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ABSTRACT

Successful speech should rest not on prepared notes and outlines but on genuine oral discourse based on "data" fed into the "software" in the computer which already exists within each person. Writing cannot speak for itself, nor can it continually adjust itself to accommodate diverse response. Moreover, no matter how skillfully performed, as though it were spontaneous and interactive, the predetermined speech can never in fact be either. Basic communication classes, particularly for scientists and engineers, should primarily address the restoration of an oral experience of the shared and sounded word. The categories of data that the mental software of the orator needs to draw on are: (1) thorough knowledge of the subject; (2) audience awareness; (3) the speaker's own oral style; and (4) an understanding of the theory behind the communication process. Perhaps the greatest evidence that can be offered to stress the virtue of orality is that the computer only works well in consort with its human belief system. The contemporary human computer possesses the capacity to evolve and act on an infinite body of potential intentions. (Seventeen footnotes are attached.) (RS)

Communication for Scientists and Engineers:

A `Computer Model´ in the Basic Course

By W. Lance Haynes

Deus Ex Media

Once upon a time, long before the advent of the written word, there was an amazing oratorical computer that made wonderful speeches. Never did audiences sit through this computer´s great orations without significant changes occurring in their predispositions to act. The most powerful dignitaries of the day and the foremost teachers and scholars travelled from far and wide to listen and observe this mighty computer as it moved and inspired and coaxed and argued and led--above all, led--its audiences forth to their destinies.

Alas, the technology that produced such a computer, capable of composing not merely speech but great oratory, has long since disappeared, and traces of observations made by the computer´s many students have largely been lost. However, recent discoveries, coupled with some careful speculation regarding the meaning of certain fragments, make it possible to construct a hypothetical description of this amazing oratorical computer at work.

We must note, of course, that this computer was loaded with a vast encyclopedia of information, both

technical and humane. On any subject, it could almost instantly recall the wisdom of the ages, the facts and foibles, pros and cons voiced or written by scholars and sages through the centuries. Further, the computer constantly updated its own knowledge so that no matter how current the event, a full range of facts and their possible interpretations were immediately accessible.

Perhaps it was this vast command of knowledge that, more than anything else, enabled the computer to so completely spellbind its audiences. Being so fully in command of the facts, of course, meant likewise a full command of the possible knowledge the audience would bring to judgment of any claim the computer made. But in addition, the amazing oratorical computer was so configured that it could monitor and interpret with great accuracy the slightest behavior of its audience as they listened and responded; because the computer's knowledge of its subject and of human nature was so vast, the meanings of its audiences' behavior were as accessible as an open book. The slightest hint of objection or distraction was always dealt with in the words that followed and every audience member perpetually found the computer to be a wise, open, compassionate, and understanding friend who spoke precisely their language, who described the world just as they would, and who always seemed to have their best interests foremost at heart. Indeed, it often seemed

that the amazing oratorical computer's knowledge of the subject was rivaled and even exceeded by its knowledge of the audiences' fantasies and realities in all their existential glory.

Closely akin to its subject and audience data files, our computer was also endowed with the ability to analyze its own experience and that of its audiences in theoretical terms, which is to say that it possessed a highly creative critical faculty. Not only was it able to identify the situational components that produced each response, but as it did so, the computer incorporated the experience into its own repertoire, so that its communicative powers grew with each new event it encountered. Truly, it could be said that our amazing oratorical computer's experience was its own best teacher and over the years it developed a vast file of theory drawn not merely from the learned treatises and journals which it digested but also from exemplary events.

From its ability to examine and learn through its own experience as a communicator, our computer also came to master its own strengths and weaknesses. It paid attention to its own behavior as the audience responded, and thus developed great command of its personal style by recognizing and honing the things it did well and avoiding those behaviors which the inherent limitations of computers rendered relatively

ineffective.

Indeed, this computer could quite possibly have come to dominate the world of men and women, had it not had one interesting quirk. Not unlike the computers of today, the amazing oratorical computer had no sense of its own purpose beyond the purely pragmatic matter of making speeches. In deciding when and what to say, it was forced to rely entirely on the happenstance of events--situations--for which speeches were needed. Unlike human rhetors, who are motivated by the strength of their own idiosyncratic beliefs, the computer was governed--some would say limited--by the logic of its circuits.

Interestingly enough, one theory currently in vogue regarding the demise of the amazing oratorical computer is that it ultimately gave and stored every possible variation of every possible speech, based on events as they were at that time and had been before. Then, noting that history tends to repeat itself, the computer reasoned its own impending obselescence and, like an old soldier, faded away.

The Problem Today:
Effective Speech in a High Tech World

What would it take to program a computer to make effective speeches? The issue here is not to be a thorny problem of cognitivism or of artificial intelligence design because our purpose is not theoretical but

pedagogical.[1] Rather I mean to address a more basic issue: especially to the contemporary technical student, how might we aptly describe the broad categories of "data" upon which any successful speech should rest, and what can we learn from such an enterprise? Specifically, how might we and they understand our own mental "computers" in order to optimize the loading and application of this information?

This paper attempts to answer the preceding paragraph's questions by exploring a teaching analogy that has met with ready acceptance by engineering and computer science students at a major technical school, the University of Missouri-Rolla. The analogy was developed to deal with students' professed difficulties in coping with what they call "mushy philosophical concepts." In general, the author has observed technical students to be initially less comfortable with ambiguity than their liberal arts counterparts. Such students are often dismayed by the idea that, unlike bridge building or circuit design, effective public speaking cannot be assured by carefully following a list of patent steps. We trust that the problem sounds familiar.

Our model and the teaching underlying it both rest on one major assumption: that written preparation is useful only to the extent that it does not predetermine the speaker's choices in ways that preclude or

interfere with existential interaction.[2] Thus the mode of public speaking to be taught does not include speeches given from outlines or notes, let alone speeches performed from manuscripts. Indeed, we will do well to regard such performances as unnatural and unfortunate effects of literacy taken for granted.[3]

We should further recognize that to whatever extent performance is taught as a substitute for genuine oral discourse, that practice virtually amputates the deep humanity of our oral powers.[4] The temptations of technology, underwritten by astounding starting salaries, place such heavy demands on technical curricula that there is scarce time for attention to the human side--indeed, liberal education is too often seen as the opposite of "conservative" technical education. But speech--oral speech (regretably not a redundancy)--in its existential glory is itself a powerful humanizer, and the best "computer" of all comes as standard equipment installed in every student. Because the existential nature of the speech product is basic to the computer analogy that follows, the next section of this paper elaborates our view of oral discourse. An exposition of the analogy itself, answering the questions posed in the initial paragraph, follows and conclusions are drawn.

Separating Orality from Literacy

It would be incorrect to say that written performances cannot be effective; to the contrary, they are sometimes quite moving, expecially to highly literate audiences. However, among the overwhelming majority of speeches in this author's experience, the written performance would have been markedly better as an existential interaction, if only the speaker were experienced and knowledgeable enough--as an orator, not a performer, mind--to carry it off. As speech teachers, it is our business to provide the experience and surely it would be a better world if those who lack the knowledge to speak well and wisely would keep more often silent.

Why is it then, we ought to wonder, that speech students so often speak on subjects about which they know far too little? Indeed, we may well ask, why do they speak on subjects about which they have only become acquainted for the purpose of giving a classroom speech and only sufficiently acquainted to fill the time allotted by the assignment? One answer may be that our education system is thoroughly biased by literate assumptions which regard the human capacity for speech as a secondary and decidedly lesser medium of communication. Although writing gives us many blessings, it also enables speech without knowledge, in effect, pseudo-speech, performed essays that venture

claims of truth drawing only on the facts selected as if there were no other facts to be found. Indeed, students who so prepare and deliver have very little reason not to believe that they have found the certain truth because their own research has selectively ignored contradiction and their presentations are too occupied with recall to recognize--let alone cope with--contrary audience response. "The sincerity that has heard only one side," said W.B. Yeats, "is invariably without flaw."

Contemporary teachers of the basic course have been bequeathed a tradition that teaches not oral-aural communication but oral-aural transmission of written--one hopes cleverly written--messages. Like it or not, we usually follow practices that derive from and are logical adjuncts to departments not of speech communication but of (written) composition and literature.

Written communication, because it is permanent, is a far more practical way to transmit messages when complexity abounds and precision is paramount. Scholarship is primarily a written enterprise, thus this paper is written, and indeed, it is written to be read. But writing cannot speak for itself, nor can it take stock of its reader's reactions, nor can it continually adjust itself to accommodate diverse response. Nor can writing, no matter how fine the pen

or rich the paper, begin to convey the impact of the speaker's existential immediacy; as Natanson put it, the risking of the self.[5] Moreover, no matter how skillfully performed as though it were spontaneous and interactive, the predetermined speech can never in fact be either. Screened from the moment by written composition from the elsewhere past, the performing self risks only its veneer.

It would be imprudent to derogate the written word or to understate its vast impact on civilization. Science and technology, empire and exploration, health and home, even law and order, amount to only a fraction of our written inheritance.[6] Rather, we intend merely to point up one particular--though very important--facet of human potential that the advent of writing has pushed into neglect. The sort of speech to which this paper is addressed, and which we all might well address, is closely akin to that which did quite well for some fifty or more millenia before the first word was ever written. As found even today in cultures that lack the experience of writing, we refer to the speech and cognition of orality.[7] It is, of course, no mere coincidence that speech utterly precedes writing both in the history of the human race and in the history of the individual human organism: speech is symbolization of thought and writing a symbolization of speech.[8]

The purely oral-aural mode of communication is

unfettered by either the urge or the need to recall into consciousness bits of messages written at other times for an audience imagined; rather the oral-aural mode is free to deliver directly from the inner recesses of the nonconscious mind using the full physical resources of the body. The grace of this orality is that its products can be no better than the genuine grasp of subject matter and the strength of sincere conviction. Orality is a poor deceiver. The beauty of this orality is that its products take shape with the ongoing responses of the audience as it changes (and change, the audience physically does) unrestricted by the sluggish interference of conscious analysis. The joy of this orality is that it comes not from imitation of abstract ideals but from the essential qualities of the speaker and audience, elicited not by premeditated manipulation but by spontaneity born of confident self-knowledge and the warm glow of shared experience. Finally, the confirmation of this orality derives with utter simplicity from our everyday conversation which, doubtless influenced by literacy but unfettered by written preparation, proceeds quite elegantly, as it has done since ever the first human learned to shape breath into speech.

In our highly literate world, the embrace of writing has inhibited orality. This is not simply the result of writing's nature as a medium but also because of our

nature as its users. Scholars of orality have shown that the use of literacy is accompanied by cognitive patterns, processes, and concepts that did not, indeed could not exist in an exclusively oral world.[9] Abstract thought, logic, measured time, the self-concept are but a few of the many aspects of modern humanity bequeathed by the spread of writing. Yet none of these profound developments can be seen as inhibiting orality of itself. To understand the atrophy of our oral powers, it is necessary to see the human as user of the written word, who thereby fixes knowledge in space and time independent of any human mind. The recording of knowledge frees the mind to soar, unfettered by the need to retain the sum of knowledge by the collective community of a culture. But alas, when a culture gives up its collective encyclopedia and the practices of shared communal knowledge, it loses most of the experience of orality, the power of the shared and sounded word, and the warm comfort of unselfconscious spontaneous interaction.[10]

It is thus the restoration of this oral experience, albeit mediated and modified by the inevitable effects of literacy, that we believe the basic communication class should primarily address. Pedagogically, a comparison between orality and literacy, on the one hand, and classes in speech and in engineering on the other, illustrate the point remarkably well. Let us turn now to answer the questions posed at the outset of this paper

and in so doing inform our understanding of orality's potential for contemporary communication education.

The Oral Computer Model

Software

What information will our computer need? What sort of program will be required to optimize its use? Starting from our own experience, we may note that some kind of program must already be in place; that in ordinary conversation, words usually well up out of our mouths with no premeditation and no conscious intention whatsoever. Subsequently, of course, we are able to account for our words as if they were part of a carefully planned scheme by which our entire lives are ordered.[11] We may indeed have premeditated schemes but who will deny that our intentions usually proceed through the maddening bustle of contemporary life by force of habit, rather than by conscious and deliberate forethought? The experience of speech gushing up from the depths of our beings provides conclusive evidence that information is processed outside our awareness.

Let us move ahead with the assumption that there is indeed a computer of sorts already installed in each person who speaks, loaded with a program that changes in response to new information, a program that determines our oral activities along with the rest of our behavior, without the necessity of conscious awareness. Our task

is not to create a new computer but rather to better understand how we consciously and nonconsciously alter the program we already seem to have.

We can understand the nonconscious alteration of our communication (or any other) behavior first as a process of operant conditioning: behaviors that are unsuccessful are replaced through trial-and-error, behaviors rewarded by success gradually become part of the standard repertoire. We can also understand conscious intervention in the development of communication behaviors both in the sense of learning new behaviors through willful repetition or practicing, and in the sense of deliberate cessation of our habits, quitting smoking, for example.[12] By practicing desired behavior until it becomes standard, we may consciously modify our programming.

However, it is probably an oversimplification to assume that either conscious or unconscious modification operates exclusively of its counterpart. We are aware of many rewards and punishments, for instance, and although we may not willfully regard them as lessons, yet the awareness is inseparable from the intensity of the experience, and the intensity certainly bears on the liklihood of behavioral change. Furthermore, conscious learning for example, intellectual grappling with theories about the causes and effects of human interaction, expands the range of possible options from

which new behaviors are selected--consciously or unconsciously--for trial. Thus we might make the observations that our mental software is self-correcting and self-teaching, and also that the study of communication and rhetorical theory, as well as the experience of everyday life, can produce improvements in our programming, whether or not we are aware of the process as it occurs.[13] With these notions in mind, let us proceed to consider the broader question asked at the outset: what categories of information would such a program need to draw from in order to compose effective speech?

Data Bases

Happily for the speech teacher, it is far more the process than the content of our curricula that changes to embrace orality. The four categories of information, or data bases, from which the computer will draw in composing speech encompass most, if not all of the topics ordinarily covered in classical and in more contemporary communication curricula. These categories are subject, audience, style, and what we may call process theory. We review their functions in terms of the computer model.

Subject: The computer cannot operate well unless it has a thorough knowledge of the subject, thus the sort of cursory research facilitated by written memory aids is altogether precluded. Speakers must be familiar not

only with the facts supporting their own positions but also with those supporting other perspectives so that they can process and cope with audience feedback. The difficulty of assignments should be graduated lest such thorough research seem excessive to beginning students.

A first presentation assignment might ask students to draw exclusively on knowledge that is already quite familiar, for example, to tell about interesting experiences they have had. Meeting with success in this endeavor, students discover that they indeed do have "computers" of sorts, and are made more receptive to the notion that the computer's output is only as good as its input: garbage in, garbage out.

As students recognize the necessity of thorough research, they are likely to fall back on the familiar written methods of freshman composition. Since their sources are primarily written, and because they are coping with knowledge framed by literacy, common sense dictates that notes be taken. To whatever extent writing facilitates orientation to subject, it should be used by all means. However, the practice should not be extended, especially not by the novice, into the process of composition.[14] Visual aids, especially to facilitate the presentation of technical material, are quite acceptable, but never in ways that predetermine the interaction.

A second kind of assignment, usually a group

presentation, will further reinforce the students' grasp of just how broad their understanding of an issue must be. Members of a small group directed to reach consensus on public policy toward any controversial issue will inevitably confront the flaws in their ideologies and the multiple realities and fantasies of their potential audience. Subject knowledge must be thorough, and it must be scrutinized with even-handed tolerance. The most persuasive stance must include openness to being persuaded.

Audience: How is the student, as did our amazing oratorical computer, to understand the audience's realities and fantasies? Unlike the computer in our fable, the student is faced with the variations of but a single audience and a single subject. One possible approach is for students to orally compose not just their own speeches but also the speeches their audiences might give.

We should understand the oral composition process as one of loading alternatives into the computer, alternatives to suit a wide variety of possible audience responses and situations.[15] When one composes orally, without pausing to record, without fear of forgetfulness, the task is creative play. The computer stores everything. Conscious access, that is, literate recall, is unnecessary. After careful orientation to the subject, the words will come in a steady stream.

Each time one composes, the speech will be different; each time, the file of available options grows. Again, in order for students to best become comfortable with their computers, early assignments should draw on subjects with which students are already familiar. Thus will they see that, as long as the speaker really "knows what he's talking about," the rest is easy.

Style: And the rest is easy. Just like the amazing oratorical computer of antiquity, the human computer is self-teaching and self-correcting, learning best from its own experience.

When we speak of oral style, surely we should refer not to the speech but to the speaker. Indeed, let us consider that style, as an oral concept, must refer to a speaker's strengths and weaknesses and how that speaker is able to use them in speech situations. Although nonconscious learning may assume the major role in honing a speaker's style, video review and discussion, especially in the company of an artful teacher, can speed up the process significantly.

Students, and especially technical students, are often adjective-poor. Asked to describe their own styles (list their strengths and weaknesses), they are apt to describe their speeches instead. It is often the case that the teacher must tactfully point out a personal characteristic or two before a deliberate self-study of one's style can commence.

Process Theory: Further understanding of the strengths and weaknesses at the student's disposal is facilitated by increased sensitivity to communication process: how others respond to the speaker's messages, and how the speaker responds to the audience. This sensitivity may be cultivated if the teacher is able to identify and explain student responses to each other's speeches immediately after each experience occurs. In other words, by leading students to notice the message process in terms of their responses and then helping them to understand those responses in theoretical terms, a teacher enhances both critical and creative faculties in the student. Integration of improved communication behaviors into the individual repertoire is surely achieved most effectively through immediate processing of actual experience. Perhaps the greatest single virtue of enhancing process sensitivity is that, once begun, it becomes a permanent habit. The student becomes perpetually equipped to learn from every new communication situation. How many college classes can make such an enduring claim?

Here, then, are the four categories of data files, the four kinds of information that must be properly loaded in order to optimize the human computer's functioning: Subject, Audience, Style, and Process Theory. One should note that, far from replacing traditional curricula, these four categories encompass

them quite readily. There is, however, an inevitable shift in emphasis that results, not from the computer analogy per se but from the shift away from literate to oral thought process that the analogy assumes.

A Humanistic Dilemma?

We do so take literacy for granted that the foregoing may, at first blush, seem to have heretical overtones. It is literacy, after all, that has given us the capacity to live deliberately, to willfully apply the powers of reason to the conduct of our lives and of our society. Yet one only needs to spend a few minutes watching the conduct of public business on television to realize that individual participation in that process by reasoning beings is overwhelmingly difficult. Public business is increasingly performance and the actual processes of public decision-making become less and less accessible as a result. Likewise, as Toffler pointed out some years ago, we are personally overwhelmed by too many choices. We are in future shock.[16] A renaissance of orality, even a new video-spawned orality, offers no quick fix as yet. Still, McLuhan and Fiore observed that the establishment usually tries to make new media do the work of the old.[17] Literacy and literate processes simply cannot keep pace with the electronic media and the ways of decision making these new media engender. New ways are

needed and the recovery of our oral powers cannot but help.

There need be no derision of conscious analysis, only recognition that the human computer analyzes out-of-awareness as well and that the human capacity to reason is restricted not so much by one's discipline of conscious thought as by one's capacity to properly load the data. If we truly know what we are talking about, have composed it again and again over sufficient time to permit thorough processing, the speech will always come. If even the least among us can truly make a subject his own, then even the least can be eloquent.

Perhaps the greatest evidence that can be offered to stress the virtue of orality is that the computer only works well in consort with its human belief system. Unlike the limited intentionality of the amazing oratorical computer of antiquity, the contemporary human computer possesses the capacity to evolve and act on an infinite body of potential intentions. Yet if these intentions are not fully embraced, to that degree, the computer falters. We may find it most encouraging, for instance, that sales pitchmen and campus zealots rank among those who are least successful at learning to optimize their computers' functioning. Garbage in, garbage out.

Footnotes

1. However, a grasp of both cognitivist and artificial intelligence perspectives will facilitate use of the model. See, for instance, John O. Greene, "Evaluating Cognitive Explanations of Communicative Phenomena," Quarterly Journal of Speech, 70(August, 1984), pp. 241-254, and Herbert A. Simon, The Sciences of the Artificial, (Cambridge, MIT Press, 1969).

2. I have addressed this issue more completely elsewhere. See "Of That Which We Cannot Write: Some Notes on the Phenomenology of Media," Quarterly Journal of Speech, (February, 1988) in press. Although the present case advocates a deemphasis of written methods in the teaching of speech communication, the underlying difficulty may not be attributable so much to our obsession with literacy as to the problem of language origin and the assumption that language is the distinguishing quality of human being. Sarles argues that the language origin problem is "a system of thought . . . that does not leave itself open to attack, or even discussion. It presumes that language and reason are essentially the same. . . (and) any attempt to reorient the `problem´ is considered to be against `reason´; therefore, irrational." See Harvey B. Sarles, Language and Human Nature: Toward a Grammar of Interaction and Discourse, (Minneapolis: University of Minnesota Press, 1977), pp. 22-24.

3. See Eric A. Havelock, Origins of Western Literacy, (Ontario: The Ontario Institute for Studies in Education, 1976), p.10-12.

4. I especially like Gordon F. Hostettler's discussion of our discipline's virtues. See "Speech as a Liberal Study II," Communication Education, 29(September, 1980), pp.332-347.

5. Maurice Natanson, "The Claims of Immediacy," Quarterly Journal of Speech, 41(1955), 133-139.

6. See Harold A. Innis, Empire and Communications, revised by Mary Q. Innis with a foreward by Marshall McLuhan,(Toronto, University of Toronto Press, 1972); and Walter J. Ong, Rhetoric, Romance, and Technology, (Ithaca, N.Y.: Cornell University Press, 1971).

7. Walter J. Ong is unquestionably the foremost scholar of orality. See his Orality and Literacy: The Technologizing of the Word, (London: Methuen and Company, 1982), especially pp. 31-77. For a fine study of a contemporary oral culture, see Robert Shuter, "The Hmong of Laos: Orality, Communication, and Acculturation," in Larry A. Samovar and Richard E. Porter, Intercultural Communication: A Reader, 4th edition (Belmont, Cal.: Wadsworth Publishing Company, 1985), pp. 102-109.

8. Hostettler, p. 333. Also see Richard B. Gregg, Symbolic Inducement and Knowing: A Study in the Foundations of Rhetoric, (Columbia, S.C.: University of South Carolina Press, 1984), pp. 62-63.

9. See Ong, Orality and Literacy, pp. 78-116; Alexander R. Luria, Cognitive Development: Its Cultural and Social Foundations, Michael Co.. ed., trans. by Martin Lopez-Morillas and Lynn Solotaroff (Cambridge, Mass.: Harvard University Press, 1976), pp. 1-175.

10. Havelock, Preface to Plato (Cambridge: Harvard U, Press, 1963), pp. 198-200.

11. See Marvin B. Scott and Stanford M. Lyman, "Accounts," American Sociology Review, 33:1 (February, 1968), pp. 46-62.

12. One may smile at the problemmatic theoretical issues that derive from combining behavioristic and cognitive approaches in an adr tedly simplistic fashion. Our purpose, mind, is pedagogical rather than theoretical.

13. I am indebted to Professor William S. Howell of the University of Minnesota for many ideas on out-of-awareness processing. See his The Empathic Communicator, (Belmont, Cal.: Wadsworth Publishing Company, 1982).

14. The expert speaker striving for interactivity will of course understand the perils of written composition and may thus use writing freely for other purposes.

15. For a pedagogy of Oral Composition, see W. Lance Haynes, "O-I-C: An Orality-Based Approach to Interactivity in the Basic Course," ERIC (June, 1986).

16. Alvin Toffler, Future Shock, (New York, Random House, 1970).

17. Marshall McLuhan and Quentin Fiore, The Medium is the Massage, (New York, Bantam Books, 1967).