to recast what appears to be immutable into something fresh and new. Thereby, the cliché becomes resuscitated (what Mary-Claire van Leunen, in *A Handbook for Scholars*, New York: Knopf, 1978, p. 114, refers to as the "cliché redivivus"); in rhetorical terms it is called **paradiorthosis** or quoting of famous words but putting one's own twist to the words without identifying the original lines. Used sparingly, it can be very effective.

George Seldes has gathered several of these ingenious transformations in *The Great Thoughts* (New York: Ballantine Books, 1985). For example, Thomas Jefferson said in a letter to John Adams, 15 August 1820, "I feel, therefore I exist." And Camus, quoted in *The New York Times* of 29 October 1967, stated, "I rebel, therefore I am." Kant changed it to "I ought, therefore I can." Paul Valery made it less all-inclusive: "Sometimes I think; and sometimes I am." In the non-book world some Web wag has indited, "Cogito Eggo sum: 'I think, therefore I am a waffle.'" And not long ago I saw a hat with this truism on it: "I golf, therefore I swear," a saying akin to the timeless, "I fish, therefore I lie."

For our purposes here, though, I wish to call attention to the sense of self contained in the motto of the Flying Karamazov Brothers (a must-see if they come to town): "Jugglito ergo sum" ("I juggle, therefore I am."). Since juggling effects a favorable change of identity in virtually anyone who tries it, it is a worthy activity for the professional communicator to undertake. Those who engage in it are likely to experience a subtle enrichment of their verbal and nonverbal styles in unexpected ways as a result of the physical and mental concentration required in learning to juggle. Their professional communica-

tions then will probably flow more naturally, with fewer inhibitions.

To this end, four books (of the many) would be valuable to ease the professional communicator into the wonderful world of juggling, there to learn about the myriad possibilities: (1) Michael J. Gelb and Tony Buzan's *Lessons from the Art of Juggling: How to Achieve Your Full Potential in Business, Learning, and Life* (New York: Crown Trade Paperbacks, 1994); (2) Carlo's *The Juggling Book* (New York: Vintage, 1974); (3) Dave Finnigan's *The Complete Juggler* (New York: Vintage, 1987); and Steve Cohen's *Just Juggle* (New York: McGraw-Hill, 1982).

Moreover, valuable connections between style and juggling are made by Robert Louis Stevenson in his important essay, "On Some Technical Elements of Style in Literature" (*Contemporary Review*, April 1885). And William Hazlitt's essay, "The Indian Jugglers" (essay IX in *Table Talk*, 1821-1822), makes equally fine, instructive reading.

My next column will be based on Gelb and Buzan's splendid book; this column celebrates Steve Cohen's extraordinary work, *Just Juggle*. It is a masterpiece of style as well as of worthwhile information to instruct the reader in the joys and benefits of juggling.

The organization of *Just Juggle*, alone, is worthy of regard. It attests to a thoughtful presentation of content—an important point for professional communicators to remember. Careful and thorough thought must form the foundation of every document meant to succeed. Cohen's book has four parts: Introduction, Why Juggle? The Method, and Continuity.

Part I contains two chapters: Definitions and History. It is important to know what the activity is and something of the tradition from which it arises. The four chapters in part II sing the benefits that accrue to the would-be juggler: physical, intellectual, emotional, and other. Part III discusses

successively in six chapters, Goals, Equipment, The Place, The Body, The Moves, and The Cascade, although the chapter titles are noticeably out of parallel structure. That defect, however, should not be construed as indicative of stylistic flaws in the text. Part IV stresses learning additional patterns, increasing goals, establishing vistas, and acquainting the reader with books on the subject, props, and groups to contact.

Solid, gracious writing informs virtually every page of this fine book. The simple beauty of Cohen's general description of three-ball cascade juggling illustrates the fluidity of his prose: "A juggler flings one object at a time into the air until all three things that were held are incorporated into a pattern traversing paths from hand to hand through the air." It is possible to enter what he refers to as a "state of enlightened ambidexterity."

After all, we regularly juggle responsibilities, jobs, checkbooks, phone calls, people at the door, and a myriad other factors that constitute modern life. Why not learn to juggle actual objects to relieve the stress that so many people seem forced to endure? As Cohen puts it, "Short-fused tempers lit by angry frustration are by-products of the tension people operate under everyday." But what seems complex, like building a house, becomes manageable if a person considers approaching one step at a time. Just so with juggling. Like a finished house, juggling is the result of "perseverance forged of thoughtful choices pieced together to establish a new unity."

The benefits are indeed many. *Physically*, juggling is "a relatively gentle exercise that emphasizes coordination over strength" and "tones [the] body instead of tiring it." The juggler's eyes improve because they must track rapidly moving objects without directly looking at them. The sense of touch and even hearing (from becoming attuned to the rhythmic slapping of the balls in the hands) is improved as a person juggles. Shoulders, arms, wrists, and fingers also benefit, as do coordination and

Those who engage in [juggling] are likely to experience a subtle enrichment of their verbal and nonverbal styles in unexpected ways.

sense of balance. Even bending over to pick up dropped balls contributes to developing flexibility.

Intellectually, juggling promotes self-control, concentration, and poise—traits we would all do well to foster. The result is a kind of mental balance that can only help as practice for juggling the elements of multitasking that we regularly must do. The crossover benefits are considerable.

Emotionally, as a person reduces the number of ball-droppings and improves at juggling, there is what Cohen refers to as a "a private place at the center of juggling where you may sense more than a rhythm of the balls" that becomes a stay against chaos. A person can then become more relaxed as he or she masters patterns and considers new challenges. It is an inexpensive and pleasant activity in which a person experiences a heightened state of consciousness and freedom that transcends the diurnal.

The book, too, has an unexpected joy resulting from the design of the document. In the upper right-hand corner of each right-hand page there is a figure of a man holding balls (white, gray, black). The reader hardly notices them until the mental light switch clicks on, telling him or her that each drawing is in the same place. After wondering why that might be, a person starts to flip the pages, only to discover that here is a little movie of cascade juggling complete with eye movement. What a touch of brilliance!

Finally, I hope you will try it and learn a refreshing new skill that will serve you well. And, if you are in the mood for an astonishing experience, send off to the Public Broadcasting Service (Alexandria, Virginia) for the *Great Performances* tape titled "In Motion with Michael Moschen." You will find there a man who elevates juggling into the spiritual realm.

Ron Nelson is an associate professor of English, James Madison University, Harrisonburg, VA 22807; +1 540 568 3755, fax +1 540 568 2983; nelsonrj@jmu.edu.

Do Roman paramedics refer to IVs as 4s?

LEST WE ALL GO TO HELL

JEAN-LUC DOUMONT

Sentence length is at best a symptom.

"I've got bad news," a friend of mine recently told me on the phone, "I just found out that what the two of us have repeatedly committed together in the past is in fact a deadly sin, so we will both burn in hell." I was appalled: What on earth could she possibly be referring to? "Well," she went on, not knowing whether to be amused or irritated, "I just attended a presentation on Information Mapping® that listed several deadly sins; one of them is *writing sentences longer than 20 words!*"

Twenty words! Sinners we were: Our recent biotechnology report, which, paradoxically, had been well received, probably had few sentences that short. Why, the first paragraph of this very article opens with a sentence of some 45 words and this second paragraph, after attempting to make up for it with a two-word utterance that is but a sentence fragment, now goes on with a 50-word sentence—over twice the limit!

Sins, of course, are a question of religion, and I conveniently decided not to believe in the 20-word one. In stating such dogmas, Information Mapping and other theories involving readability formulas suffer from two major flaws: They pick on symptoms, not causes, and they extrapolate otherwise good ideas outside their range of validity.

Sentence length is at best a symptom. Hard-to-read sentences tend to be long because their structure is complicated and not the other way around (the same way a person may look pale because of being ill and not the other way around). The sin, therefore, is easily falsified. The heavenly short seven-word sentence *Dick, who, when Jane arrived, left, returns* exhibits a hard-to-read nested structure. By contrast, Gabriel García Márquez's 991-word sentence in *Cien años de soledad* (One Hundred Years of Solitude), while appropriately suggesting someone rambling on, is perfectly readable because it can be processed linearly; we no longer need the beginning to understand the end.

Sentence length can hardly be considered in isolation. Whereas well constructed short sentences are readable, a long succession of short sentences is typically not. Moreover, those of us who believe each sentence should express one idea recognize that short sentences can only express simple ideas. Complex ideas require complex sentences, though not complicated ones.

Why, then, would Information Mapping insist on short sentences? One reason may be that it was devised for procedural writing. When a manual, precariously balanced on your lap, must get you to carry out a set of actions on a given object, short, simplistic sentences make sense. In other circumstances, they might not.

Readability formulas are likewise often applied out of context. The Gunning Fog Index, reporting the minimum grade level at which a text is easily read, works well for school-age students, but not quite beyond that point. The first sentence of the next paragraph (which has only 20 words) has a Fog Index of 36, suggesting that you cannot understand it easily unless you are currently working on your fourth Ph.D. degree or so. (But please go ahead and give it a try.)

Readability formulas, which typically penalize multisyllable words, discourage expressions like Professional Communication Society and Institute of Electrical and Electronics Engineers. Still, to a technical audience of non-native English speakers, the word *electrical* may be far less problematic than the difference between such short words as *would, should,* and *could.*

Unrepentant I am, then. Let those who have never sinned throw the first stones!

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

LOST AND FOUND

VICKI HILL

Casting my net widely …turned out to be a constructive move.

This series of articles started with a question in my mind, one that I thought others might be interested in: What are reality-based and workable techniques that can be used by authors to attract an audience? A superficial analysis of this question had turned up one simplistic admonition: Know your audience. There must be more knowledge out there, I thought.

Yes, there is; there are clues and even direct statements, but they need careful cultivation and application. And they need a place to take root—some raw piece of writing that can be used as a starting point. This is my last column and I want to reflect a bit on what I've learned and tried to communicate from all this questing for the past year.

In teasing out the raw materials for these columns, my first principle bore fruit. I insisted on a real audience interaction. Interactions I defined loosely. Sources included:

• A report I wrote for a demanding audience (with a little help from an expert)

• My reaction to the images in a moving film

• Magazine articles: what worked and what didn't

• My favorite: critiques about pieces of writing or other expression (*Brill's Content, The Blair Witch Project,* Proust's fiction)

Nearly every column sprang from a different type of raw material—highly unscientific, but I think that one of the best analytical techniques is approaching a goal in a variety of ways. Casting my net widely, not just confining my domain to books and magazines, but also including movies and the Web, turned out to be a constructive move. More than that, it opened up worlds to me I never knew existed.

So now I had my own slices of reality to work with; what next? Here's where the real knowledge quest began. Reader, in

almost every situation I found a published statement that resonated with the point I was trying to make. Luck? Yes, some luck but mainly persistence. There *is* a lot of information on audiences out there; it's just not advertised or indexed as such. I never reveal my renowned information searching techniques, but what I found was normally advice on writing with a twist. The twist was to focus single-mindedly on the perspective of an author's finding an audience, excluding all else. The importance of having something meaningful to say when you write may seem too obvious to state.

When this idea was aptly stated and applied to a magazine writer with much in common with a novelist of a hundred years ago, somehow it seemed to come alive. Pages and pages about finding and expressing a theme have been published. When the theme is time and one's entire life, as in Proust's fiction, the lesson of an unstoppable theme to me was driven home. I identified both with the authors and with the writers seeking to give advice. Combining the real work with the (of course separately generated) advice seemed to have a synergistic effect. When I found the advice to be borne out in a real piece of work, playing matchmaker so to speak, I derived direction and inspiration.

As all of this was going on I found that I was selecting a path that was meaningful for me. Authorities talked about different techniques for creative vs. non-creative works; I started choosing creative works (films and novels). I started these articles with a report on the Telecommunications Act and how I got the right information in it for its specialized audience. I ended up comparing two films, *The Godfather* and *Babette's Feast*, finding them mirror images in content but united in their use of techniques for dealing with universe-defying events and inspiring impassioned contemplation.

Years ago I was working with data collected during space missions. The problem

WORKING FREELANCE

HOW LONG WILL THIS TAKE?

JULIA LAND

An accurate estimate of the time required to complete a job is an important element in negotiating a new project. If a freelancer is charging a project-based fee, the time estimate is crucial in determining what that fee should be. No matter what the basis of the fee, the time estimate is needed to set the schedule for completion of the work.

Before beginning the time estimate, it is necessary to define the job requirements. The January/February WORKING FREELANCE column talked about how to create clear job specifications. This column talks about using those specifications to make realistic estimates of the time required for the project.

A good set of specifications provides quite a bit of information about the final product, answering questions such as these: What is the product? What topics is it to cover? How long is it going to be? What process will be used to create and review the document? How many drafts will there be? What information will the client provide?

In meeting the challenge of translating the specifications to realistic time estimates, one approach is to perform some of the work. Freelance book editors may request a sample chapter from the client and edit some or all of the sample. The freelancers then extrapolate how long it will take them to edit that particular book.

Another approach is to turn to industry experts and professional organizations. I list five sources*; each contains a chart that identifies some element of work and assigns, as a guideline, a number of hours (or a range of hours) required to com-

> *Realistic time estimates are important to the success of freelance work.*

---

* Freelance Editorial Association. *Freelance Editorial Association Code of Fair Practice*, rev. ed. Cambridge, Massachusetts, 1996.

Hackos, JoAnn T. *Managing Your Documentation Projects.* New York: Wiley, 1994.

Lasecke, Joyce. "Cost Estimating with Confidence." *Intercom*, March 1992.

Lasecke, Joyce. "Stop Guesstimating, Start Estimating!" *Intercom*, November 1996.

Rude, Carolyn D. *Technical Editing*, 2nd ed. Needham Heights, Massachusetts: Allyn & Bacon, 1998.

---

plete that work. For example, the Freelance Editorial Association Code of Fair Practice suggests three to eight pages per hour for basic copyediting. JoAnn Hackos shows an estimate of four hours per help topic for context sensitive information.

The difficulty with using these charts is that they are general in nature and may not fit the specific project that needs an estimate. To address this problem, Hackos provides adjustment factors, called dependencies. Dependencies are multipliers to apply to the estimated time based on such factors as the stability of the product being documented and the availability and reliability of the technical experts the writer will consult.

Some freelancers adjust the formula estimates by their own experience and their knowledge of the client. They consider many of the same factors as Hackos' dependencies but without trying for the same mathematical precision. For example, a freelancer may know that a particular client requires sign-off by several experts before the client approves a draft. With this information, the freelancer knows to add time to the review and revise portions of the estimate.

More experienced freelancers may avoid standard formulas entirely. They base their estimates on knowledge of their own pace of work and on previous experience with the client. They know about how long it takes them to write on a topic of a given length and how long to revise it after the client review. They may also consider other factors.

If they are very familiar with the subject matter, they can expect to write much faster than if the subject matter is new to them. If the subject matter experts are likely to be difficult to reach, or if communication is limited to e-mail, research may take considerably longer than if the experts are readily available for consultation. If the client and the freelancer have an established, trusting relationship, the entire project will be smoother and quicker than

A Cure for Normaphobia

By Michael Brady

More works are needed that take the sting out of standards.

The square one of contemporary technical writing is an imbroglio. Just starting daunts, as it does in all writing. But technical writers also need to know their stuff, to be up to speed before they start. The newer the field, the greater the speed to be gained, as no writer can be conversant with technologies as rapidly as they evolve (not even R&D gurus master that). But where do you get the rhetorical horsepower to accelerate? Gone are the days when you could pore over an entry in the *Encyclopaedia Britannica*. Not even a company's design documents will do, as they are at square two or farther along in the game. Particularly in the high-tech disciplines that are the bailiwick of PCS member writers, the basics of a sector are in its standards.

That's technically reassuring, as it ensures the compatibility essential in our increasingly networked world. But for newcomers, writers as well as engineers, standards are intimidating, principally because they are comprehensive and intricate. Standards folk understand them, but others often find them frightening. Moreover, connotation can cloud comprehension. Like *quality*, *standard* is a word that everyone understands but few can define. Indeed, in the second edition of the *Oxford English Dictionary*, the definition of standard runs over four pages. No wonder, then, that standards often go unread by writers.

That's unwarranted, as there are cures for the specific strains of normaphobia (fear of standards). And, fortunately, among the best of the recent crop is one that unravels the entangled standards that apply to digital television, a.k.a. Digital TeleVision Broadcasting (DTVB) and Digital Video Broadcasting (DVB), the rapidly growing sector in consumer electronics that increasingly includes wireless last-mile Internet connection. *Digital Video Broadcasting, The International Standard for Digital Television,** compiled by Prof. Ulrich

Reimers and eight colleagues on the faculty of the Institute for Communications Technology at the Braunschweig Technical University in Germany, is a landmark reference.

Though written by academics (seven of the compiling nine hold master's degrees; two hold doctorates), the approach is down to earth, as the book evolved from seminars held from 1994 on for communications industry professionals. Though compiled in the heart of Europe, the coverage is global. Alone, this aspect recommends the book, as standards all too often reflect the history of development as well as the nationalism of their originating countries. Otherwise, there would not be three incompatible color TV broadcast standards: NTSC in the U.S. and many Asian countries, PAL in most of Europe, and SECAM in France and some countries in the Middle East.

Though concerned with an advanced and evolving technology, the book puts forth all basics with admirable clarity. For each topic, the authors have extracted the essentials and have provided references for readers who seek greater detail. For instance, the Reed-Solomon codes used in digital image transmission via satellite are succinctly explained in less than a page of text, and references are given to their more involved mathematical proofs.

Digital Video Broadcasting is in handy textbook format and packs its comprehensive coverage in just 12 chapters with an extensive bibliography and a list of acronyms and abbreviations. It's fairly expensive (the online Amazon shops sell it for $89.95 in the U.S., £51.50 in the U.K., and DM149 in Germany) but well worth it, particularly in view of its scope. It's also timely: Market prognoses imply that by the end of this decade, digital television with its return channel may be as ubiquitous as one-way analog television is today. If you're at square one of the digital television sector, this is the book to speed your start.

---

* *Digital Video Broadcasting, The International Standard for Digital Television*, Berlin, Heidelberg, New York, 2001, Springer-Verlag, 295 pages hardcover, ISBN 3-540-60946-6.

TOOLS OF THE TRADE

HOW TO BRIGHTEN YOUR STYLE

PETER REIMOLD AND
CHERYL REIMOLD

Part 3: For Flow in Writing… Connect!

For your thoughts to reach your reader in a smooth, coherent flow, you must show the reader how they connect. The key to flowing, connected writing in business and science is an overall pyramid structure: You begin your memo, letter, report, or e-mail with your main message and then make sure everything that follows relates to this main message. However, it's also important to show how the sub-sections connect to each other.

Let's begin with sentences. Here are three ways to connect them.

1. Set up a plan in the first sentence of the paragraph and then follow it.

Very simply, this means you tell the reader that you will consider several aspects of a message. Then you go on to address those issues one after another. Here is an example:

There are *three main kinds* of business meetings. *The first* is the brainstorming meeting, which allows everyone to throw out ideas and get pats on the back for doing so. *The second* is the progress meeting, which offers project members a chance to explain why they haven't made any. *The third* is the administrative meeting, which brings people together to plan future meetings. Of the three, this one is clearly the most popular, as it is the most frequent.

2. Repeat key words or structures.

Look at two passages from Winston Churchill's impassioned statements during World War II. By repeating words and structures he enhances the power and connection of the thoughts in his message:

When I told the French that Britain would fight on alone whatever they did, their generals told their prime minister and his divided cabinet, "In three weeks, England will have her neck wrung like a chicken." Some *chicken*, some *neck*.

Never in the field of human conflict was *so much* owed by *so many* to *so few*.

Oscar Wilde achieved the same effect, on a lighter note, in *The Importance of Being Earnest:*

Of course the *music* is a great difficulty. You see, if one plays good *music*, people don't listen, and if one plays bad *music* people don't talk.

3. Use transition words that show connection through time, space, or logic.

Some small words were made for transitions. They aren't the most elegant form of connection but, used sparingly, they work. Here are some examples:

Time: *before, meanwhile, afterwards*
Space: *above, beneath, in front*
Logic: *because, if, therefore, however, as a result*

Look at the way Montesquieu uses transition words to connect his thoughts:

If we wanted to be happy, it would be easy. *However*, we want to be happier than other people. This is almost always difficult, *since* we think them happier than they really are.

More powerful still is the use of transition words not just to connect thoughts but actually to guide the reader through images to an inescapable conclusion. Chief Seattle does this in his letter to President Franklin Pierce on the proposed sale of Indian land:

If we agree, it will be to secure the reservation you have promised. *There* [connects to reservation], perhaps, we may live out our brief days as we wish. *When* [connects to brief days] the last red man has vanished from this earth, and his memory is only the shadow of a cloud moving across the prairie, these shores and forests will still hold the spirits of my people. *For* they love this earth as a new-borne loves its mother's heartbeat. *So*, if we sell our land, love it as we've loved it.

Strong connections can breathe life into your writing and make it both memorable and persuasive.

Cheryl and Peter Reimold (telephone +1 914 725 1024, e-mail perccom@aol.com) have taught communication skills to engineers, scientists, and businesspeople for 18 years. Visit their new educational web site at http://www.allaboutcommunication.com.

Connect your thoughts in these ways: Set up a plan and follow it, repeat words or structures, or use transition words.

SEARCH ENGINES REVISITED

ELIZABETH MOELLER

Only about 20 percent of Web-site traffic comes from the use of search engines.

It has been a while since I first discussed search engines. Since those early NET NOTES columns were written almost two years ago (May/June and July/August 1999) a lot has changed. Some search engines have folded, others have merged, and still others have changed their business models to increase revenues. What has not changed is the game search engines and Web site owners play to increase a site's visibility in search engines and directories.

The Changes

All the changes over the past three years can be boiled down to overlapping categories: shutdowns and mergers, and pay for inclusion. The Disney Go Network is one of the most notable examples of the shutdown and merger mania. Go bought Infoseek and then recently announced that it was scaling back all of its search-engine services. However, the Go Network has also acquired GoTo.com and is using its results in addition to those from the Go database. This is an interesting development as Disney is now earning revenues from a company that successfully sued it over the use of a traffic light logo just one year ago.

America Online (AOL) dropped Web-Crawler, which then merged with Excite, in favor of AOL Search, its own search engine. The Microsoft Network (MSN) and Netscape also have their own very popular search engines. Finally, Yahoo merged with Google, forming the largest search engine-directory combination on the Web. As search engines shut down and merge, it becomes more difficult for users to weed through the data returned in their searches as well as for sites to achieve a decent listing. As I write this, Google is advertising almost 1.4 billion pages in its database.

Do you need a scorecard for all these? The best place to see the most current information is the Search Engine Watch Alliances Chart, *http://www.searchenginewatch.com/reports/alliances.html*.

One way for Web sites to improve listings is to participate in the pay-for-inclusion models implemented by Yahoo, Looksmart, NBCi (formerly Snap), and possibly Inktomi. A pay-for-inclusion model is simply that: Site owners pay a fee to have their sites listed in these directories. In the case of Yahoo, only sites listed in the business-to-business (B2B) categories pay the $199 fee for review.

Looksmart, also with a $199 fee for consideration, is supplying their results to MSN, Excite, AltaVista, iWon, and CNN. MSN displays results from Looksmart before displaying results from its own database. The others all use Looksmart rankings in their formulas to determine how relevant a site is to a user's keyword search.

NBCi is experimenting with a Top Sites directory where, for a $99 fee, sites will be placed near the top of the listings. Inktomi is also experimenting with a pay-for-position model with some of its clients, such as Rolling Stone and The Hunger Project.

Paying the fee sometimes does not guarantee a listing. Both Looksmart and Yahoo reject sites with adult content. They also reject sites if they do not deem them "unique enough." This can cause problems for competitors who offer essentially the same product lines. The first one applying is often accepted whereas the second or third may be rejected. This happened to a client of mine, a 50-year-old company with an impeccable reputation; the site was accepted upon appeal, however.

The Game

What does this mean for Web site owners? When everything shakes out, it really appears that there are only a handful of databases that search engines pull their results from. Search-engine positioning within those databases has become one of the most-played games in the world of Internet searching. Site owners are doing everything they can to optimize their pages or buy their way into top spots in the search engines. Optimizing pages involves using software that figures out the latest

search-engine relevancy formulas to help you design a Web page that meets a search engine's criteria for relevance to keywords.

Relevance is determined by the information in the title bar, the number of times a keyword appears on a page, the number of times a keyword appears in relation to the number of other words on that page, the number of words on a page, and a host of other details. Search engines are doing everything they can to prevent optimizing. This involves techniques from blocking software to frequently changing their formulas. Unfortunately for those on a strict budget, buying your way into a position is becoming more and more likely.

What does all this mean for the average Internet surfer? It means there are fewer choices of search engines and there is no guarantee that you will ultimately find the Web site you need. The one thing to remember is that 20 percent or less of site traffic comes from the use of search engines. The rest is from word of mouth or well done site marketing—but that's another column.

Elizabeth Weise Moeller is vice president of PCS and chair of the Meetings Committee. 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.

WORKING FREELANCE

one in which the client wants to watch closely ever the freelancer's shoulder.

If these experienced freelancers use formulas at all, it is likely to just be as a sanity check to validate their own estimates.

It takes time to develop the experience needed to make realistic estimates. Some freelancers keep careful records showing how much time they spend on each step of a project. They can compare how long they thought it would take to how long it actually did take and thus improve their estimating skills.

However the time estimates are developed, they are important to the success of the freelance business. If the freelancer has underestimated the time required to complete the work, he or she may end up working harder and earning less for the time than anticipated. If an inaccurate estimate causes a project to take significantly longer to complete than scheduled, the freelancer may loose credibility with the client. And if the estimate is too high, the client may select another freelancer with a more reasonable estimate for the job.

As usual, several other freelancers have helped me by telling how they deal with the issues in their city or country. Many thanks to Jane Aronovitch, Ian Blythe, Michael Brady, Jean-luc Doumont, Carrie Estill, Mick Harney, Ruben Oren, Kim Shaw, and Tom van Loon. Together, we have lived and worked in Austria, Belgium, Canada, France, Germany, Israel, the Netherlands, Norway, Switzerland, the United Kingdom, and the United States. If you would like to participate in these discussions, please send e-mail to *julia_land@ieee.org.*

The author has been a freelance technical writer for eight years and a member of PCS for six. She lives and works in Houston, Texas, and would especially like to hear from freelancers working in Asia and along the Pacific Rim.

Keep quantitative records, look for examples, ask experts, perform a sample of the work.

"Who knows most speaks quietly."
— *Herbert V. Prochnow*

IMPROVING SOFTWARE DOCUMENTATION USING INSTRUCTIONAL DESIGN

BY PAWAN NAYAR

Documentation is an important component of the sale of software that often differentiates between two similar-capability products. High quality software documentation saves users time, money, and energy in learning the program and using it effectively. It also can reduce support costs for the seller and help develop better brand recognition.

Despite its importance, the quality of software documentation has not evolved to the extent that it replaces the demand for supplementary aids to learning such as books, guides, Internet-based material, and computer-based training packages. Various factors are responsible for the inability of software documentation to serve the real needs of users.

Fulfilling Users' Expectations

Users do not have time or energy to waste on irrelevant or incomplete information. They like crisp, doable instructions. Each sentence in documentation should have a meaning that helps in either understanding a concept or performing a task. For documentation to meet users' expectations, it should conform to the three Cs: clear, concise, and complete.

A **clear** document is characterized by direct, unambiguous language. It provides simple instructions that accurately define the tasks to be performed. A clear document generates only one meaning—the intended meaning—and prevents all misconceptions that might arise because of any unintended meaning.

A **concise** document uses minimum words to convey the point. It conforms to an established style guide and a list of terms with consistent spelling and meaning.

A **complete** document introduces all terms, concepts, and procedures required for understanding a technology and using it effectively in the users' environment.

Using Instructional Design

One can use instructional design (ID) tools and principles to substantially raise the quality of software documentation. Instructional design involves asking precise questions that turn isolated sentences and paragraphs into objective and measurable instructions that cause desirable learning and prevent any interpretation that may cause undesirable learning.

The *Document Development Life Cycle* figure shows the checks based on ID principles that can be added to your processes. The four phases in the figure and some of the tasks are based on the software development process of the Microsoft Solutions Framework model. The description of the tasks, however, is modified for a document development perspective.

ID in the Envisioning Phase

In the envisioning phase, you need to answer the bigger questions about your endeavor: What is the vision of the project (the big unlimited picture about the product) and what is the scope of the present version of the product (short-term deliverable focus)? From an instructional design perspective, you need to don the role of advocate of the end user and list how you can enhance users' performance with the software. For this, conduct a cost-benefit analysis of different training, education, and information sharing strategies.

You must decide whether you need a user manual, a reference guide, a help file, or a set of these. You must choose an information delivery mechanism that defines the nature of your documents and how different ones are generated.

You must decide whether you will provide printed documentation or printable (e.g., PDF or HTML) files and searchable soft copies. To ensure fast and effective searches on the Internet, you must define the tagging mechanism for searching documents.

You must decide whether you will single-source documents (that is, generate help files and manuals from the same content) or write content for each delivery medium (PDF, HTML, WinHelp, HTMLHelp, etc.) separately. If you decide to single-

ID involves asking precise questions that turn isolated sentences and paragraphs into objective and measurable instructions…

source content, ensure that all processes for single-sourcing content are defined. You must set a deadline (ideally before the end of the planning phase) to complete all design templates and filters for converting the single-source copy to each delivery medium.

The envisioning phase is also the time for defining the documentation development processes and the editing and instructional design standards. You should settle on guides to refer to for basic editing and

Next Cycle

Start Here

Improve Processes

Quality Change Control

Doc Usability Review

Perform Media Checks

Stabilizing Phase

Follow Proper Reviews

Developing Phase

Perform Standard Checks

Create First Draft Follow ARCS

Identify Learning Patterns
Research Software

Define Vision

Set Scope

Define Information Delivery Process

Define DDP

Set Edit/ID Standards

Envisioning Phase

Planning Phase

Create Analysis Documents

Define Word List

Create Style Sheet

Make Content Outline
Objective
Parallel
Modular

Legend

DDP – Document Development Process
ARCS – Attention Relevance Confidence Satisfaction

some corporate guidelines/standards for writing books, manuals, help files, tutorials, and multimedia presentations. If you have not already sealed on corporate standards, start that work right now because it is critical to the ultimate success of your project.

When you are defining styles or standard guidelines, keep in mind the end user. Each standard must aid in providing the right content clearly, concisely, efficiently, and accurately to the user. The key point in the envisioning phase, as opposed to the planning phase, is to look at the larger pic-

ture. The processes that you are defining or evolving should represent the essence of your product philosophy and serve as the long-term guiding principles of your document development process.

ID in the Planning Phase

One of the fundamental premises of ID is that the instruction be relevant, i.e., appropriate and useful, to the learner. To plan for relevant instructions, you must conduct three types of analysis at the start of the planning phase: audience analysis, task analysis, and needs analysis. Those analyses will help you scope the project.
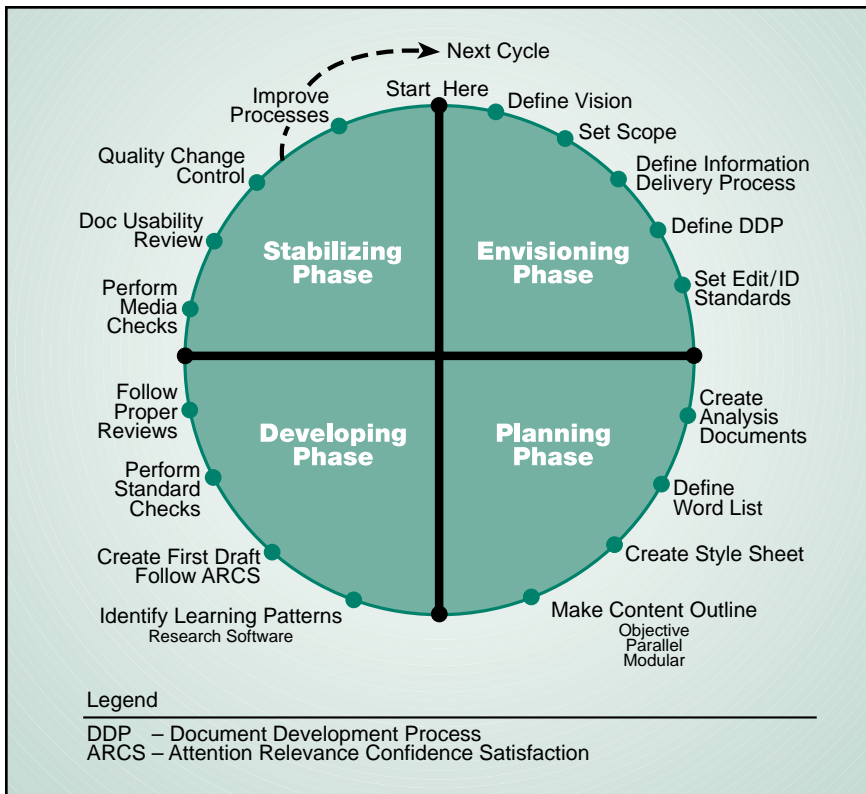
Audience analysis (or user analysis) involves defining the user profile. You define the users' background and list their comfort level about the current software. You get an idea of what they need as prerequisites for understanding the content. You also define a goal for the exercise: how the book, help file, or tutorial will increase users' skills.

Task analysis involves defining a list of tasks that a user typically performs. Make the task list as big and as specific as possible. For example, assume you are doing a task analysis for book-publishing software. Among the tasks, list creating a book, creating a chapter, and creating a topic as three different tasks. Next, detail each of these tasks and you will end up writing hundreds more associated tasks.

Needs analysis involves understanding all the situations in which the user will perform each task. It explains the real-life use of the software. For example, a user may require a word processor to type a letter or write an article. Understanding the typical situations helps technical writers put relevant examples and analogies at the right places.

Whenever you need to make a decision to include or to exclude some content (instruction, explanation, or procedure) you can go back to the three analysis documents. You can also refer to the documents to decide how much content you need to expand on any concept.

Besides analysis documents you must also create a **word list** and a style sheet. The

…that cause desirable learning and prevent any interpretation that may cause undesirable learning.

word list should prescribe the capitalization, article, and comma usage rules for all technical words in your document. The **style sheet** should indicate how you will refer to figures, cross references, dialog boxes, tables, lists, and user interface terms. Any special highlighting for notes, tips, cautions, etc. should be explained. You must also describe when to use different character and paragraph tags. If you have template files that insert specific page borders, formatting, etc., explain how to use those files. After you have the word list, style sheet, and analysis documents ready, you start the real activities.

The first is preparing the **content outline** (CO). To create this outline, collect and study all reference material from all available sources: marketing requirements, functional specifications, test plans about product features and flows, customer feedback, and known bugs (if an earlier version of the software exists). Then list all chapters and appendices down to the second level of detail (i.e., lessons, topics, and subtopics).

When creating the content outline, be objective. One of the foremost instructional design authorities, Robert F. Mager in his excellent book *Preparing Instructional Objectives: A Critical Tool in the Development of Effective Instruction* (Atlanta, Georgia: Center for Effective Performance, 3rd ed., 1997) explains how to write objectives around literally anything. You can use this book as a basis to ensure that your CO contains objectives

for all levels. The lesson objectives should be broad, whereas the subtopic objectives should be precise and based primarily on one central idea.

Next, be sure that the CO is parallel, modular, and complete in organization. A **parallel** outline has a similar level of depth and orientation at each level. A **modular** outline progresses from one task or concept to another in a manner that blends the content in a natural flow. A **complete** outline consists of content in the sequence, structure, and detail that are appropriate for completing the documentation goal.

After writing the content outline based on those principles, have it reviewed by all development groups, subject matter experts, and a pilot audience. Incorporate the feedback and move on to the next (development) phase.

Continued in the next Newsletter.

The author is a specialist technical writer at Cadence Design Systems, Ltd., in NOIDA, India, where he develops user guides, reference books, tutorials, and help files for electronic design automation software. Previously, as an instructional designer, he created computer-based training packages for the National Education Training Group, Inc., in Naperville, Illinois. Nayar is a post-graduate diploma holder in journalism and mass communication. He likes poetry, trekking in the Himalayan ranges, and daydreaming. You can check his creative works at http://www.jindagi.com *or contact him at* pawan@cadence.com.

AUDIENCE QUEST

we were all working on was that the data collected in a given era were tied to the hardware and software capabilities of that era. Scientists couldn't read old data because the computing platforms that matched that data were no longer available. More than one author referred to this problem as "Lost in Space." My work with NASA I titled "Found in Space" because we were working on techniques to allow scientists access to that data.

I hope that by unearthing and communicating some audience-finding techniques, I have helped some writers find audiences that would have otherwise been lost.

Vicki Hill (vgh1@erols.com) *is a consultant in the areas of business process improvement, software life-cycle processes, and telecommunications applications. Special interests include the presentation of complex technical information, the magazine scene, biographies, films, and Web surfing.*

DEAF PEOPLE *DON'T* WRITE *MUSIC*

BY WEN SMITH

Hey, all you've read so far is my title, and already I can hear you saying I'm off my gourd. You're ready with the big exception: Beethoven wrote some of his finest music while totally deaf.

My title is a generalization, you say, and all generalizations are false.

Well, we've all heard that one before. If all generalizations are false, then this one….

The quandary lies in what the logician calls distribution of terms. *All generalizations* is a distributed term; that is, it refers to *all* members of its class. *Deaf people*, since I set no limit to it, is also a distributed term: It refers to *all* members of its class.

What I needed was a limiter, a *some* or a *many* or a *most*. I might have said, "*Some* deaf people don't write music" or "*Few* deaf people write music." The undistributed terms would still produce generalizations, but acceptable ones.

To put the matter another way, I should preface every generalization with the face-saving phrase *as a rule*, meaning "most of the time but not necessarily always." I might have said that deaf men, *as a rule*, don't write music. The same goes for women, of course, but I want to keep this simple.

Instead of limiting, I often go whole hog and put the generalization as if it had no exception. In other words, I don't always say what I mean. I say part of what I mean and expect that the rest, the exceptions, will go without saying.

My title generalization, if you take it as I meant it, isn't really false. Beethoven notwithstanding, it's true that deaf people, *most* deaf people, don't write music. To understand me, you have to listen to what I mean, not what I say. Of course, if I'm a writer, I should at least try to do my share of the work.

We're really dealing here with the delicate connections between thinking and saying.

As a rule, get your not *in the right place.*

How can I get my words to say what I really mean? Words have a way of reverting to their wild state unless I exercise the whip to keep them in line.

And we're also dealing here with the delicate connections between hearing and understanding. You hear what I say, and, even if I've left out a lot of stuff or buried it deep, you try to "dig" all of what I mean.

Is a puzzlement.

So much depends on the *allness* or *partness* of what I'm trying to say.

Take a well known generalization: "All that glistens is not gold." (It's paraphrased from the poet Thomas Gray, who really wrote *glisters*, but that's no matter here.) The generalization just can't be true. Gold does glisten, so obviously some of what glistens is gold. The familiar but twisted old quotation is clearly wrong. If nothing that glistens is gold, an absurdity prevails: Gold is not gold.

The line really means, apparently, that *some* of what glistens is *not* gold. In other words, *not all* that glistens *is* gold. What jumps at us is the difference between *all is not* and *not all is*. It's an essential distinction. Gray, bless his soul, had it right, and the familiar line misquotes him.*

Now and then I say something like *all is not* when I mean *not all is*. The trick is to get the *not* in the right place. It's wrong to say "*All* grass is not green," because my neighbor Phil's grass is green. But when I say, "*Not all* grass is green," I have reason (as well as the ungreen grass) on my side.

Most of us love generalizations because they feed our appetite for exaggeration. When I say *all* and mean *some*, my nose grows an inch. When I say *always* and

---

*ON A FAVOURITE CAT, DROWNED IN A TUB OF GOLD FISHES …

   Not all that tempts your wand'ring eyes
   And heedless hearts, is lawful prize;
   Nor all that glisters, gold.

STYLE WHAT?

BY ROBERT STAHL

Computerized systems don't make information more understandable; they just speed the presentation of it.

"Have you seen the new company style manual?" My colleague was ecstatic: "It's the solution to good documentation; just a moment, I'll show you my copy." While waiting, I wondered if the proffered book might be a new edition of one of the venerable American trilogy: *The Elements of Style* by W. Strunk, Jr., and E. B. White, the *New York Times Manual of Style and Usage*, or the nigh classic *The Chicago Manual of Style*? Or perhaps the even more venerable British duo: S. Jenkins' *The Times English Style and Usage* or *The Economist Style Guide*? Or might it be one of the reliable ancillary references such as *Fowler's Modern English Usage*, Eric Partridge's *Usage and Abusage*, or Bill Bryson's *Dictionary for Writers and Editors*?

It was none of those. Indeed, the words "style manual" were in the long title of the spiral-bound monograph, but a style manual it was not. It was a directive on document codification, a modernized extension of the Roman numeral outline of high school English classes. As I leafed through it, I thought that the Roman numeral approach to composition had some advantages, not least that it helped students who would not take up writing and aided the teachers who graded their papers. But it was so much a straightjacket that most modern writers save one, Vladimir Ilyich Lenin, have uniformly ignored it.

Nonetheless, vestiges of the Roman numeral outline abound, particularly in high tech fields. Arguably, the trend of central dictation of technical text form began with the documentation of telephone exchanges, the first complex systems in the modern sense. By coincidence that happened in the depression years, so the format of exchange documentation was set in the climate of the post-depression make-work ethic. The result was a codification understood only by those who specialized in it.

Thereafter, documentation codification flourished. The second world war boosted it to the forefront of technical awareness in the garb of military specifications. Its constraints became increasingly rigid: A text was acceptable only if it could drop into a pre-assigned slot in a defined hierarchy. Content suffered; a company active in the defense sector might have a military expert to interpret specifications, just as it might have a lawyer to interpret contracts.

The current rush to make documentation available electronically, on CD-ROMs and from online databases, has further championed codification at the expense of content. Computerized systems don't make information more understandable; they just speed the presentation of it. The medium of the monitor is best at disgorging information when it is displayed in blobs. Each blob is constrained to the topic of its codified heading and is self-contained, so it may be used elsewhere and may be accessed from anywhere. That approach enables a company to quickly compile a comprehensive manual on the latest widget by assigning the blobs of it to different staff members and then tossing their contributions into the defined structure. Moreover, when finished, the multi-blob document easily slides into the company database because its components were identified in advance. Codification is company-friendly, which may be why there are so many company style manuals.

But what is the effect on the reader when a document becomes an assemblage of blobs of information in a rigidly defined hierarchy, interspersed with hyperlinks, much as a TV show comprises blobs of a scenario interspersed with commercials? What happens when continuity of content is subverted to format? Fleetness, yes; instruction, no. As educators know, continuity is a cornerstone of teaching, be it with the past or with the more fundamental. Consequently, in building on structured discontinuity, codification stymies learning. With a codified user manual in

hand, a user cannot actually learn a new widget, but he or she certainly can quickly find all the blobs of information in it, including the telephone number of the widget help desk.

Codification has one outstanding advantage: In the name of uniformity throughout the provinces of a company, it keeps the central codification compilers busy.

As new topics evolve, new codification topics and substructures become necessary, and the provinces must look to the central compilers whenever they face a new documentation challenge. Lenin would have been pleased at that.

The author would welcome discussion and comments pro or con codification. Send them to the editor, r.joenk@ieee.org.

DEAF PEOPLE
(continued from page 24)

mean *sometimes*, it grows two inches. But I do it because exaggeration has punch.

Reason doesn't exaggerate. Its punch bowl is unspiked, yielding a flavorless brew that most of us avoid except in small doses. We're afraid it will drive us sane.

When I use a generalization, purpose holds sway. If I want to entertain or impress, generalizations often help. Same goes if my intention is to deceive. But when I want to inform and seek truth, it's best to get *not* in the right place, avoid *all* and *always*,

seldom say *never*, and save face by admitting that my generalizations apply only *as a rule*.

Enough hair-splitting. Not all deaf men write music. You can take my word for that — as a rule.

Wen Smith, a right-to-laugh activist, lives with his wife and the swallows in San Juan Capistrano. His new book of humor, Tip of My Tongue, *has just been published by Authors Choice Press and is available by order online at* http://iUniverse.com.

IEEE POTENTIALS CALL FOR PAPERS

The bimonthly *IEEE Potentials* magazine is addressed to student members in the U.S. and Canada, now numbering about 45 000.

Articles are sought on all aspects of electrical, electronic, and computer engineering and computer science. They should be

written for the undergraduate level, explain technological advances in an area, and attempt to interest students in the topic. Articles are refereed before publication.

For more information, communicate with Dr. George W. Zobrist, associate editor, *zobrist@umr.edu* or +1 573 341 4492.

Term	Translation
Old world charm	No bath
Tropical	Rainy
Majestic setting	A long way from town
Options galore	Nothing is included in the itinerary
Secluded hideaway	Impossible to find or get to
Pre-registered rooms	Already occupied
Explore on your own	Pay for it yourself

IPCC 01

IN THE NEIGHBORHOOD OF IPCC 01

By the time you read this we will have assembled the program for IPCC 01, so check your mailbox or our Web site (*http://www.ieeepcs.org/2001*) for details of the intellectual side of the 24-26 October conference. Meanwhile, in case you aren't already determined to go, let's look at the aesthetic side of the experience.

The beauty of northern New Mexico has long attracted people who create, collect, and appreciate art, and La Fonda, the conference hotel, happens to be a great hotel for a first taste of what Santa Fe has to offer. To say that artwork is displayed at the hotel does not quite do justice to the situation. More accurately, art is part of its nature. Even the shops and galleries emphasize fine arts and locally themed decorative items and clothing.

La Fonda is on the Plaza, the heart of this eminently walkable city. Walking around the Plaza you get a sense that Santa Fe has always been a destination, a center of culture and government, a city long accustomed to visitors who are doing more than just passing through. We anticipate building into the program a siesta on Thursday afternoon so that you can explore the city without missing any talks. The Thursday program will run a bit later into the evening than usual, and afterward comes the Society's awards banquet.

If you have more time (staying the weekend?) there is much to see and do farther afield in New Mexico. We don't have nearly the space to describe more than a fraction of the opportunities, but here is an eclectic sampling:

• Your children or grandchildren can bring you up to date on the facts about dinosaurs (including some local-lizard-makes-good stories from New Mexico)

at the Museum of Natural History and Science in Albuquerque (about 70 miles).

• For perspectives on the military-industrial affairs with which our profession has been so intertwined, try the National Atomic Museum, also in Albuquerque, and the Bradbury Museum, at Los Alamos (about 33 miles).

• The Atchison, Topeka, and Santa Fe railroad lives on only in song, but rail fans won't want to miss the Santa Fe Southern excursions along the 15-mile spur from Santa Fe to Lamy.

• If your artistic side hasn't been satiated by Santa Fe, you'll be within day-trip range of Taos (by U.S. highway or the old Turquoise Trail through the mountains, about 70 miles). New Mexico is known for a rich and diverse mix of cultures in the present day, as well as archaeological sites of those who have gone before.

• Last but hardly least is the land itself. If there is space in your luggage for a pair of hiking boots and room in your schedule to use them, northern New Mexico can certainly provide the trail.

How to dress? In a region where elevation plays a key role in determining climate, Santa Fe is at 6300 feet (1900 m). Although temperatures might reach into the high 60s or even the low 70s Fahrenheit (high teens to low 20s Celsius) on a warm day in late October, overnight lows will be near freezing. With any luck this nip in the air will translate to fall color in the mountains, and the odds are very good that you'll have clear weather in which to enjoy it.

We do hope that you will. Santa Fe is the sort of place to which you might well travel for pleasure, but at IPCC 01 there will be so much more. In the next *Newsletter* we'll go into detail on what the program has to offer. Meanwhile, explore *http://www.ieeepcs.org/2001*— and tell a friend!

COUNTDOWN TO SUZDAL

We have less than three months before our PCS delegation of 10 heads to Moscow for the International Colloquium on Professional Communication, 15-16 August. The Western delegation includes presenters from Canada, Belgium, and both shores of the United States. We are all busy gathering our travel documents and trying to learn some Russian phrases so we can communicate with our hosts in their native language.

Top photo:
Museum of Wooden Architecture of the 18th-19th centuries

Right photo:
St. Nicolas Church (18th century)

We have chosen our topics carefully so they will be particularly interesting to the audience. We expect the audience to consist of highly technical professionals who need to communicate their research, data, products, or processes to various audiences—technical communicators though not the type we normally encounter at the PCS conferences.
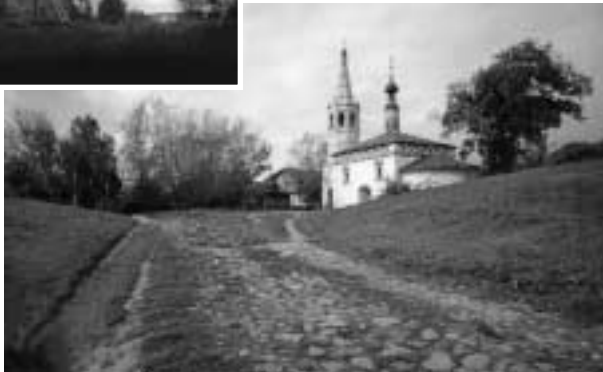
This audience will no doubt challenge us and question us on our communication techniques. Our goal is to provide them with new ideas to help them disseminate their information. In turn, we hope to better understand the challenges and needs of technical people so we can help foster the PCS mandate of providing engineers with professional communication skills.

The topics we will take to Suzdal include conveying information in visuals, writing technical and business proposals, detailing professional communication education curricula, and outlining the history of technical communication. If you're interested in attending, contact Lisa Moretto at *RGI_Lisa@compuserve.com* for details.