



IEEE PROFESSIONAL COMMUNICATION SOCIETY NEWSLETTER

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PCS MEMBERS ARE GETTING INTO PRINT

BY RON BLICQ

Ron Blicq is the PCS liaison to the IEEE Press.

Over the past three years, PCS members have either authored or have been coordinating editors of seven books published by the IEEE Press—and more are on the way! It's a surprisingly high output for a small Society, and most encouraging for me, as the PCS representative on the IEEE Press Board.

The topics are eclectic, ranging from advice on writing and presenting reports and proposals, through documenting patent applications, to creating in-depth proposals for the government. All are written specifically for engineers and scientists (although they have equal appeal for non-technical readers), and each is extraordinarily readable: easy to pick up, difficult to put down.

Here they are, listed in chronological order.

David F. Beer (ed.): *Writing and Speaking in the Technology Professions* (260 pp., 1992)

An IEEE best-seller, Beer's anthology contains 62 papers providing concrete, *practical* advice on how engineers can communicate more efficiently in the workplace. It covers writing clear technical documents, giving confident oral presentations, presenting information through graphics, holding productive meetings, and becoming an effective listener.

Robert M. Woelfle (ed.): *A New Guide for Better Technical Presentations* (368 pp., 1992)

Subtitle: *Applying Proven Techniques with Modern Tools*. Provides extensive information for making highly sophisticated tech-

nical presentations. Contains 60 papers covering planning, preparation and delivery of a talk, and using visual aids, computer graphics, video, and multimedia.

James W. Hill and Timothy Whalen (eds.): *How to Create and Present Successful Government Proposals* (330 pp., 1993)

Subtitle: *Techniques for Today's Tough Economy*. "This is intended to be a working document for your instruction and convenience," the authors say in their introduction. The 31 articles that follow, each written by a different proposal specialist, reveal proven techniques used by their authors to prepare winning proposals for government contracts.

Mike Markel: *Writing in the Technical Fields* (296 pp., 1994)

Subtitle: *A Step-by-Step Guide for Engineers, Scientists, and Technicians*. Provides an excellent "hands on" approach to technical writing. Combining leading-edge research with practical advice, it offers its readers a simple, effective system for writing all types of technical documents.

Michael A. Lechter (ed.): *Successful Patents and Patenting for Engineers and Scientists* (412 pp., 1995)

In 40 articles by experienced patent specialists, this beginner's manual—designed expressly for engineers and scientists—gives thorough coverage of both U.S. and international patenting concerns. It describes conditions necessary for patenting, how to avoid the many pitfalls that preclude patent protection, and how to research, read, and interpret existing patents.

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NEWSLETTER LOOKING FOR AN EDITOR

Reply to:

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Newsletter editor David Nadziejka has expressed a need to devote more time to his primary job at Argonne National Laboratory, as well as to the heavy demands of a 3-year-old. During his two years as editor, David contributed much of his own writing and supervised the design of the new two-color format. We will miss him and his resourcefulness.

The newsletter is published six times per year in the odd-numbered months. The copy deadline is approximately five weeks prior to the month of publication. The editor obtains and edits all content and oversees typesetting and page layout by

an independent contractor. Printing and distribution are handled by the IEEE. PCS provides a token honorarium per issue. We would like to have a new editor on board in time for the Thanksgiving copy deadline for the Jan/Feb '96 issue. The editor must be, or must become, an IEEE member. Please send expressions of interest and qualifications, as well as requests for more information, to Rudy Joenk (see left column). Please feel free also to communicate with editor David Nadziejka, d.nadziejka@ieee.org.

QUALITY CONTROL

From the July 12, 1995, edition of the *Chicago Tribune*, in an article about women's golf and champion Patty Berg:

Berg, 77, was a freckle-faced teen when she won the first Women's Open in 1946 . . .

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INFORMATION TECHNOLOGY

BY DAVID A. B. MILLER

David Miller is President,
IEEE Lasers and
Electro-Optics Society.

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permission from the
IEEE LEOS Newsletter,
June 1995.

*The modern scientific
and technical
journals are . . . based
on printing and
distribution technology
that has changed little
in concept for more
than 100 years . . .*

“Maybe we can seal the hull with an intense parafotonic flux field . . .”

“But we have to be sure it will work, Captain!”

“Computer, analyze all known observations of zeolium interactions with parabosons.”

“Successful parafotonic hyperlattice restitching in metametals was reported in the *IEEE Journal of Quantum Metallurgy* in 2095”, the computer replied instantly in its usual calm and pleasant voice, “at an intensity of 47.6 megamegons for zeolium . . .”

Another technical problem solved, on time and on budget, thanks to reliable information quickly accessed and searched.

It is a dream, of course, or a third-rate movie script featuring some “enterprising” starship captain. Finding the information we really need is seldom as easy, at the very least because the problem is usually not so well defined. Our starship captain also has the advantage of some extremely advanced information technology in his helpful, patient, and all-knowing computer. (I notice also that our captain never seems to curse or kick his computer—clearly some major [and much needed] advance has taken place by the late 21st century, either in computer technology or in genetic engineering of human self-control, to levels beyond our current comprehension.) But the information technology is changing rapidly, and a look at history gives us some perspective on just how fast.

By the time learned scientific societies were being formed in the mid 17th century, the Gutenberg printing press had been in existence for some 200 years. The first scientific journals followed very soon after the creation of such societies. (The *Philosophical Transactions of the Royal Society of London* dates from 1665,

three years after the founding of the Society itself.) The benefit of disseminating the information was apparently clear to the founders. It was in the 19th century that such journals really started to proliferate. The 19th century also saw the growth of effective postal services, first national, and later in the century, international.

The modern scientific and technical journals are therefore based on printing and distribution technology that has changed little in concept for more than 100 years, though it has doubtless become much more efficient and cost-effective. The peer-review and referencing models on which many of these journals work has probably changed relatively little over much of the last 300 years. The resulting body of knowledge is impressive, both in its breadth and in its accuracy and reliability. That is not to say that every scientific paper is correct, but the work is also opened to scrutiny and criticism by its publication, which in the end finds most errors of any importance. In turn such errors are corrected in subsequent publications.

Set against this historical background, the last few decades (and, in particular, the last few years) have seen an astonishing pace of change. First of all, the sheer volume of published technical material has grown dramatically. New electronic databases and literature searching technologies have fortunately emerged to help us find the information we need in this ever larger collection. It is not clear, however, that we are keeping up with the real demand. The rapidity of technical obsolescence, the shortening of product development cycles, and the need to work in broad-based teams to produce technically competitive products, are creating a need for up-to-date, accurate technical information that is also easy for the non-expert to understand and use. This creates a substantial challenge for organizations such as technical professional societies and educational institu-

tions. The classic models of research journals, conferences, and educational courses founded on scientific and technical disciplines still have very important functions, but more is needed, and real economic benefit could result if we could figure out what to deliver and how to deliver it effectively.

But perhaps more profound on a historical perspective are the changes in information distribution technology itself, most of which have occurred over the last few years. It is now quite possible to publish a "journal" without any printing or mailing whatsoever, through the use of e-mail or other network-based technologies such as the World Wide Web. Such journals already exist, and many experiments are under way. CD-ROMs can hold whole volumes of journals on a single slim plastic disc, with very low "printing" cost. Furthermore, the fact that this information is in electronic form means that it can be searched to track down specific information and also to "hyperlink" to referenced documents. The ease and speed of publishing by electronic means also enables information to get there faster. For example, LEOS journal tables of contents are available on-line and by e-mail long before the journals themselves appear in print.

Scientific and technical professional societies that do not keep pace with the changes in information technology are likely doomed to obsolescence themselves. The risk of changing to new technologies is substantial, however. The revenue from publications, for example, is often a major source that enables these societies to do the many other activities needed for their professions, as well as paying for day-to-day expenses that keep the societies running. New information technologies will likely have different cost models and different ways of recovering revenue, and will likely also lead to new kinds of products, with the risk of undercutting existing revenues. The next decade will be an exciting time as we exploit these new opportunities for societies, but the treasurers will likely

have more than a few sleepless nights! The irony is that it is we (in IEEE in particular) who have created (and will continue to create) all of this new information technology in the first place. I am not so pessimistic as to believe that it is a Frankenstein's monster, but, whatever it is, it is out of the castle and heading off into the village, out of our control now.

Just like Frankenstein's monster, though the new information technologies will likely be welcomed by the young and the wise, the rest of the villagers are in for a bit of a shock. I think most of us can see some of the reaction against the rapid growth of the Internet, for example, and in this case some of the criticism is coming from people who do understand it. A classic complaint is that, although there is a lot of "information" available, much of it is of little value, and it can take a long time to find the stuff that is worthwhile to any specific user. This is really not a new complaint—we could get the same reaction if we put the average reader into a large library and left them to it. We can always hope, of course, that, just as in our starship captain's computer, the technology will get better at finding what we really need to know among all of the raw "information". But even if that does happen, the key role of a technical professional society in validating the information in the first place, and putting its "brand" name behind it, will likely remain. Perhaps also we will figure out how to broaden the societies' role in helping people get the reliable, understandable, technical information they really need. Fulfilling these roles will ensure that such societies will survive beyond the changes in information technology, perhaps even to 2095 . . .

"But, Captain, what made you think of parafotonic flux fields in the first place?"

"Oh, I picked up a few useful tips while holobrowsing the *IEEE LEOS Newsletter* on the Galaxy Wide Web the other night . . ."

New information technologies will likely have different cost models and different ways of recovering revenue.

CURMUDGEON'S CORNER



JOAN G. NAGLE

Joan Nagle has been active in PCS since 1985. She has edited the Society's Transactions and has served on the Editorial Board of the IEEE Press. She is currently working on her second book.

ON VOCABULARY, AND COWS

If you're not a cow, it's getting really hard to understand what's being said these days."

This is the lead from an article in *The Atlanta Constitution* (May 2, 1992), and the conclusion of a Cornell University study which analyzed the language of modern communication, from children's books to scientific journals, by computer. The study, reports the newspaper, was based on the 10,000 most common English words (apparently ignoring such other communication factors as sentence length and complexity).

A "neutral" score of zero was assigned to international newspapers, like *The New York Times* and *The Times* of London. Then positive scores were given to writing that was more difficult than these papers, and negative to easier prose. Here are some of the results:

<i>Nature</i> magazine	55.5
Cell research reports	38.0
<i>Science</i> magazine	28.0
<i>New England Journal of Medicine</i>	23.4
Adult magazines on specialized subjects	2.3
<i>Discover</i> magazine (popularized science)	-4.7
Adult fiction	-19.3
<i>Ranger Rick</i> (science magazine for children)	-22.6
Cartoon shows on television	-32.0
Fiction for children ages 9-12	-32.1
Books read to preschoolers	-38.8
Adult-to-adult conversation (no children present)	-41.0
Mother talking to 5-year-old child	-48.3
"Mr. Rogers" and "Sesame Street"	-48.4
First-grade readers	-58.6
Farmers talking to cows	-59.1

The winning (?) score for *Nature* was based on a 1960 article by scientists at the National Institutes of Health, titled "Histochemical localization of the human term, placental 17-beta-estradiol dehydrogenases: implications for the transhydro-

genase reaction". Catchy. (You knew this was going to be something from the government, didn't you?)

At the other end of the spectrum were such typical farmer-to-cow communications as, "Come on, girls . . . Come on, babes . . . Let's go, let's go, let's go . . . Good girl . . . Let's go, honey."

A friend of mine who raised chickens had an even clearer way of communicating with them. He would take the ax off the wall, brandish it in front of them, and say, "OK, ladies, which is it going to be — eggs or chicken soup?" He swore this really inspired the hens; productivity invariably went up.

If so, this was effective communication. Words — and axes — are symbols. A word symbolizes what most users of the language have agreed that it will stand for. "When I use a word," said Humpty Dumpty in *Through the Looking Glass*, "it means just what I choose it to mean — neither more nor less." Not so. A word means just what the audience understands it to mean.

The Cornell researchers concluded that articles in scientific journals (like *Science* and *Nature*) are becoming so complicated that even scientists have trouble understanding them. That may be true. But then we have the typical engineer who says of a report, "Any engineer will know what I mean." That is, will decode the same meaning from a word that I encode in it.

The good editor's reaction to this is, "Are you sure that no one but an engineer will ever have to read it?" A purchasing agent may be the audience for a data sheet. An accountant may be the audience for a proposal. A high-level manager, whose technical education ended 25 years ago, may be not only the audience, but the decision-maker, on the plan for a new system installation.

The Cornell study simply reminds us of what good editors and writers already know — that communication is audience-

A word symbolizes what most users of the language have agreed that it will stand for.

related. We use a different vocabulary when addressing our peers than we use when (and indeed if) we talk to cows. James J. Kilpatrick says that 90% of our words should be known to our audience. The other 10% can be used to describe something new that we're telling them about.

Given its audience, the transhydrogenase article may not have been as incomprehensible as the Cornell people thought. On the other hand, even though 90% of a cow's vocabulary is a pretty low number,

"Come on, babes" may have been an overly high-level communication from farmer to cow.

The only thing here that really surprises me is the low score for adult-to-adult conversation. Lower even than children's cartoon shows on television. Do you suppose they were talking about cows?

PCS MEMBERS

(continued from page 1)

PCS is also working with the IEEE Press to pioneer a new "publishing" thrust this fall: a 105-minute videotape that adds a new dimension to the advice given in the books.

For advance information: r.blicq@ieee.org or facs, (204) 488-7294.

Ron Blicq and Lisa Moretto: *Writing Reports to Get Results* (2nd ed.; 228 pp., 1995)

Subtitle: *Quick, Effective Results Using the Pyramid Method* (a unique technique for accurately focusing a message). Provides ready-to-use guidelines for writing semi-formal proposals and incident, field trip, inspection, progress, project completion, investigation, and evaluation reports. It demonstrates how to apply the guidelines through realistic, state-of-the-art examples.

Joan Nagle: *Handbook for Preparing Engineering Documents: From Concept to Completion* (392 pp., forthcoming)

This comprehensive handbook sets a new standard in scientific documentation. It covers the entire process of preparing, producing, and distributing engineering documents using current software and the most recent technologies in information transfer.

Author	Title	ISBN No.	IEEE Order No.	List Price	Member Price
Beer	Writing and Speaking in the Technology Professions	0-87942-X	PP2733	\$29.95	\$24.40
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Blicq & Moretto	Writing Reports to Get Results (2nd Edition)	0-7803-1019-5	PP3673	\$24.95	\$20.00
Nagle	Handbook for Preparing Engineering Documents	???	???	\$34.95	\$28.00

TOOLS OF THE TRADE

A LESSON FROM CYBERSPACE



CHERYL REIMOLD

Cheryl Reimold is a member of the PCS Administrative Committee and the author of more than 200 articles and several books, including How to Write a Million-Dollar Memo, Being a Boss, and The Language of Business. She is President of PERC Communications — 6A Dickel Road, Scarsdale, NY 10583; (914) 725-1024 — which offers businesses in-house workshops and courses in writing, presentations, and on-the-job communication skills.

I resisted e-mail for years. “I get too much information already!” I protested. “Don’t add me to any other mailing lists—electronic or otherwise.”

However, I was finally hauled into submission by 20 people who told me that I was cramping their style. I was the only member of the Professional Communication Society’s AdCom who was not on e-mail. Information beamed out to everyone else had to be turned into a fax just for me. At the committee’s last meeting, the collective implication was that my refusal to “come on board” was egocentric, imperial, anti-social, antediluvian, and—worst of all—pigheaded. I joined.

With a click of a mouse and an unseen waft of dollars outward, I instantly became a paying member of the interactive cyberspatial community. Now I am fully geared to send and receive mail electronically to and from the beginnings and ends of the earth.

My first e-mail act was to send messages to the other committee members announcing my electronic capitulation and asking them to reply to my message, so that I could see if I was using the system properly.

I began to get mail.

A frightening discovery

That was when the strange phenomenon began. I—the e-mailer-under-protest—found myself sneaking over to the computer throughout the day. Furtively, I would click on my mailbox. If it announced, “You have mail!” my heart would do a glad little leap and I would read my mail immediately. If the mailbox window said, “No mail,” I would feel insulted and incredulous. I would check again to see if I had made an error in accessing the mail that must have been piling up. After all, I hadn’t looked for mail for at least two hours.

At first, I assumed this compulsion to check my mail was a pretty normal reaction to a new toy. It would wear off with time. It didn’t. Furthermore, consultations with inveterate masters of the cyber-universe

have convinced me that it probably won’t. They all check their mailboxes—constantly.

Now, here comes the oddest part. I don’t resent this new, steady call on my time! I love getting personal mail in yet another way. Messages to me from someone else light up both my computer screen and my heart.

My new passion for e-mail, which appears to be shared by just about everyone else on-line, suggests that for human beings, *there is no such thing as communication overload*. Information overload, yes. After having processed a certain amount of data, most of us—unlike our computers—tend to shut down. But, as I have written before, communication does not equal information.

We seem able to process and enjoy any number of personal messages. We crave attention, whatever we may say.

A message for all at work

This discovery is important for life at work. Perhaps you have omitted to call or write to someone about a small but interesting matter for fear of taking up more of that person’s over-full day. I suggest you reconsider your decision. Your reader will appreciate it—and you.

Few people send thank-you notes. I think this is largely because they consider such low-density information to be a waste of everyone’s high-packed time. Yet, I have never met a person who didn’t enjoy getting a simple letter of thanks. I do know people who treasure them. The small thank-you letter is a great boon for daily communication.

To improve your communication on the job, start sending those messages you thought twice about—by phone, fax, mail, or e-mail. If you find something you think might interest someone, send it off with a few words attached. If a co-worker has done you a kindness, write him or her a note of thanks. If a team has worked especially well or put out extra time or effort,

*I have never met a
person who didn't
enjoy getting a simple
letter of thanks.*

write them all notes of commendation. Remember, communication is not just information. Both sender and receivers will benefit.

Just before I started to write this, my usual truckload of mail arrived—the real paper stuff, not the electronic phantoms. I ploughed through it, tossing away piles

of unwanted information. In the heap was a pink hand-addressed envelope. I opened it to find a card with a joyful teddy bear beaming at me. Inside was a letter of thanks from a student in a recent communication skills course I had given.

It made my day!

ADCOM PROFILES

BILL KEHOE

Bill Kehoe has an M.B.A. from George Washington University in Washington, D.C., and is a member of the senior staff at the Johns Hopkins University Applied Physics Laboratory in Laurel, Maryland, where he handles the administrative, manpower, and fiscal matters for the Aeronautics Department. On a daily basis Bill interacts with program managers, project engineers, and department managers, and he is the liaison between these and other laboratory groups such as budget, security, communications, asset management, and office services.

Because of the large number of engineers in his department, Bill organized an IEEE PCS "Communication and Report Writing" workshop for the Aeronautics staff. Ron Blicq, senior member of the IEEE and a member of PCS's AdCom, was the workshop leader.

Bill has been a member of PCS for 15 years and an AdCom member and treasurer for the last 10 years. As treasurer, he prepares the annual budget for PCS and reviews and approves all Society expenditures. He interacts extensively with the IEEE and is instrumental in keeping the AdCom apprised of the financial condition of the society.

Bill is very active as a society member and has been the finance and registration chair for six IPCCs and exhibit chair for two

others. He also helps plan society meetings and conferences. Bill credits his wife, Marlene, with his ability to remain active, because she volunteered to help with registration at those six IPCCs. Bill likes her also to accompany him in selecting possible conference sites to get the woman's viewpoint about hotels and the amenities they offer.

In 1992, Bill was selected to receive the Alfred N. Goldsmith Award, given annually by PCS in recognition of an individual's service to improve the quality of engineering communication. In addition to being active in PCS, Bill enjoys the Gardening Club at APL, of which he has been an officer for the last six years.

SAY AGAIN?

The title of a table in a paper on computer-based tutorial systems:

Typical Abnormal System Behavior

*Ich habe nichts
dagegen wenn Sie
langsam denken,
Herr Doktor, aber ich
habe etwas dagegen
wenn Sie rascher
publizieren als denken.
[I do not mind if you
think slowly, but I do
mind if you publish
faster than you think.]*

Wolfgang Pauli
(attributed)

as quoted in
Harvest of a Quiet Eye,
A. L. Mackay, 1977.

ADCOM PROFILES

DAVID KEMP

David Kemp, PCS Chapter Coordinator, received his diploma in electronics engineering technology from the Manitoba Institute of Technology in 1965 and a certificate in industrial management and administration from the Canadian Institute of Management in 1971.

Dave commenced his IEEE volunteer activities as Student Branch Chair in 1964. From there, he went on to serve as Winnipeg Section Secretary, Treasurer, Vice Chairman, and Chairman. Region 7 (Canada) activities attracted Dave to chairing both the Conference and the Membership Development Committees. In 1991, he was elected to the AdCom of the Professional Communication Society, where he established the role of Chapters Coordinator for the Society. Reelected for a second three-year term in 1993, he continues to serve in the Chapters role.

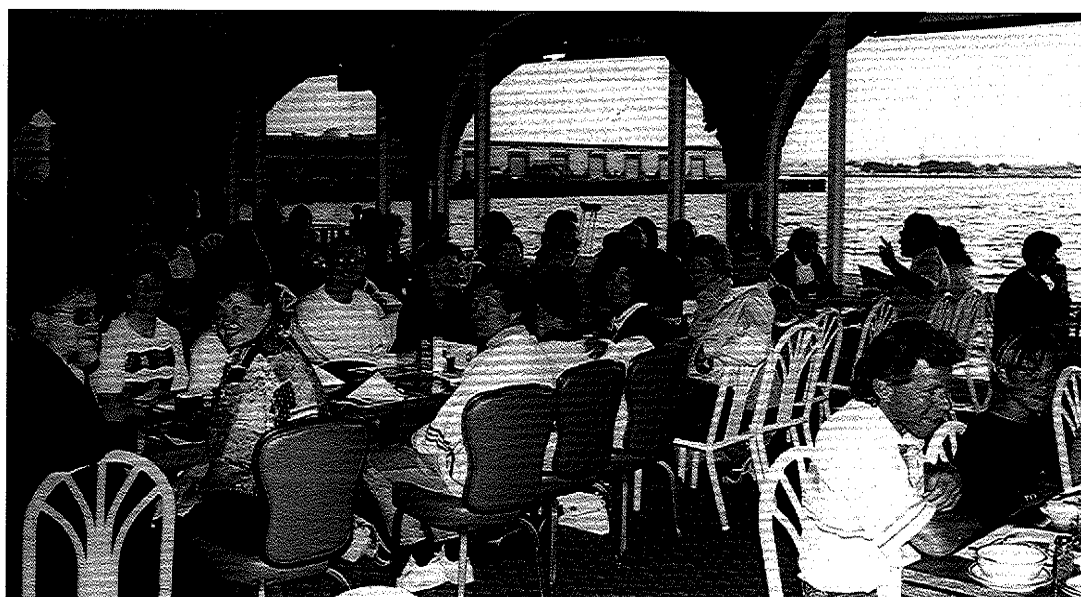
In 1994, Dave was elected to the AdCom of the Engineering Management Society and was appointed Vice President-Member Relations. He is also running for the position of Director Elect, Region 7, in the upcoming 1995 IEEE elections.

Dave has received three IEEE awards: 1965 Outstanding Leadership and Service to Student Branch, 1984 Institute Centennial Medal, and 1990 Western Canada Council Silver Merit Award.

Dave has 30 years' industrial experience with the Manitoba Telephone System and has been loaned on several occasions to alliance partners in management consulting roles. Experiences include systems engineering, corporate planning, human resource (organizational), customer service, research and development management, international consulting, and information systems architecture development. He currently is project manager in the new business development area.

Dave welcomes volunteers to come forth with suggestions and offers to help better serve members of PCS. On the inside back cover of the PCS *Transactions* there is a current listing of the PCS Chapters. Dave is available to discuss starting new chapters or expanding the existing ones to cover a broader base, either by joining with other IEEE societies or by partnering with groups such as STC or SIGDOC.

*Dinner hour at
AdCom meeting in
San Diego this
past June.*



FUZZYSPEAK THREATENS COMPUTING'S FUTURE

BY SOREL REISMAN

*Dr. Reisman is with
the Management
Science Department,
California State
University, Fullerton*

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permission from
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In a previous professional life, my career and income depended largely on my programming teams' ability to deliver quality software on time and within budget. The critical success factor in accomplishing these objectives was the kind of people I hired. Coding ability was important, of course, but a programmer who could also communicate well with his peers, and occasionally with senior management, enjoyed a substantial advantage at promotion time.

Now that I am a professor in a business discipline, Management Information Systems, nothing irks me more than to hear students—and even people—play loosely with English. I know how important communications skills will be in my students' careers. I drive my introductory programming students mad by insisting that every program they write be thoroughly commented and accompanied by flowcharts, pseudocode, structure diagrams, and so on. Many don't return after the first session, when they discover that they must make a formal presentation of one program assignment to complete the course. At least I think that's why they don't return!

My students become especially frustrated when I insist they use the proper terminology in their formal presentations. They are unaccustomed to this kind of specificity, being more accustomed to something I call *fuzzyspeak*.

I coined this term to describe the use of words or expressions to mean whatever you want them to, irrespective of the word's original meaning or even its dictionary definition. Some politically correct circles have gone so far as to give the fuzzyspeak phenomenon an innocuous euphemism: deconstruction. No matter what you call it, I believe that most people who practice fuzzyspeak are intellectually lazy. They deny their audience the specific meaning of what they are communicating

because they themselves are too lazy to discover that information.

Fuzzyspeak invades computing

In the traditionally rigorous field of computing, fuzzyspeak was confined at first to the blurred definitions of the adjectives *super*, *mainframe*, *mini*, and *personal* when they modified the noun *computer*. Sadly, fuzzyspeak has blossomed into a common practice—so common it threatens to become our industry's primary mode of communication.

Consider the term *client-server*. What exactly does it mean? Ask any 10 people and you will hear 10 definitions. It's unlikely that any one of those definitions will much resemble any of the others. This abusive misuse of *client-server* makes it impossible to assess the documented successes and failures of client-server implementations. Sure, we all know that distributed this and distributed that is the way to go, especially now that everyone has "the power of a mainframe on their desk." But, when you consider the number and variety of client-server articles published—both pro and con—you've got to wonder if any two of them really address the same topic.

Multimedia fuzzyspeak

Another example of creeping computer fuzzyspeak is a word that describes a subject close to my heart: multimedia. I used to know exactly what *multimedia* meant, before the days of mainframe-like PCs. Up until about three or four years ago, *multimedia* simply meant the embellishment and extension of the user interface to include audio and video—a natural evolution of the GUI.

Today, *multimedia* means so many things to so many people you must consider the company you're in before you dare utter it.

*Fuzzyspeak . . .
threatens to become our
industry's primary
mode of communication.*

*We now live in a world
in which end users
believe, however fuzzily,
that they understand as
much about computing
as developers.*

It might mean: CD-ROMs, videoconferencing, video-on-demand, high-tech Hollywood-type movies, Sega-Nintendo-like video games, PC audio products, PC video-display adapters, PC video-capture products, PC video-compression products, and so on. Oddly, many fuzzy-minded fuzzyspeakers consider each of these definitions to be mutually exclusive.

Different groups define multimedia differently. For example, to cable operators and phone companies it implies something very different than it does to Hollywood or PC types. Although I have read thousands of column inches devoted to multimedia, I'm still not sure exactly what any of those groups thinks the technology really is. I am sure that each of them, despite having only a fuzzy concept of it, expects to reap huge profits from multimedia.

Is multimedia a good thing? Is it the wave of the future? Should anyone invest in it? No one can possibly answer those questions until they have a clear definition of exactly what they are talking about.

Fuzzyspeak hits the road

Even more popular than *multimedia* is *information superhighway*—the suddenly ubiquitous description for the supernetwork that promises to bring the wonders and power of computing to everyone. As a metaphor, it has done wonders for creative fuzzyspeak. Who can fail to be amused by phrases like “road-kill on the information superhighway”, “traffic jam on the information superhighway”, and other such silly nonsense that replaces real information.

Worse, *information superhighway*—a nebulous term at best—has spawned a host of even fuzzier synonyms. *Business Week* magazine uses the term I-Bahn (coined, presumably, by Volkswagen, BMW, and Mercedes manufacturers). Why has *Business Week* inflicted I-Bahn on us? I suspect it viewed any term that uses fewer column inches and leaves more salable advertising space a good thing. Others fuzzily misuse the term the Internet interchangeably with *information superhighway*, even though that venerable network will be at most a component of the supernetwork.

Perhaps the most frightening thing about fuzzyspeak is that fuzzy terms such as *multimedia* and *information superhighway* can begin to overlap, eventually blending their component meanings until the fuzziness of both terms is squared. Because fuzzyspeakers are loath to learn much about anything, let alone anything new, the World Wide Web has become their holy grail. After all, here is a single, tidy technology that—they think—encompasses it all: multimedia on the information superhighway. What a deal.

Industry consequences

Why worry about this? Because fuzzyspeak is having a direct effect on our industry and may well threaten our future. People in our industry were once considered to be “high priests”, endowed with the ability to direct and control the development, sale, and use of computer products. Now, although computer technology has become increasingly complex, we no longer control it.

Computing has been personalized and popularized—developments that are not, in themselves, bad. But somehow computing has also become trivialized. People *outside* the industry increasingly feel comfortable fuzzily expounding on the merits, virtues, benefits, and limitations of technologies they don't really understand. The result? People *inside* the industry will find it increasingly difficult to develop and market products in an organized, well-considered, and controlled manner.

Consider Intel's public-relations fiasco with the Pentium. Most computer-industry people understood the problem of developing such a complex product and empathized with Intel. They know that it is sometimes nearly impossible to detect the most arcane bugs. Such bugs have always been with us, lurking in 25-year-old payroll programs that still manage to operate. When their bugs are eventually discovered—perhaps when the year 2000 rolls around—most companies will quietly and at great expense fix them. If the fuzzythinkers don't know about such

problems, they can't write fuzzy denunciations of the companies that developed them.

But, as Intel has discovered, when these flaws are exposed in a public forum in which fuzziness is pervasive, computer companies must operate quite differently. Developers, who have traditionally been trusted by end users throughout the design and development of hardware and software, will not be protected from the effects of fuzziness. In the past, end users let us guide the development process. We now live in a world in which end users believe, however fuzzily, that they understand as much about computing as developers. Whether we like it or not, the traditional developer and end-user roles must change.

As these changes take place, we have a responsibility as computer professionals to maintain—whenever possible—our

traditional high standards and not let our industry become permeated with fuzziness. Those of us who are responsible for educating and training aspiring computer professionals must ensure that our students do not fall prey to the easy-going habit of fuzziness.

High-quality computer products can only be produced by high-quality, clear-thinking, well-organized professionals. Both as practitioners and as educators of future practitioners we must understand the changing environment in which systems and products will be used and judged. And like it or not, we must adapt ourselves and our practices to the new world of fuzzy thinking, fuzzy speaking, and fuzzy writing.



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