

Newsletter



IEEE Professional Communication Society

How to Make a Speech

Note: For most of us, making a speech is, to some degree or other, an anxiety-producing event. We can use all the help we can get. In How To Make A Speech, Steven Allen shares the rules and tricks of the speechmaker's trade acquired during his 40 years at the podium.

Many of us know Steve Allen as that man on TV who makes us laugh. But he is also much in demand on the lecture circuit, speaking sometimes on humorous subjects, but often with seriousness of purpose on a wide range of subjects.

Writing out of his impressive experience, Allen outlines clear and simple rules for speechmaking that range from how to overcome stage fright, to how to write the speech, to the appropriate use of humor. The neophyte as well as seasoned speechmaker will want to put many of his suggestions directly to work.

Steven Allen is known as a radio and television personality, an actor in the movies and on Broadway, and the creator of NBC's "Tonight" show. He is currently working on his 28th book.

It may seem strange that in a discussion on the art of preparing and delivering speeches I start by taking up the matter of stage fright. I do so because it is often the first part of the speaker's personal experience. The fear, in fact, often starts the moment the possibility of making a speech is considered.

There may be some comfort in knowing that almost everyone becomes psychologically and even physically uneasy at the prospect of having to get up in front of an audience.

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Controlling the Effects of Stress

Technically speaking, stress is a physiological condition of the body—a state of arousal and excitation in response to a perceived danger or threat. Stress does not have to be a negative experience; in fact, well-managed stress can represent a valuable mechanism for transformation and growth. The Chinese language contains a clue to the two sides of stress. The Chinese character for "crisis" is composed of the symbols for "danger" and "opportunity." In the positive stress cycle, we respond in a way that promotes growth for even greater strength when we confront new stressful situations. However, we actually make ourselves ill when we are unable to manage the level of stress in our lives.

Three Kinds of Stress

There are actually three kinds of stress: normal or acute stress; distress, which is normal stress that has become chronic; and eustress, or positive stress. The normal, acute stress response is our body's mechanism for adapting to change. It is an essential part of our ability to perform in crisis, to respond to life's challenges. Distress is when we are constantly in a state of arousal, without an outlet to relieve the stress response. The body remains in a state of continual alarm or mobilization, and the potent hormones released in the stress response can actually damage the body's vital organs, the nervous system, and the immune mechanisms.

Although too much stress can clearly produce physical and psychological illness, we all require a certain amount of stress in order to feel good. It is stress in this positive sense, or eustress, which makes for challenge and vitality, and adds to the vibrancy of life. For example, you've most likely had the experience of doing a job slightly better than usual because you had to meet a tight deadline, or of going beyond your normal limit under the stimulation of competition. The self-

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From the Editor . . .

In my role as PCS *Newsletter* editor, I generally deal with people through phone calls, manuscripts, and letters. As a result, I tend to recognize people by their voices and writing styles rather than by their visual appearances.

Fortunately, those rare opportunities do exist where I am able to meet both the audience of and contributors to the *Newsletter*. I enjoy these face-to-face meetings as I get the chance to discuss with them, the *Newsletter* readers, how the publication can better meet their needs.

Recently, I had the pleasure of speaking with the IEEE Dayton Section about the role of communication in the business and engineering worlds and how PCS can help engineers communicate more effectively. What I found particularly gratifying was that both students and engineering professionals attended the meeting, making for a diverse and interesting group.

The message of my talk, which was reiterated by several of the attendees, was that communication skills are essential to success in business. Managers want people in their organization who can present ideas and results effectively, who can communicate clearly, and whom they can groom as future managers. Unfortunately, most engineering students do not have the time to take a technical or business writing and speaking course, if one is even offered. Fortunately, other options exist—such as taking advantage of PCS offerings, joining Toastmasters, or taking a continuing education or adult school course.

Of course, before engineers sign up in droves for such courses, they need to realize the importance of having honed communication skills. It certainly was a pleasure to see the Dayton Section's commitment to and active interest in improving the skills of their student and professional members. Continue the good work!



Lacy Martin Named Fellow

Our congratulations to Lacy Martin, a long-time and active member of PCS. He was recently elected a Fellow of the Institute for the Advancement of Engineering. The Institute is a non-profit educational corporation organized by engineering societies to further the growth of engineering and to distribute its benefits. Fellows are engineers who have made a significant contribution toward advancing the engineering profession in local, national, or international circles. Lacy was nominated for this honor by the IEEE, and was inducted at the 1987 Fellows Installation Luncheon in February. Again, PCS congratulates Lacy on this achievement.



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How to Make a Speech

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Overcoming Stage Fright

First the good news: You'll get over it. And facing up to the reality of it does help.

More good news: The worst few moments usually occur just before your entrance or introduction. However, there is something about hearing your own voice and seeing that the audience does not rise up and leave the room that restores your sagging confidence.

Your nervousness may grow out of a feeling that you do not have a particularly resonant or melodious voice. Consider, then, author Norman Cousins, one of the most effective speakers of our time. He does not have a deep, resonant voice. There is nothing of the formal debater about him, nothing of the great orator. But, as he talks, you become aware of a remarkable sincerity, a conviction, and—at moments—a passionate intensity. And you realize that he is an excellent speaker indeed.

If it is evident that you are sincere about the ideas you express, if you know what you're taking about, you can be effective at the lectern.

Another possible reason for your nervousness is that you are thinking more of yourself than of what you are going to say. This immediately suggests a solution: Concentrate your attention on the subject of your talk. Be concerned with your message. *Care* about it. Think consciously about the first few points you want to bring out. If you have notes, inspect them. If you have typewritten pages, check once again to see that they are in proper numerical order. Make last-minute underlines or notations. In other words, do something to take your concentration off yourself.

If you have the shaky hands problem there are two things you should guard against: trying to drink a glass of water and holding your papers close to the microphone.

No audience wants to see whitecaps in your glass. So, if your mouth gets so dry that you absolutely must drink, turn your body around slightly, take one quick swig, and put the glass back down. And leave your papers on the top of the lectern. If you have to hold them closer to your eyes, beware of permitting them to rattle close to the microphone, since the sound will be magnified and your nervousness will become a distraction.

Helpful tip: Avoid caffeine. Extra adrenaline is already flowing when you're getting ready to perform and the

addition of a jolt of caffeine can sometimes make you jumpy for purely chemical reasons, even if you weren't before.

But do not be dismayed if, after all such efforts, you still feel a bit ill at ease. Your feeling of uneasiness establishes nothing more than that you are perfectly normal. And you can—believe it or not—calm your nerves to a degree:

- First of all, simply *instruct* yourself silently to relax.
- Second, breathe. Deep breathing forces the muscles to do a bit of extra exercise that promotes relaxation. It also increases the flow of oxygen to the brain cells.
- Next, realize that even if you're not as electrifying a speaker as Jack Kennedy or William F. Buckley, you're still probably better at it than anyone in the audience; otherwise one of them would be at the lectern.
- Finally, remember that the tension you may feel, if not carried to extremes, can actually be a help rather than a hindrance. Nervousness keys you up, makes you a bit hyper—and this can actually add a certain vitality and energy to your speaking.

The Speech

If you plan to lecture on any subject that is the least bit complex or controversial you should approach it with as open a mind as possible and do a good bit of studying before you publicly address yourself to the issue.

Once you know the subject of your speech well, you can determine the purpose of it. Your purpose will be either to provide general information about the topic or to press for a particular point of view on it. To identify your purpose for yourself, begin with the word *to*—to explain the effects of natural radiation . . . to urge campaign workers to increase their efforts. It is essential to have the purpose clearly in mind, since this will tend to concentrate your thinking on the point or issue.

Organizing Your Speech

The Opening. On the first day of a biology class during my freshman year at Drake University, the first thing the instructor did was to pick up what turned out to be a hard-boiled egg and toss it to me. Reflexively I caught it, at which point the professor launched into a discussion on the classification of living creatures that lay eggs. The attention of the class, of course, was immediately riveted on the subject and we were off and running.

I don't suggest that you begin all your lectures by tossing an egg out to the audience. Some speakers use

a compelling statistic to capture their listeners' attention. Others open with a joke. Still others prefer to get right to work in addressing an audience, without attempting any dramatic or unusual introduction. There's no right or wrong on the point; make your own decision, or try one approach in a certain instance and another on a second occasion.

A word of caution: Use an opening "gimmick" only if it's your natural style. And remember, it's better not to try something too bizarre and have it fail.

Whatever your introduction, the primary rule is to keep it short. In many cases, you may choose simply to acknowledge the chairman, distinguished guests, if any, and the "ladies and gentlemen" who constitute the audience.

The Middle. This main portion of your speech constitutes the statement of your case. It need not have any apparent logical structure, although there is nothing wrong with such a formulation. Just making your basic points and hammering them home will suffice.

I never use an outline but prefer a numerical listing of the points I wish to bring out. The points as they are later developed can be written or typed without being numbered, but you may find the numbers helpful as an eye aid on the platform even if you do not refer to them aloud.

The Conclusion. It may be appropriate at the end of the speech to review quickly four or five of the main points. If you have only a minute or two in which to close, however, simply restate the importance or significance of your argument and possibly solicit the involvement or assistance of your audience.

It may also be appropriate to devote just a few seconds to thanking the host organization for having invited you to give your talk, and to share your thanks with the ladies and gentlemen who have just listened to you. If there has been a question-and-answer period, you may want to direct a remark or two to some who posed questions.

"And my thanks go to Mrs. Fuller, here in the front row, who was kind enough to raise the question of what we might expect the City Council to do to assist in this campaign."

However you close, keep in mind the show-business adage on the advisability of getting off "too soon," or always leaving the audience wanting more.

Researching a Topic

After selecting a topic, you may realize that your general purpose requires more support than your combined memory and imagination can supply. In this case you will have to do research at a library or in bookstores.

I rarely find it necessary to refer to public libraries, because I have an enormous collection of books that fills far too many shelves in several rooms. One room in particular houses about 1,500 three-ringed, loose-leaf notebooks in which are filed significant articles I've read on various important subjects over the past 30 years. I read at a fast rate, but I also underline and make marginal notes when studying material to which I might want to refer in the future. The underlines enable me to find the meat of the article quickly when I consult it a second time.

Another source of information is personal investigation. If you are writing a speech on prison reform, for instance, you might visit a prison or two, interview officials of the institutions, and talk to prisoners or ex-convicts.

You may also choose to conduct your own survey or poll, putting questions about your subject to a certain number of people and tabulating the results.

The Actual Writing

"Be yourself" at the typewriter as well as at the lectern. If your normal style of speech and writing is simple and direct, don't suddenly try to write like Thomas Jefferson. Don't try to compose your speech in a hurry. It's better not to attempt to write it all at once. Give yourself some time, not only to do research, but to clarify your own thinking.

Suppose you start to write a speech of approximately 20 pages and find that, after the completion of a few hundred words, you have nothing more to say on the subject for the moment. No problem; simply set the project aside and get back to it later.

After you have completed the first draft, you may then make additional decisions concerning which portions go in which positions. Something originally conceived as part of the conclusion, for example, may turn out to be more suitable for the opening.

Editing the Speech. My first instruction on editing is to buy a good manual of style and usage. It can teach you not only to write better but to function as an editor.

It is notoriously difficult to edit your own material shortly after you've written it. The ego is generally plugged into the creation so firmly at that point that you'll find it painful to make deletions or other improvements. Therefore, set the material aside for a few days so that you can consciously forget it. You'll be surprised at how many errors, typographical and otherwise, you can find when you look at it again.

The Length of the Speech. Never leave yourself in the slightest doubt about how long you will be expected to speak. If you can't figure it out, ask.

Once you know the type and length of speech expected, you can prepare your written remarks in such a way that the number of pages relates to the amount of time allotted to you. To do this, you need to determine your approximate minutes-per-page rate of speaking.

You simply read three pages aloud, at the approximate pace at which you will talk when confronted with an audience, and time yourself. If, for example, reading the three pages takes six minutes, then you are devoting two minutes to the reading of each page. Once you know your minute-per-page rate you can relate it to an address of any length.

Typing the Speech. Typing important thoughts into separate paragraphs is a convenient eye aid on the platform. I suggest that you specify even more paragraph headings—with indentations—than if you were preparing an essay for publication.

To aid the eye, you may also draw straight black lines across the page to separate paragraphs.

Sometimes I use the reversed P mark to indicate paragraphs, even though the copy may already be indented. My purpose is to remind myself that a new thought or a new angle of argument or exposition is being introduced.

Needless to say, you *never* try to read a speech that is single-spaced, because you'll almost certainly get lost the first time you look away from the page to the audience. Double-spacing is the norm; some speakers even prefer to have material triple-spaced, which makes it even easier for the eye to follow the text, particularly when reading from a standing position.

Those of us whose professional background is in radio use a common page-marking technique that is perfectly suited to the lecture platform. We underline words that we want to emphasize, and draw a slanted line between words or sentences if we want to make a pause. It's easier to read if you underline with a thin-line felt-tip

black pen. The underlining is actually a more important detail than it might at first seem, because the decision about which words in a given sentence you will verbally emphasize is itself extremely important. The two sentences "*John* hit him" and "John hit *him*" are by no means the same.

It's a good idea to have three or four copies of your speech—not all stored in the same place. Be sure that all copies reflect any insertions, deletions, or significant additions you make as the speech develops.

Getting Ready

Rehearsing the Speech. Rehearsing falls into two categories: rehearsing your speech and rehearsing your mouth. You might find some use in an exercise I developed when I was first working in radio. I used my car as a rehearsal studio. As I drove about the city, I would simply give a "play-by-play" description of whatever I was watching. It sounded like this:

"Here we are again, folks, as I continue my description of the things and people and places I see as I drive around good old Phoenix, Arizona. It's slightly rainy out this morning, which is pretty unusual for this time of year and—come to think of it—for this part of the country, which is essentially desert, as you know. But in any event I now see, as I pass the corner of Fourth and Jefferson, two elderly women about to cross the street, waiting for the light to change. . . ."

Don't be in the least concerned with making your account dramatic or "interesting." The purpose of the exercise is simply to keep your own mouth working in as intelligible and coherent a manner as possible.

As for the speech itself, remember that not even the world's greatest actor would dream of walking on stage without long periods of rehearsal. Common sense will dictate how much time to spend rehearsing your speech, and what forms your rehearsal might take. Here are some possibilities:

- Read the speech over several times silently.
- Read it several times aloud.
- Practice your delivery in front of a mirror.
- Read the speech into a tape recorder. Listen to the results, *twice*. (You'll pick up much more on a second listening.)
- Videotape your performance.
- Deliver the speech to family members, and ask them for their *honest* comments.

Another recommendation: Try to locate recordings by gifted speakers. If you can't get any, tune in speakers who appear on radio or television. Listening to such

material can be quite helpful during your own rehearsal stage.

Doing Your Homework. Try to familiarize yourself with the place where you'll be giving the speech. If circumstances permit, walk around the room—not only on the stage but through the auditorium. Sit down in two or three parts of the room so that you will know what the speaker's area looks like from out front.

Ask questions. You can get valuable information—such as whether the room has a spotlight, where the nearest restrooms are, and so on—from your official hosts, and also from busboys, security personnel, electricians, or lighting technicians.

Check out the podium or lectern area to see if there is sufficient light for reading your notes. About one time in 10 the bulb on the lectern is burned out or the unit isn't plugged in. It's better to discover such a problem before the ballgame starts. I generally carry a small pocket flashlight for extra help if necessary.

Unless you feel uncomfortable having the audience quite close to you, you should know that this is the best possible arrangement for a speaker. If there's any way that your own wishes can be followed, you should let your hosts know that you would like the first row of tables or seats moved as close to your platform as possible.

Finally, determine long before your talk whether public address equipment is available. If it is, don't stand too

close to the mike, or words with the letter *p* will produce a "popping" sound. But don't stand too far away, either, or you won't be heard. If in doubt, ask, "Can you hear me all right?"

If there is no PA system, you might practice speaking to a friend from across a large space.

A lectern will give you something to "hide behind," or lean on. It definitely provides a measure of psychological assurance. I've found that a tall music stand—the black metal kind—can serve almost as well.

Once behind the lectern—where do you look? The audience should have the impression that you are interested in communicating with all of them. This can be achieved simply by directing your glance to various parts of the auditorium, including the balcony, if there is one.

I generally prefer to look at a series of points about three-quarters of the way back into the house. And on those occasions when I must read a speech, I find it helpful to keep a finger on the line I am speaking at any given moment. Then, after I spend a few seconds looking out at the audience, I have no trouble relocating the proper place on the page.

What About Your Hands? The lecturer is usually protected by some sort of lectern which he or she may elect to touch or lean against. If you are standing on a stage without such defenses, simply do with your hands what you would if talking to a member of your

Generating Ideas

One of my secrets for doing creative work of any sort is simply to do what I call "getting out of my own way."

I discovered, quite early in life, that there is some strange creative center in my brain that, once stimulated, will give up a considerable volume of whatever I ask it to produce: jokes, stories, philosophical observations, ideas for essays, and so on. Part of the process involves shutting "me" up, calming myself down, relaxing, and just listening to the ideas as an internal computer cranks them out.

By simply agreeing to give a speech, or by self-generating a plan to do so, you will have stimulated your own mysterious idea center. What you must do next is *listen to its responses*. At this stage don't—

whatever you do—serve as a consorious judge, telling yourself, "Oh, that's no good" or "That will never work." Stopping self-criticism at once is part of the process of getting out of your own way.

Whatever thoughts occur to you, make an immediate note of them on slips of paper, cards, or a legal pad. Keep yourself provided with pencil and paper or a small portable tape recorder. If you use a single sheet, enumerate the points as you make them on the left-hand side of the page. Then, over to the right, revise the order in any way that seems reasonable.

Now determine from your list or cards which points are the most important. Then either eliminate the least meaningful ones or include them only by way of a quick, passing reference, thus permitting yourself more time to develop the essential elements of your presentation.

family. Put one hand in your jacket pocket and gesture with the other. Or, if the occasion is very informal, put them both in your pockets. Scratch your nose if it itches, make a gesture if it illustrates a story or a point, or clasp both hands behind your back. It's not a big deal unless you make it one.

If you're still bothered by those starfish-like appendages, you might resort to the use of props—items you can naturally employ in the context of your assignment. These include typed pages, index cards, a pointer, a pen, an object you might be talking about. Some talk-show hosts hold 5 × 7 cards in their hands while conducting interviews. William F. Buckley holds a clipboard, with notes attached.

Turning Pages. Don't arrive at the lectern with the pages of your talk fastened together. Your audience will become distracted if you start fingering paper clips or ripping pages off the staple one by one.

Keep your pages separate. There is no right or wrong system for turning them. Do what is easy for you personally. The important point is to plan this detail in advance. The less ad-libbing you have to do on the

platform, particularly during your first few speeches, the better.

The Actual Performance

There is nothing that says you have to start speaking the moment you reach the lectern or microphone. There's nothing at all wrong with giving the audience a moment or two to look you over. You may wish to adjust the microphone, place your papers on the speaker's stand, look about the room, perhaps smile slightly, take a relaxing breath or two, put on or take off your glasses.

Again, if you have had no particular difficulty communicating with others—family, loved ones, friends, acquaintances, strangers—for the past 20 or 30 years, it follows that you are already an experienced speaker. Simply address your audience as if it consisted not of hundreds of individuals but of one person who had come prepared to learn something from you.

Whatever your honest emotions are on the lectern platform, it is perfectly all right to reveal them. The one emotion that can make you appear in the most unsympathetic light is anger. In other cases, the audience will

Should You Employ Humor?

Humor accomplishes two things: It puts the audience at ease, and it makes your listeners more favorably disposed toward you.

If you choose to use humor, you will probably want to employ one or more of these three types: the brief joke, the funny story, or something based on personal experience, not necessarily your own. The form best for you is the type you most frequently employ in normal conversation. Do you make your friends laugh with silly lines, little jokes, plays on words? The same approach will probably work for you on the platform. But be sure there is some relevance between the joke, your purpose of the moment, and the interests of the audience.

Whatever you do, don't try the joke or story in public without first working it over in private. We've already considered the importance of rehearsing your speech; the importance of rehearsing the humorous portion of it is even more crucial. Remember that a speech is intended for the ear, not the eye. Consequently, the wording of a story that seemed so right when you found it in a newspaper

might be totally inappropriate and stilted when you deliver it from the podium.

In introducing the story try to avoid such clichés as "I'm reminded of the story about . . ." It's best just to jump right into the account without such a shopworn preamble.

If your story quotes actual or alleged conversation, it's vital that the words be those of common speech and do not sound literary or artificial. If your story involves dialogue, it's best to use only the simple verb *said*.

If you're a beginner at the joke-telling trade, you might want to employ an ancient device which gives you a certain amount of protection: attributing the joke—accurately or not—to some recognized or popular wit. I sometimes toy with an audience by saying, "As Mark Twain once observed,"—after which I simply do a line of my own. Then, after the audience has laughed, I share with them the information that Mark Twain had nothing to do with what I just said. Using this device, if the joke gets a big laugh, you've won the point. If it gets a modest response—well, it wasn't entirely your fault!

identify with you, sympathize, and—in most cases—like you better for your sincerity.

Be yourself. These two words are crucial to good public speaking. If you never say witty things or tell funny stories off the platform, then don't try it on the platform. It won't be natural; it won't be you.

If you speak and behave naturally, audiences will be fully sympathetic—once they decide they like you—even if you do happen to tip over a glass of water, cough, sneeze, or get the sniffles.

Your Audience. If you're not sure about the bias and emotions of your audience, just listen to its responses. While making a campaign speech, a candidate for political office sought to discover the dominant religion of the audience.

"My great-grandfather," he began, "was an Episcopalian [stoney silence], but my great-grandmother belonged to the Congregational Church [continued silence]. My grandfather was a Baptist [more silence], while my grandmother was a Presbyterian [still frigid silence]. But I had a great-aunt who was a Methodist [loud applause]. And I have always followed my great-aunt [loud and continued cheering]." He was elected.

The point is a simple one: On most occasions it will be to your advantage to know how your audience feels about the subject on which you are speaking. You need not ingratiate yourself with them if that is not your purpose, but you should know where they stand.

Suppose, for example, that you wish to give a speech on behalf of the United Nations, and have been invited to address an audience comprised largely of Catholics. You would obviously be better advised to quote the Popes, who have repeatedly endorsed the UN, than Bertrand Russell.

The Ad-Lib Speech

Although the news may come as a surprise, you already know how to ad-lib. You've been doing it every day of your life since you were about two years old. Even now when you go into, say, a meat market, nobody hands you a script. You simply go up to the butcher and tell him what you want.

Actually, extemporaneous speechmaking is the easiest thing in the world so long as one particular factor is attended to: *knowledge of the territory*. If you want to speak off the cuff, be sure you know what you're talking about. If you do, just relax and let it flow.

A good many of the things I say as an after-dinner speaker occur to me during the hour or so before I get up to address the audience. I generally make notes throughout the evening, starting not just with the formal program but with my entry into the room. Almost invariably there is something that catches my attention or strikes me as odd or funny. It may be the wallpaper, a chandelier with three of its bulbs burned out, an orchestra playing disco music when the average age of the audience is 65, or a tray of dishes spilled by a waiter.

Tips for effective ad-lib speaking:

- Don't digress. Hold onto the main purpose of your communication as you deliver your remarks.
- Know the territory. Plumb your experience and do your research.
- Speak in complete sentences. Audiences will tolerate only a certain amount of incoherence.

Extemporizing During the Question Period

Try to keep answers brief and precise. One reason is that not everyone in the audience will share the questioner's interest in a particular aspect of the larger subject. Another is that a number of people may be waiting their turn to pose questions. And last, a short, well-thought-out answer is easier to understand and retain than a long, rambling response.

If the room is so large that you have to repeat questions, you don't have to make it word for word. Simply state the essence of the question as quickly and precisely as possible.

Don't be afraid, by the way, to express your personal feelings in your responses. In most cases, questioners request your opinion rather than factual information.

Almost invariably, a question will come up that you are not adequately prepared to answer. It's much better to acknowledge your predicament at once, in a simple, straightforward manner, than to try to fake and bumble your way through a response, pretending to knowledge that you don't have.

Don't be afraid of responding to questions. For me, it's the most stimulating aspect of public speaking!

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Making Speeches

It's almost as certain as death and taxes: Sometime in your working life, almost everyone has to make a speech. Whether it's a retirement party, a recruiting visit to a group of high school students, or a formal presentation before co-workers, the reaction of most people is sheer terror. A recent survey of Americans ranked making speeches as our number one national fear—over poverty and the nuclear bomb.

How can the average employee get through the ordeal as painlessly as possible—and make a good impression? Ten pointers that experts swear by:

1. *Take time to prepare.* Forget the spontaneity. Even the most informal speech should be outlined and worked on in advance. For formal presentations, write out the entire text of your remarks and memorize it if you can. You don't have to stick to it exactly, though. Spur-of-the-moment embellishments can be effective.
2. *Seek audience sympathy.* Consider the type of people you are addressing and speak about what concerns them. Use "we" instead of "I" as much as you can.
3. *Use colorful language.* Vivid word pictures make the most effective speeches. Compare "Mary was shy when she came to our company" to "I remember meeting Mary her first day, when she was trembling with fright. How long ago that seems!"
4. *Drum home your message.* Listeners retain at best only 15 percent of what they hear. Don't be afraid to reiterate your main points.
5. *Use humor sparingly.* Unless you're naturally witty, go easy on the jokes. Experts say an opening joke is not obligatory. If you're comfortable about your presentation, your audience will be too.

6. *Keep it short.* Most speakers time their presentations to last 15-20 minutes. That allows you about 10 double-spaced, typed pages of text.
7. *Practice makes perfect.* Rehearse your speech several times, both with a tape recorder and before a live audience of friends.
8. *Use visual aids.* Formal speeches benefit from slides, charts or other prepared illustrations. Or use a blackboard.
9. *Tone down your appearance.* Your words, not your clothes, should take center stage.
10. *Establish eye contact.* The mark of a nervous speaker is a fixed stare. Shift your gaze to all parts of your audience, as if you're talking to a room full of friends.

—Reprinted from the Instrumentation and Measurement Society Newsletter, July/August 1986



New PCS Magazine?

PCS is giving consideration to the feasibility of publishing a magazine of general interest to engineers and other PCS members. If such a magazine were produced, it would not be necessarily be intended as archival. Therefore, the format and topics covered would be entirely at our discretion, depending upon the current needs, as we perceive them, of PCS members and engineers in general.

This would in no way supplant the *Transactions*, which would continue as usual.

At present, such a magazine is only in the discussion stage by your AdCom, but we would appreciate your expression of interest in such a publication and any thoughts you would like to contribute if this idea can be implemented. Your thoughts and ideas may be addressed in care of me.

Lois Moore, PCS President
The Johns Hopkins University
Applied Physics Laboratory
Office 25-130
Laurel, MD 20707



The Power of Analogy in Engineering Writing

Analogy—the ability to put difficult technical concepts in more familiar terms—is a powerful additive to straightforward technical writing. In fact, as one looks across the various science and engineering disciplines, one constantly encounters analogy as a way of clarifying science.

For example, in *The Chip*, J. R. Reid compares electrical circuits to the structure of an English sentence and the four basic components of a circuit (resistor, capacitor, diode, and transistor) to, respectively, a nozzle, a sponge, a dam, and a faucet. One can extend Reid's insight to an analogy of demonstration. The human fingers and hand can "shape" a nozzle, sponge, dam, and faucet. Electrical engineers have circuits "in hand," so to speak.

But the use of analogy in technical writing is no mere game to see how clever the writer can be. Analogy, carefully constructed, lets the reader "see" what is complex, even frequently invisible to the naked eye. For example, in contemporary physics, the Heisenberg Uncertainty Principle can be stated as the inability to measure both the position and momentum of an electron precisely at the same time. Or, in more succinct mathematical form, the statement can be written:

$$(\Delta X)(\Delta P) \geq \frac{h}{2\pi}$$

However, the ramifications of the Heisenberg principle can be explained using analogy. In *General Physics* (Vol. II.), Douglas C. Giancoli compares measuring an electron to locating a Ping-Pong ball in a dark room. The act of touching a Ping-Pong ball gives it momentum and an unknowable future position. Light or observation of an electron has a similar effect. Light photons impart momentum to electrons on the subatomic level, just as the hand does to Ping-Pong balls in a room. In fact, I am merely summarizing Giancoli's analogy which runs to over 200 words.

In his new book, *In Search of the Double Helix*, John Gribbin helps readers visualize the coding of life within a DNA molecule by explaining the relationship between genes and chromosomes in terms of a necklace. Genes are "beads" that are strung along the chromosome's "wire". A colleague of mine in the Department of Aeronautics worked with me to develop an analogy

for illustrating differences between air flow over swept-back vs. forward-swept airplane wings. She and I wrote: "You can feel the aerodynamic effect by sticking your arm out the window of a moving car and arranging your arm in various positions. As long as your arm is perpendicular to the direction of the car or swept back (the usual construction of aircraft wings), you can control your arm's axial movements pretty well. The air tends to move over the arm/wing and to bend the wing's back or trailing edge. However, if you angle your arm to the front to imitate a forward-swept wing, the wind will start to force the palm of your hand upward, and the pressure will increase with speed. Similarly, as a forward-swept wing aircraft increases its speed, the air tends to twist the leading or forward edge of the wing upward."

Whatever the kind of engineering (the examples in my brief article are from electrical, atomic, genetic, and aeronautical), the importance of analogy is crucial. Rather than analogy being, as some call it, a weak form of argument, analogy transforms scientific complexity into shared seeing between writer and reader. If, as PCS President Lois K. Moore observes, our goal as engineer-writers "is to place more emphasis on helping engineers to better communicate their expertise, not only to their peers, but to lay people as well," what better medium than analogy? Analogy can simplify the complex, can make the invisible seeable, and can extend the engineer's vision outside his or her own narrow discipline.

The use of analogy at key points in a technical paper, manual, report ought to be a required practice. Recent cognitive theory suggests that writing is a process of clarifying thinking, of getting ideas straight for the writer and the reader. Developing new insight and clarification through analogy is a powerful step in that direction. After all, engineering writing is not like riding a bicycle; it is not a skill that's once learned and forever the same. Rather, engineering writing is like bicycle racing; it's an ongoing activity requiring constant attention, variation, and practice.

—William E. McCarron
Colorado Springs, CO



President's Message

Kudos to PCS Volunteers

Everyone knows that Thanksgiving Day is in November, but any time of year is a good time for us to express gratitude and count our blessings. So, I decided to use my column in this issue to recognize and thank the many enthusiastic PCS volunteers who work behind the scenes to make our Society function smoothly and continue to provide worthwhile service to its members.

First, thanks to all our members who write and review articles for the *Transactions* and *Newsletter* and to our two dedicated and caring editors—**Joan Nagle**, *Transactions* and **Deborah Flaherty Kizer**, *Newsletter*—who always manage to seek out the best material, interface with authors, write smashing editorials and still meet deadlines. These publications are our most important vehicles for communicating knowledge, experience and ideas. Through them, we instruct, inform, advise and report matters of general interest to our membership.

Second, thanks to the Conference Chairmen and their committees (past and present). They work thoughtfully for many, many hours selecting terrific places and sites for us to hold these conferences, and pack the programs with useful information to help members in the communications part of their varied, individual jobs. Future conference chairmen already hard at work to bring us the best possible conferences, include **Ron Blicq**, IPCC '87/Winnipeg; **Gary Greenup**, IPCC '88/Seattle; **Richard Robinson**, IPCC '89/New York; and **John Moffett**, IPCC '90/London.

Third, special thanks to our PCS Administrative Committee members for their willingness to devote all the time and effort necessary to promote our common cause and, especially, to those on important committees. Some of these are chaired by **Leon Pickus**, Technical Activities and Conferences; **Roger Grice**, Awards; **Lacy Martin**, Chapters; **Deborah Flaherty Kizer**, Editorial Advisory; **Daniel Rosich**, Education; **Christopher Parker**, Membership; **Keith Kizer**, Nominating; **John Moffett**, Publicity; and **Jim Hill**, Ways and Means.

Last—but not least—my thanks go to current officers **Jim Hill**, Vice President; **Bill Kehoe**, Treasurer and **Sam De Amicis**, Secretary, all of whom have served the Society far beyond the call of duty. They've always managed somehow to go that "extra mile" that spells

the difference between mediocrity and success. This type of enthusiastic teamwork continues to make our Society grow and better respond to the original goal of improving technical communication.

Sharing the experience and being part of the team over the past eight years has been enlightening, challenging and, sometimes, even fun. I just wanted to tell you how grateful I am for being given this present opportunity to work with all of you.

I only trust other members will not take the energy and talent of these people for granted and let complacency stifle their own ability to contribute. Great responsibility often begins with recognition of a person who brings fresh ideas by serving on a committee.

Then, maybe next year or the year after, this column will single you out for "congratulations." I hope so.

—*Lois Moore*
PCS President



Newsletter Deadline

Articles, news and comments for publication must reach the editor by the following dates:

Issue	Deadline
July	May 22
October	August 14
January	November 20

Send your contributions to **Deborah Flaherty Kizer**, AT&T Technologies, One Oak Way, Rm. 3WC110, Berkeley Heights, NJ 07922.



A Moratorium on These Words, Please

The words listed below are all *good* words, but they are being grossly over-used. Why is that bad? Because our overdependence on these few words blocks us from even considering plainer and better ways of expressing ourselves. Their habitual overuse not only impairs our ability to write clearly, but also blunts our capacity for original thinking.

analysis	increment
application	initial
area	initiate
availability	integration
basis	interaction
capability	interface
communications	interrelationship
compatibility	modularity
concept	multiple
concurrent	objectives
configuration	operational
considerations	optimum
contiguous	_____ -oriented
development	parameters
device	performs
diagnostics	provides
dynamic	quantification
environment	requirements
facility	status
function	support
generate	system
implementation	unit

Remember: It's the *overuse* of these words that is objectionable. With all writing, a good precept to follow is this advice by Coleridge:

Whatever can be translated into other and simpler words, without loss of sense or dignity, is written badly.

Typical translation:

Implement the function = Write the program, do the job, solve the equation (problem), design the circuit, run the program, write the answer, install the machine, test the machine. . . . and hundreds of other expressions you could add.

—© Gerald Cohen 1986

1988 International Conference on Communications (ICC '88) Issues Call for Papers

Philadelphia, PA will be the site of the 1988 International Conference on Communications (ICC '88). The Call for Papers for the Conference has been issued for original work on topics of special interest to the field of communications. Complete manuscripts are due by September 1, 1987. ICC '88, which will be co-sponsored by the Institute of Electrical and Electronics Engineers (IEEE) Communications Society and the Philadelphia Section IEEE, will be held June 12-15, 1988. The Conference will spotlight international speakers presenting work on topics such as optical technologies, intelligent networks, data communications techniques, systems and networks, radio systems and communications operation, performance and quality.

ICC '88 will include a full conference agenda, a keynote speaker banquet and an extensive exhibit hall featuring leading manufacturers and other communications industry participants. For more information . . .

Call For Papers

ICC '88 Technical Program Chairman
John S. Ryan
AT&T Bell Laboratories
Crawfords Corner Rd., Room 2M632
Holmdel, NJ 07733-1988
Phone: (201) 949-5813
Telefax: (201) 949-4632
Telex: 219879 BTLH UR

ICC '88 General Information

ICC '88
c/o IEEE Office
Moore School of EE
Room 209
University of Pennsylvania
Philadelphia, PA 19104
(215) 898-8106 weekdays between 10 am and 2 pm (EST)



New PC-ers November-December 1986

ASIA

Indonesia

Scholz, W.E.

Japan

Takahashi, H.

Korea

Lee, K.Y.

Noh, C.W.

AUSTRALIA

Queensland

Trendle, M.W.

CENTRAL AND SOUTH AMERICA

Ecuador

Quiroz, A.S.

Jamaica

Henry, P.S.

Venezuela

Sarda J.E.

EUROPE

Austria

Reiter, H.E.

England

Cochrane, D.S.

Norway

Leiro, L.

MIDDLE EAST

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El-Burc, N.A.

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Taibot, R.T.

British Columbia

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Despinic, M.

Ontario

Dhar, S.

Franks, R.G.

Herber, N.D.

Windsor, C.F.

Yi, A.

Saskatchewan

Thibeault, A.J.

United States

California

Berke, R.W.

Blatchford, C.W.

Cooper, A.J.

Frostenson, N.A.

Jones, H.C., Jr.

Kelly, D.L.

Lange, T.G.

Lyons, G.H.

Morales, L.G.

Pitsker, B.

Colorado

Prigbe, P.L.

Connecticut

Anderson, M.J.

Messina, S.J.

Rybick, D.W.

Florida

Diefenbach, T.W.

Jackman, A.W.

Georgia

Eddins, S.L.

Illinois

Faris, J.K.

Indiana

Rouanne, M.F.

Louisiana

Carter, B.B.

Maryland

Blue, L.

Carroll, L.D.

Carson, M.H.

Kim, S.S.

Maerz, M.S.

Massachusetts

Goyette, S.A.

Lee, C.W.

Wolman, L.M.

Michigan

Anneberg, L.

Rosenbaum, S.L.

Thomas, R.

Wurst, R.W., Jr.

Yester, J.

Minnesota

Cumming, D.

Nebraska

Martens, J.D.

New Hampshire

Feeney, J.S.

New Jersey

Liebman, E.L.

New Mexico

Elchison, B.F.

New York

Burgett, J.W.

Turner, H.

Zane, W.

North Carolina

Ekman, P.N.

Ohio

Banther, M.R.

Blomberg, D.D.

Bradley, J.T.

McHugh, W.R.

Oregon

Elmoujarkach, A.B.

Hefty, D.R.

Pennsylvania

Callahan, M.R.

Kline, S.C.

Texas

Case, R.R.

Dalina, R.S.

Dumenko, M., Jr.

Ellis, M.G.

Garza, A.

Hall, M.D.

Hawkes, L.

Kassemos, W.T.

Smith, G.

Wessel, A.M.

Virginia

Bernet, M.D.

Bostian, F.F.

Daly, R.

Jackson, D.W.

Reilly, A.D.

Searly, S.G.

Wisconsin

Boben, S.P.

Sio, T.M.

Stege, D.K.



Notable Quotables

Leadership

Leadership versus management. Leaders do the right things, managers do things right. *Leaders who are managers excel at:* (1) Managing attention (being accessible). (2) Managing meaning (integrating facts meaningfully). (3) Creating and maintaining team spirit.

Executive Excellence, 145 E. Center St., Provo, UT 84603, monthly \$130/yr.

Videotaping helps managers

Videotaping helps managers help themselves. Observing themselves at meetings and negotiations and on the phone gets them to focus on what they're doing wrong. Even managers who resent criticism admit the need for change when they see it for themselves.

International Management, 1221 Ave. of the Americas, New York 10020, monthly, \$50/yr.

Competence on the job

Competence on the job cannot overcome bad chemistry—a personality conflict with other executives in the company, particularly the boss. A candid, conciliatory management style, for instance, may only lose you respect in a more aggressive, conspiratorial environment. *Recommended:* If you can't fit in with the corporate culture, the best way to preserve your self-confidence (and your career) is to leave.

Patricia O'Toole, author of Corporate Messiah: The Hiring and Firing of Million-Dollar Managers, William Morrow & Co., 105 Madison Ave., New York 10002, \$15.95.

Winning ways

Always act confident, no matter how you feel. Never stand still. Take the initiative and the risk. Seize your opportunities. Always press your advantage to the full. Do the unexpected—it will keep your opponent off balance. Bluff occasionally to keep your opponent guessing. *Goal:* Respect, not love. Know when to retreat in one area to gain an advantage in another. Learn from your mistakes—don't make the same one twice.

Tactics by Edward de Bono, Little, Brown & Co., 34 Beacon St., Boston, 02108, \$16.95.

Essentials of motivation

(1) Employees must understand the specific requirements of their jobs. (2) Desired behavior must be part

of the company culture, not just something written in a memo. (3) Each individual must perceive that *his* own interests are best advanced by performing his job well.

The Decision-Maker, Box 15005, Charlotte, NC 28111, 6 issues, \$36/yr.

Electronic typewriters

Electronic typewriters won't be replaced by computers and word processors. The sales of electronic typewriters should hit \$6.6 billion by 1988, up from \$2 billion in 1984. *Reasons:* The low cost of the machines, their ability to be used with other office equipment and the realization that word processors aren't always needed for daily routine jobs.

Report by International Data Corp., Framingham, MA, quoted in Computer Decisions, 10 Mulholland Dr., Hasbrouck Heights, NJ 07604, monthly, \$35/yr.

Manager burnout

Symptoms to watch for: Blaming others for mistakes . . . Putting off making decisions . . . Drastically changing eating habits . . . Increasingly using profanity . . . Displaying behavior that reflects self-pity . . . Stepping up the work schedule for no apparent reason . . .

Nursing Life, 1111 Bethlehem Pike, Springhouse, PA 19477, 6 issues, \$13.95/yr.

Lee Iacocca's black book

Lee Iacocca's black book on his managers keeps him aware of performance down the line. Each senior executive sets goals for the coming quarter at the time results are reviewed for the past quarter. Every first-of-the-quarter week Iacocca reviews results against goals. Goals and results go into the *black book*. Senior managers keep similar books on junior managers. *Advantages:* Forces dialogue on specifics between boss and subordinates. And review of the black book keeps the top executive aware of good performers and deadwood down the line.

The Iacocca Management Technique by Maynard M. Gordon, Dodd, Mead & Co., 79 Madison Ave., New York 10016, \$14.95.

Poor performances

Poor performances are very hard to get on track because employees typically won't admit that their performance is bad. They have a strong tendency to ignore the problem. Progress begins when employees *actively* deny the existence of a problem. The next step

forward is when employees blame others. But too often, matters are dropped at this stage. Improvement occurs only after employees accept responsibility for their work.

Recognition

Recognition of good performance needn't be on a grand scale to be a highly effective motivator. At one large company, an employee who has performed extra well gets a handful of M&M's. The giving and receiving makes everyone feel good. The point is that a moment of hoopla is created, and everyone understands why the reward is being given.

Corporate Cultures by Terrence E. Deal, Addison-Wesley, Jacob Way, Reading, MA 01867, \$14.95.



IEEE Publishes Effective Meetings for Busy People: Let's Decide It and Go Home

The publication of *Effective Meetings for Busy People: Let's Decide It and Go Home*, by William T. Carnes, has just been announced by the IEEE PRESS, book publishing division of the Institute of Electrical and Electronics Engineers. The book was published under the sponsorship of the IEEE Professional Communication Society.

Meetings, conferences, and committees are a way of life in organizations of every size and kind. Unfortunately, for everyone involved, they are often dull, unproductive, and sometimes useless.

Effective Meetings for Busy People pinpoints the problems of unsuccessful meetings and provides a methodology to make them effective, interesting, and profitable for all concerned. The techniques it explains can be successfully applied in just about any kind of participatory decision-making situation.

Divided into 33 chapters, the book shows how to organize meetings, committees, and conferences properly; points out major deficiencies that afflict most meetings—and tells how to correct them; provides the

know-how (including the fine points) to chair a meeting successfully—even if the reader has never done it before.

The book also helps save money on meetings by showing simple, effective ways to reduce costs without cutting essentials on hotels, meals, arrangements, etc.; demonstrates how to improve interpersonal communication within meetings; shows ways to make meetings more enjoyable; upsets some established traditions about meetings, opening the way to new concepts, ideas, and techniques; spotlights just what needs to be done in meetings—and what should NOT be done.

Effective Meetings for Busy People provides a much-needed look at the whole question of meetings and conferences—and a good deal of straightforward “how-to” guidance for organizing and conducting them effectively.

William T. Carnes received his B.S. in electrical engineering from the University of Kansas. Before his recent retirement, he was chairman of the Airline Industry Electronics Committee.

Effective Meetings for Busy People: Let's Decide It and Go Home (Order number PC02030) contains 368 pages and is priced at \$29.75 (\$22.30 for IEEE members). The book may be ordered from the IEEE Service Center, 445 Hoes Lane, P.O. Box 1331, Piscataway, N.J. 08855-1331. Make check payable to IEEE. Please add the following shipping and handling charges: for orders totaling \$1.00 to \$50.00, add \$4.00; \$50.01 to \$75.00, add \$5.00; \$75.01 to \$100.00, add \$6.00; \$100.01 to \$200.00, add \$8.00; over \$200.00, add \$15.00. Credit card orders (MasterCard, VISA, American Express, and Diners Club) are acceptable.



Tools of the Trade

Editor's Note: Our guest editor for the "Tools of the Trade," Cheryl Reimold, is president of PERC Communications, a communications firm that conducts in-house courses on effective writing and speaking for businesses and other associations. For information, please contact her at PERC Communications, 6A Dickel Road, Scarsdale, NY 10583, (914) 725-1024.

Writing and editing—the two halves of language

Part 2: Editing—the shaping of a manuscript*

Most of us don't like to edit our work. We quake at the scourge of red pencil that slashes through our manuscript, changing hard-sought expressions, questioning others, even amputating whole sentences or sections. If *only* our original outpouring could satisfy our colleagues, our readers, our editors—ourselves. Alas, it rarely does.

But—the new way of writing offers an alternative. You simply don't edit anymore. Rather, you *shape* the free-flown words into an orderly, attractive piece of communication. And it feels entirely different.

Shaping is a positive, creative act. It is what a sculptor does to a hunk of marble, a prize confectioner to a lump of dough. Shaping makes the critical difference between an unfathomable sea of thoughts and a well-charted channel between writer and reader. The red pencil becomes an instrument of creation, not amputation.

Find the unifying force

A piece of technical writing usually has a few points to make about a single topic—the subject of a memo, the event or plant described in a trip report, the experiments detailed in a technical report. In a *unified* piece, these points are connected by a single unifying force or impulse.

The *subject* of the Gettysburg Address is a memorial to the soldiers who died at the battle of Gettysburg. The *unifying force*, the impulse behind the words that draws them all powerfully together, is Lincoln's desire

to preserve the Union. The short address covers a great deal—the birth of the United States, its early principles, the Civil War, the battlefield, the heroic death of the men who fought there, the charge now given to the living. Yet throughout, the words seem to throb with the energy of that single impulse: this nation must survive.

Our regular writing tasks seldom grow from a force so powerful and urgent as this. But we always write to say something. If we have nothing important to say, we'd better put down the pencil.

Read through your first unedited (I hope!) draft. Then close your eyes and try to formulate a one-sentence answer to the question: What do I want to convey? It may help to begin your answer with the words, "I want . . ." For example:

- I want you to continue supporting these experiments.
- I want our company to consider buying the copiers I examined at the XYZ plant.
- I want better service.
- I want you to understand exactly how this machine works.

Very often, the unifying force is discernible only after you've written the first draft. You have to write down all your thoughts and discoveries on a subject to find out or clarify what, essentially, you want to say about it. That is why it is much better to write first and shape later. You can be more confident of having something real to shape instead of fabricating something flimsy around a chosen focus that may be neither appropriate nor relevant.

Build your words around the unifying force

When you've found the unifying force in your writing, you will be able to extract the points you've made in its service. Underline every sentence that:

- makes a relevant point (one line)
- illustrates or explains a point already made (two lines)
- connects one point or thought to another (three lines)

Check *every* sentence; if you find one that doesn't fulfill one of these conditions, it probably should go.

Now pick out your three major points. If there are more, see if any of them can be subsumed into one of the three. If not, omit them. More than three points

with illustrations and explanations simply cannot be absorbed at one sitting. If your work contains a number of chapters or sections, apply this rule to each.

Make your writing good to read

Now that your work has its structure and form, you can give it the final aesthetic shaping. Make it good to read. For the final phase of shaping, you can use a checklist.

Trim away:

- **Clichés.** Expressions such as "last but not least," "in the final analysis," "in actual fact," "back to square one" are unoriginal phrases that have lost their precision through overuse and now serve to cover up the writer's personality—precisely because everybody uses them. Avoid them.
- **Irrelevant detail** that draws attention away from the unifying force.
- **Excessive explanation of the obvious.** Watch out for sentences beginning with "That is to say . . ." or "In other words, . . ." If you've said it clearly, you don't need to repeat it in other words.
- **Unnecessary modifiers**, such as "a loud explosion," "a high peak," "an empty vacuum," or "the final conclusion."

Check for:

- **Correct subject/verb agreement:** Freeze drying of the sample and recommencement of the entire process three hours later *were* (not *was*) found to produce. . . .
- **Correct punctuation**, particularly commas that may change meaning: Next, we prepared the wood lying in the freezer. . . . *not* Next, we prepared the wood, lying in the freezer. (Unless you prefer to work in subzero temperatures.)
- **Variety** in words, expressions, and the structure and length of sentences.
- **Relationships.** Are your ideas connected? Could you make the relationships clearer by using conjunctions (e.g., *because*, *since*, *yet*) rather than placing one sentence after another?
- **Completeness.** Have you covered all you promised in your opening paragraphs?
- **Coherence.** Does your work have a beginning, a middle, and an end? Are they connected?

Shaping is fun. It gives form to your thoughts and makes them pleasantly accessible to others.

But, as half the writing process, it requires half the writing time. Are you willing to give it the time it needs? The reward is clear. You will be read. With pleasure.

**Part 1 of Writing and editing—the two halves of language appeared in PCS Newsletter, January 1987, p. 10.*



Intelligible Foils Revisited

There are two principles for making useful visual aids, particularly those large transparencies known as foils. There are hundreds of rules and guidelines for implementing and refining different kinds of visual aids and for making them attractive, but there are only two principles: **comprehensibility** and **legibility**.

First, get your thoughts in order. Isolate the key points of your message. Then slash, cut, trim—and edit. Visual aids aren't a substitute for the written page. The observer can't annotate, highlight, or underline them or put them away for review and interpretation later. (Prepare handouts if there is a need for reference or study material.) Choose only key words, phrases, graphic trends—not sentences, paragraphs, whole memos. If you also stay away from acronyms and jargon, you'll be well on the way to making comprehensible foils.

Second, turn away from your typewriter and take up a big, thick-tipped marking pen. If your pen strokes are a couple of millimeters wide, you'll have to work hard *not* to produce legible foils. Don't worry about your printing; ask any audience whether artistry outweighs legibility. Typewriter fonts do not have adequate stroke thickness for easy reading at a distance. Pin your foils on a wall and try reading them from at least ten feet away.

Summary: For foils (visual aids), shorter is better and larger is necessary. See also *IEEE Transactions on Professional Communication*, PC-22/4, December 1979.

—*Reprinted from IEEE Transactions on Professional Communication, Vol. PC-24, No. 2, June, 1981.*



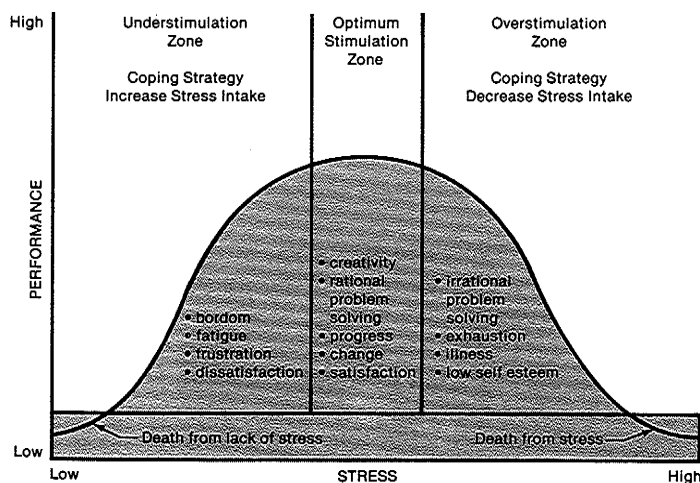
Controlling the Effects of Stress

(continued from page 1)

generated drive to do a little better can often boost our performance to a higher level and increase our sense of well-being.

If you look at the graph, you will see the relationship between our mental and physical performance and our stress level described by a bell-shaped curve. On the left-hand side of the curve, performance is low because the stress level is low. We know from countless studies that when there is a very low level of stress, the level of excitement, motivation, and enthusiasm also remains low. A certain amount of stress is essential for movement, activity, growth, and productivity. The middle zone of the curve represents an optimal level of stimulation or stress, between high and low, where performance will reach a peak. Once stress increases beyond this optimal range, performance rapidly begins to deteriorate. Stress ceases to have a positive effect and begins to produce symptoms of distress.

STRESS AND PERFORMANCE



Each of us has our own individual stress threshold—a point at which we are simply overwhelmed by the amount of stress in our lives and begin to show the symptoms of distress. The first step is to recognize these early warning signs, which can be extremely different from one person to another. When headaches, stomach upset, or irritability appears, that is the sign that you have entered a condition of distress, and that you should take steps to either reduce the stressors that are affecting you or strengthen your own internal supports so you can handle greater amounts of stress without experiencing distress.

Modify Your Lifestyle

Eliminate excessive stress by modifying your lifestyle. A great deal of personal stress can be attributed to poor life planning and ineffective management of work and leisure time.

In order to reduce stress, you might decide to change majors, take a less stressful part-time job, or cut back on the relationships and commitments that tend to produce stress. But such a radical and fundamental life change is not always a realistic option, nor is it necessarily the most beneficial. A more conservative approach would be to change your situation more moderately—by learning how to work more efficiently, resting a bit more, eating better, and taking a bit more time for recreation and enjoying yourself.

Many little lifestyle shifts can add up to a significant reduction in the level of stress in your life. Structure your life to allow some quiet time for rest and relaxation. Getting away from your usual routine, even for just one day, can refresh and revitalize you and make you more productive. Finally, you may benefit from setting aside more time to spend with your family and close friends. The social support of your loved ones is one of your most valuable resources in dealing with stress.

It's important to realize that you have a right to live this way. Too many of us seem to feel that we are obligated to be miserable if we are to be productive; in reality, misery is not compatible with productivity. When you reduce your stress level, not only will you enjoy life more, but you will also benefit from improved health and increased productivity.

Diet and Nutrition

Another important way to deal effectively with stress is to actually change your body. This involves working with the body to make it stronger, more vital, and resilient against the abuses and pressures of stressful living.

Diet and nutrition are an essential starting point in fortifying the body against stress. After all, it is the food we eat that forms our ever-changing biological makeup, influencing all aspects of our physical and mental functioning. We know that stress depletes certain critical nutrients, and that substances such as caffeine or sugar may diminish our ability to tolerate stress and can even mimic the stress response.

Growing consensus among nutritional experts indicates that the best diet for optimal health is one which avoids processed foods, refined flour, sugar, alcohol, excessive fats, salt, and stimulants such as caffeine. Also, more than 35-50 grams of protein daily has been shown to lead to high blood pressure, tension, and general fatigue.

Foods that seem to be most beneficial for maximum mental and physical health in a "high-stress" environment are: whole grains, fresh fruits, vegetables, lean meats, fish, fowl, non-caffeine beverages such as herb teas, low-fat milk and dairy products, and foods high in natural fiber. In addition, there is mounting evidence to suggest that a regular regiment of vitamin and

Fight or Flight: the body's biological response

We are all familiar with the physical signs of stress. Think about how you felt the last time you had to swerve to avoid a collision while driving: heart racing, palms sweaty, stomach in knots. Such a combination of sensations results from a complex physiological chain reaction in your body in response to a perceived threat. The sequence of events is as follows:

1. The central nervous system informs the hypothalamus gland at the base of brain.
2. The pituitary gland is activated, which causes the release of the hormone ACTH.
3. Within two seconds, adrenaline and noradrenaline are released from the pituitary gland. Adrenaline works to provide the body with quick sources of energy by increasing the heart rate, the rate at which the body processes oxygen, body temperature, and rate of carbohydrate consumption.
4. Subsequently, 17 other hormones are released, sending the body into a hyperactive state. Within eight seconds, we feel a surge of energy.
5. Stored sugars pour into the bloodstream to provide fuel for quick energy.
6. Red blood cells flood the bloodstream, carrying more oxygen to the muscles of the limbs and brain.
7. The muscles tense in the arms and legs in preparation for increased exertion.
8. Digestion ceases so that the blood can be diverted to the brain and muscles.
9. There is increased perspiration to prevent the body from overheating.
10. The pupils dilate, allowing more light to enter, and all senses are heightened.
11. The hands and feet become cold, as the circulation is diverted from the extremities to protect against bleeding.
12. Attention narrows as the mind attempts to focus on the problem at hand.

13. Internal point of view becomes focused on *defeating the enemy*, as self-preservation becomes the mental *modus operandi*.
14. The senses become "hyper-alert" and "hyper-excited" in order to best defend against and/or attack the enemy.

The persistent triggering of the stress response can produce mentally and physically damaging results. The greater the frequency of stressors, or the longer they persist, the greater the risk that you will develop stress-related problems and diseases.

Many of the most common minor disorders, which we often dismiss as "just a part of life," may actually be early warning signs of excessive stress. Some examples to look out for are:

- aching neck and shoulder muscles
- allergies
- chest pain
- cold and flu
- frequent accidents or injuries
- frustration
- headaches (tension, migraine)
- excessive daydreaming and fantasizing
- increase in drinking or smoking habits
- insomnia—sleep onset, early morning awakening
- overeating
- peptic ulcer
- skin problems
- stomach problems
- trouble concentrating

It's unwise to ignore these warning signals or to try to mask them with alcohol, aspirin, or other medications. These physiological warning signs will eventually progress from being acute to chronic. Then, instead of having an occasional gnawing in your stomach when you are under stress, you may develop a chronic ulcer. In the case of the cardiovascular system, the stress reaction causes an elevation of blood pressure, increased heart output, and the release of hormones into the blood which can ultimately damage the walls of the blood vessels. The result in the long term can be a heart attack or stroke.

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Pick An Exercise to Strengthen Your Weaknesses

Exercise not only strengthens and vitalizes the body, but it is also a powerful stress reliever. Every person has a unique set of mental and physical needs which must be considered when choosing a personal fitness program.

People whose muscles and joints are stiff will probably benefit from a stretching program, while those who have low endurance and poor cardiovascular functioning will gain more from walking, swimming, running, or aerobic dancing.

Ironically, people frequently gravitate away from the fitness program they need the most and instead "practice their problems." For instance, many people who are highly competitive take up running as a way to relax; but before long they are trying to beat everyone on the track and are soon training for a marathon.

Ideally, a good, basic fitness program for stress management should include the following four areas: vigorous, sustained activity to increase aerobic fitness and endurance; stretching exercises to enhance flexibility; activities that strengthen and vitalize the muscles; and relaxation and stress-reduction disciplines (such as meditation, autogenics, or deep breathing).

Physical fitness includes being able to relax, which can help to break the pattern of chronic stress and allow the body and mind to recover and renew themselves. Also, if you are at all concerned about the possible health risks of initiating a fitness program, call or visit a physician.

Modify Your Attitudes and Expectations

Another strategy for dealing with stress is based on the idea mentioned earlier that it's not always the events in the external world that produce stress, but rather our own way of perceiving them that is disturbing.

It's remarkable how differently people respond to the same potentially stressful situation. Imagine walking into your class and discovering that a surprise test is being given. For some, it will not act as a stressor at all, and they will not experience a stress response.

Others will see the crisis as a challenge, and their stress response will energize them to perform beyond their normal limits. Still others will be precipitated into a full-blown state of emergency, and be at a loss with how to resolve it.

The second approach to stress management is to change your personal attitudes and expectations—to take charge of your own point of view. Perhaps you have such high or unrealistic expectations for yourself that no matter how hard you work, or how much you get done, you are still not happy or satisfied. This is not to say that we shouldn't set our goals and standards high, but sometimes we are more focused on pushing ourselves harder and harder than we are on actual outcomes. Learn how to create realistic and productive work plans.

One approach that helps to meet new experience with confidence is to consciously build on past successes. Rather than dwelling on past shortcomings, remind yourself constantly of your achievements, no matter how minor they may seem. Success is simply doing better today than you did yesterday.

When people begin thinking more positively about themselves and others, they often find that, although they are in the same situation, life feels different to them. They feel better, more productive, and less stressed.

Improve and Expand Your Coping Skills

You can deal successfully with stress by developing a wide range of effective "coping skills." There are literally hundreds of simple strategies and techniques that can help anyone to cope more easily with high-tension situations. Wise planning and regular practice are essential in developing these skills.

For example, take a walking break when you feel anxious or stuck. If possible, get away from your desk for a few minutes and let your mind and body disengage from the crisis or stressor, while at the same time letting the movement of walking clear away your tension.

Another helpful coping skill is mental rehearsal. Picture, in your mind, handling a crisis easily and effectively over and over again. Then—as research has shown—when you are confronting the real-life crisis, you are more likely to keep your wits and handle the situation, without getting anxious. During the actual crisis situation, keep up your positive conversation with yourself in your mind, acknowledging yourself for

what you are accomplishing and reassuring yourself that the situation isn't so bad after all. Afterward, enjoy the relief of the pressure being lifted. Even if things didn't go exactly as you hoped, avoid self-criticism.

Many people feel stressed when they have too much work to do and too little time to get it all done. Learn how to say "no" to unwanted or unnecessary invitations and requests, which are a frequent cause of stress. Learning how to prioritize your tasks to get the important things done can be another great stress reducer.

The key to being able to meet stressful circumstances effectively is to maintain your sense of control over the situation. You may not be able to completely control events themselves, but you certainly can control your response to them.

—Ken Dychtwald

Ken Dychtwald is an internationally known psychologist, gerontologist, lecturer, author and outspoken figure in the fields of health promotion, high performance behavior and aging. As an expert in this field he has consulted with and/or conducted programs and seminars for a wide variety of corporations, health care facilities and governments agencies including: ABC television, AT&T, Cable Health network, Chrysler Corporation, The U.S. Department of Agriculture and Upjohn Healthcare Services. Dr. Dychtwald, president of Dychtwald and Associates, frequently appears on U.S. television and radio shows including: Good Morning America, CBS Morning, and The Merv Griffen Show.

Excerpted from The Art of Managing Stress workbook by Dr. Ken Dychtwald, Copyright © 1985, all rights reserved. For further information call or write to Dychtwald Associates, 1900 Powell St., Ste. 700, Evanville, CA 94608. Telephone (415) 652-8881.

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Networking: A Modern Approach to Committee Work?

When I accepted the job as Publicity Committee Chairman for the 1987 Professional Communications Conference I decided to try an innovation and deviate from the normal committee structure.

As a new slant on an old theme, "networking" has become quite a buzzword in recent years, and I wanted to see if it could be used to good effect in voluntary committee work. I decided to try to set up contacts throughout Canada and the USA in an informal information network to promote IPCC '87.

The conference will be held in Winnipeg on October 14th, 15th and 16th. This is the first time the conference has been held in Canada and to make it a really big success our information network cannot be too large. I would like to hear from as many PC-ers as possible who could spread the word amongst their colleagues.

Networking can often help to develop informal contacts which can be very useful in both professional and personal life and our IPCC '87 network could spin off other specialized branches.

I will be very pleased to hear from anyone who want to take part in this experiment and, after the conference, perhaps we will write articles for the PCS Newsletter to describe our experiences in the network formed, to gauge the effect on the publicity effort, and to assess the value of this approach to voluntary information dissemination.

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IEEE Notes Importance of Translating Japanese Technical Journals

The American research community needs to have greater access than it now has to English translations of Japanese technical journals. Congress, the U.S. technical community, and the academic world all agree on this general proposition. And, slowly, all elements are beginning to agree on ways and means of addressing the problem.

IEEE has been an active player in the translation game for several years. It joined with the National Bureau of Standards last year in sponsoring a conference on U.S. access to Japanese technical literature in electrotechnology. More recently, the USAB OpCom has approved a position paper supporting measures to increase the availability of Japanese technical journals. The OpCom paper, approved March 22, 1986, states that it is "both timely and appropriate" for the U.S. government "to play a leading role in helping to establish a market (for the Journals) so that professional and commercial publishers can substantially increase their activities."

In November 1985 the Senate passed legislation that empowers the Commerce Department (via the NBS) to undertake translations of those Japanese journals that are not otherwise available from private U.S. sources. It also requires Commerce to publish an annual directory of U.S. companies and professional societies that do translations, plus a list of Japanese technical documents that have already been translated by the government.

A companion bill (H.R. 3831) is still pending in the House. The legislation was the subject of discussion in the NBS authorization hearing held by the House Science & Technology Committee on March 13. The IEEE witness, Paul Hazan of Applied Physics Lab at Johns Hopkins University referred to the OpCom paper on the subject.

The following appears to be significant:

Classified or sensitive data to have a personal identification and authentication system, audit trails that keep a record of activity, a designated security officer, a written security plan, control over physical access, and security controls on removable storage media. It also called for cabinet-level action to increase manpower and funding in communications security government-wide.

The NSA committees implementing NSDD 145 are beginning to play a significant role in all aspects of Federal information security, whether or not the information is classified. Although NSDD 145 may result in better information security, "it puts the national security community in an unusually influential, if not controlling, position on a key aspect of the nation's information policy." There are indications that NSA's committees "may construe their jurisdiction very broadly, to include information that is sensitive for reasons of privacy, commercial competition, or agency decision-making."

One possible improvement is designation of a civilian agency to be responsible for security training and technical support in the nonmilitary sector, and revision and clarification of NSDD 145.

□

Time Conservation

Most people waste valuable productive time by revving up for the day's tasks after they've arrived at work.

A smart manager can get going at peak efficiency before by following a few simple steps:

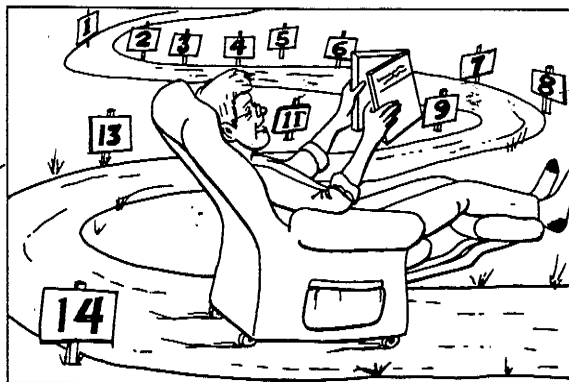
- Use travel time to plan the day, draft letters, mull over new ideas, etc. (Preferably done the night before.)
- Take home a letter, report, etc., that can be reviewed before leaving the house in the morning or read on the way to work. (Not while driving.)
- Strike up conversations with the people met on the way to work. Talk away early morning foggiess.
- Leave some unfinished (and interesting) work on your subordinates' desks at the end of the day, so that they'll want to plunge into it when they arrive in the morning.
- If all else fails, bribe them with a reward at the end of the day for completing all the targeted work.

□

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