Banquet Address—CALICO '89 at the U.S. Air Force Academy

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Editor's Note
The views expressed in this article are the author's and in no way represent the views of the Department of Foreign Languages, the United States Air Force Academy, or the United States Air Force.

Introduction
After Frank Otto found out last evening that Mrs. Kenny would be unable to be with us here, he called to ask if I would speak to you and discuss the various projects that we have underway here at the Air Force Academy. I told him I would be glad to, and I will do as he requested. But I simply cannot pass up a captive audience without making a few points that are on my mind at the present time.

First of all, I would like to express my regret that Mrs. Kenny was unable to be with us and also express my gratitude for the things she has done, both for CALICO and for our efforts here at the Academy, in promoting the use of technology in the foreign language learning process. Things have indeed come a long way since she first decided to do something in this area, and a good deal of what has happened is a direct result of her involvement.

Secondly, from time to time I hear of some negative feelings about the involvement of the Department of Defense in efforts to further foreign language teaching. I have to say that my own personal political philosophy says that federal government intervention in things should be avoided whenever possible. I say this despite the fact that it pays my salary.

But there is one area, I am sure most of us will agree, where its involvement is essential: our mutual defense. Ensuring our common defense is certainly justifiable, and of course foreign language skills constitute a crucial element that enables us to carry out this important mission. Perhaps some would like to see DoD involvement decreased in this area. But until American businesses, university administrators, and school boards understand the importance of foreign language study and the benefits to be gained through the use of technology in its teaching, we should be grateful that DoD assumes the role it does. As Richard Lambert (see June, 1989 issue of the CALICO Journal) said in his opening remarks at the start of the conference, we need to be less
concerned as a country with how we teach languages and more concerned about how we are organized as a country to teach them.

Complaints

As I said, I cannot be in front of such a captive audience without saying a few things that are on my mind. I would like, therefore, to lay out a few beefs that I have.

First, I am really tired of the difficulties we are having with video distributors concerning videodisc pricing and distribution issues. "There is no market for videodisc," some among them say. Yet, as far as I know, in every disc project in which we have participated, any extra discs that were pressed for later sale have been sold. Not bad for a non-existent market!

Concerning pricing considerations, there is no reason that the per copy costs for video materials for use in interactive videodisc workstations should be the same as single copy prices used in more traditional circumstances. A couple of years ago a person at one of the video distribution houses was complaining that they had made no money on an arrangement they had made with us. "How much money would you have normally received from us had we bought the programs to serve the same number of students in a more traditional manner?"

"Six thousand dollars," was the reply. I could not resist:

"Well, I don't have to be a PhD in math to figure that, since you received a check from us for fourteen thousand dollars, you had to have made money. Here we are serving the same students who would have watched the films in the normal way, costing us less money, and because we want to use the materials interactively (requiring multiple copies of the same materials) it cost us more than twice what we would have paid! Don't tell me you didn't make any money!"

Distributors have got to be creative about how they price their wares, working out what amounts to "site licensing" arrangements that will help learning centers afford the materials. I would like to express my appreciation for the work that Annenberg is doing to help provide materials at affordable prices. Their support of PICS is a good example. I also understand that they came close to using a conventional distributor for "French in Action" but decided to do it themselves. As a result, an institution pays today as little as $650 for a set of tapes ($1500 if they wish to copy them) rather than the several thousand dollars we might have had to pay otherwise!

Secondly, I am weary of the endless debate over the "right way" to do interactive videodisc. No doubt there exist ways that are better than others, but we are not yet able to define these ideal methods with any great degree of certainty. This is one of the reasons it is imperative that we conduct research. A
lot of solid studies will be necessary if we are to figure out what works best.

In searching for ways to study the process, we have already learned two simple things. First, students themselves can be an invaluable source of information, and secondly, getting at the information is fairly straight-forward. We can observe the students as they work and we can ask them simple questions. In fact, observation is one of the most rewarding things we are experiencing as students use our learning center. Two things, seeing their faces as they work and having them tell us how much they enjoy the experience, make worthwhile all the effort of building the center and creating the software.

Another of the lessons we are learning is that the only way to learn how to do interactive videodisc is to do it. We have started with simple instructional strategies and guess what? The kids love the experience! And our initial studies tell us they are learning. Were it otherwise of course, we would not have built the center. The result of all of this is that we have hundreds of students using the center each day.

Also, we have to be practical! I was speaking with the developer of what I consider to be a very attractive and exciting interactive videodisc application. I told him I liked very much what I was seeing and then asked him how much effort it would take to do a second program like the first. He said if he had his way he would never ever do another application like that again as long as he lived! He described it as having taken too much out of him, and he has no desire to start the process again.

The situation is similar for agencies that have funded interactive videodisc development. Agency leadership has been willing to fund one or two projects, but the high cost of materials development makes them hesitant to do more. While no one really questions the value of interactive projects, high up-front costs make the value less apparent.

To help solve this problem, we are working hard at the Academy to develop a base-line technology that will enable us to cost-effectively develop materials of the sort we are developing today and to move beyond these simple approaches to more exciting ways to use interactive media. To do this, we are defining tools that will facilitate the inclusion of materials from multiple sources, initially from text databases and eventually from audio- and video-oriented databases.

While there is not yet enough research to define the best uses of the technology, we are concerned with how some of us want to apply it. As John Fought at the University of Pennsylvania says, "Deciding between potential uses becomes an ideology of control: as teachers, we don't want to give up the control we currently have." But no matter what we do, control will remain solely within the purview of the student.
For example, many of us as teachers want to teach language by pouring our content into the heads of the students. And probably the easiest way to do this is to teach grammar. But teaching grammar for grammar's sake is no fun no matter how we do it: in the classroom or via the computer. This amounts to teaching students about language.

On the other hand and as I will explain a little later, we are working to define the role of technology in a setting where our goal is to facilitate acquisition. Given this goal, we recognize that the role of the student in the learning process changes drastically from where things stand currently. While grammar can play an important role in this process as a means to an end, it is not used as an end in and of itself.

**Research at USAFA**

As I said before, learning technology’s appropriate uses requires that we conduct a lot of solid research. Along this line, Frank specifically requested that I discuss some of the projects that we have underway here at the Air Force Academy.

But first, let me echo Colonel Cubero’s opening remarks of this Symposium— this is your Academy. In keeping with the spirit of that statement, we would like you to know that if you are interested in conducting research on the development of interactive videodisc technology, you have access to the language learning center that we have put together. We want to work together to this end with as many people as is practical, and there are essentially three ways for this participation to take place.

First is our Visiting Professor’s Program where we work through the Intergovernmental Personnel Act to pay institutions to have their faculty join us here for one year. We will be bringing in one Visiting Professor per year, normally someone holding the rank of Associate Professor at their home institution.

A second way we are just now finalizing is for professors to join us during a regular sabbatical leave. As an example, Dr. Frank Kepler from the University of Northern Colorado will join us from June through December. Under this arrangement his salary will be paid by his institution as part of his sabbatical, and we have secured a small honorarium that will help cover the extra expenses he will incur.

A final way is through collaborative research projects that individuals can propose to conduct here with us. If needed, it is possible that we can jointly seek funding. Information on how we will proceed with this is forthcoming.

Here is the list of the projects that are currently underway or that have been recently completed.

1. We have a project with a PhD graduate student at The University of Pennsylvania on phonological encoding and the relationship between students’ grammatical accuracy in a second language and
their ability to perceive and produce sounds of the target language.

2. One of our own instructors, who we sent to work on his PhD at Utah State University, is comparing vocabulary acquisition of words contextualized using visuals with words learned through the use of mnemonics.

3. As part of a project we are conducting with the City University of New York, we are working with a PhD graduate student from the University of Georgia on validating a model of instruction via interactive videodisc.

4. With a faculty member at The University of Pennsylvania we have a study underway on assessing the relationship between language comprehension and acquisition in an interactive videodisc environment.

5. We are entering into an agreement with the Language Laboratory at Yale University to work on developing interactive videodisc materials using the "French in Action" video series. With the help of the US Army Training Support Center, we have already secured the pressing onto videodisc of the first 26 half-hour programs.

6. One of our former instructors, who is working on her PhD at the University of New Mexico, has collected data on the effects on listening comprehension of visual cues obtained using videodisc.

7. A PhD graduate student at Purdue University is assessing the effectiveness when learning via interactive videodisc for two arrangements of students: working as individuals as compared to working together in pairs.

8. As part of our efforts in the development of a technology for producing cost-effective interactive instructional materials, we are conducting a study for the Air Force Systems Command on the use of compact disc for training and information distribution.

9. Finally, we are conducting a study for the Third US Army on assessing how much Arabic can be taught during a ten-day intensive program.

**Main Thought**

I would now like to leave you with my main thought for the evening. We are engaged in a paradigm shift in the way we handle information: not unlike
several others that have happened over the past couple of thousand years. And each has come with much resistance, a normal occurrence whenever change is imminent.

To illustrate, I would like to tell you a story. I am from Alabama and I spent a major portion of my early life in a small town called Tallassee. My father graduated from high school in a slightly larger town called Wetumpka. For many, many years houses in all Southern towns such as these had porches. I would like you to picture an elderly gentleman, the patriarch of his small town, sitting on his front porch one evening trying to beat the summer heat. To capture the importance of the occasion of his 100th birthday, a reporter was interviewing him for the local weekly newspaper. "Mr. Smith, I guess in your one hundred years you have seen a lot of things change, a lot of progress." "Yes siree, Sonny. And I’ve fought it every step of the way." I am proud of my Southern roots, and I don’t have to look there exclusively to find that people are basically conservative.

Let’s look at two previous major paradigm shifts that have drastically changed the way people look at and handle information. The first and of utmost importance, of course, was the invention of the writing system. Plato recounted how Socrates lamented the effects of writing on memory in a dialog between Phaedrus and Socrates. There, Socrates recounts how Thoth, the Egyptian god who invented letters, had not properly assessed the effects of his invention and was reproached by the God Thamus, then King of Egypt:

This discovery of yours will create forgetfulness in the learners’ souls, because they will not use their memories; they will trust to the external written characters and not remember of themselves. The specific which you have discovered is an aid not to memory, but to reminiscence, and you give your disciples not truth, but only the semblance of truth; they will be hearers of many things and will have learned nothing; they will appear to be omniscient and will generally know nothing; they will be tiresome company, having the show of wisdom without the reality.


If anything, however, the change was not immediate, due to the difficulty of hand-copying of texts that was required. Indeed, it is said that St Thomas of Aquinas memorized everything his teachers had told him in school.

The advent of movable type in the Western world was another paradigm shift that was not welcomed by all. Educators were concerned that learners’ education would be incomplete if they came to rely too heavily on the use of the printed page.
Relative to the invention of movable type, I would like to tell you a story about what could have been the first effort to spread the new invention. While the story is apocryphal, it does serve to illustrate my point. I attribute it to Georges Broussaud, the father of Thomson CSF’s transmissive videodisc.

King Charles VII of France wanted to learn of the high-technology recently invented by Gutenberg, so he sent his emissary on a fact-finding trip. The emissary returned several months later to report on what he had found. "Well," said the King, "What do you think of this new, high-tech stuff called movable type?" "Interesting," replied the emissary. "Only interesting?" said the King. "Yes, Sire. It is very interesting indeed, but it is going nowhere.,”, said the Emissary. "Why on Earth not? If it is interesting, why isn't it going anywhere?" exclaimed the King. Replied the Emissary, "First of all there is no distribution channel, no way to insure the sale of the books that would be printed. Finally, Sire, people can't read!"

What happened, of course, was not far removed from this story. While it is said that Gutenberg’s invention took place about 1456, it was not until the early 1500’s that the first book shops started to appear, and then only in the larger cities.

Yet the invention of inexpensive books contributed significantly to the existence and eventual spreading of the Renaissance. This movement shifted importance to the individual, preparing the way for the Enlightenment when the rights of men as individuals were to be acknowledged. This shift of focus to the individual, combined with the advent of the Industrial Revolution, caused education to be democratized. The resulting changes in the educational system enabled the transition that had to be made if people were to leave the farm to work in the factories. According to Toffler in *The Third Wave*, something had to be done to teach people who came chiefly from farms to report to work on time and to perform their repetitive tasks without too much complaint, tasks greatly facilitated, he says, by education.

Tremendous changes ensued in the way people learned. Previously, only the wealthy were able to attend school, insuring that classes remained small. The democratization of education, however, dictated that the traditional model, one that previously consisted of a mentor and perhaps six or seven learners, was to be applied to large classrooms. This print, rather than the spoken word, became the primary mode of learning.

And so things have continued to the present. But Mary Alice White of Teachers’ College at Columbia University tells us that this reliance on the printed word is quite artificial. While man has learned from image and speech for
thousands of years, he has learned from print for only the past few hundred years. We can easily believe that something interesting is going on as we see our children today returning to patterns established in man's past, gluing themselves to the television, losing themselves in that multisensory experience. Should we be surprised? Absolutely not, for it is in our genes! But we see today an educational system that does not reflect our natural modalities for learning, or, try as it may, does not really address the needs of the individual.

To place all of this in proper historical perspective, let us look at two explanations for the current situation, returning first to the Industrial Revolution. Educators of that period, inspired by what they saw going on around them (or at least working to meet the demands of the factory) and aided by the easy availability of books, applied the mass production model to education. R. Buckminster Fuller places the beginnings of our current system elsewhere, stating that Colonial schools were an easy way to take care of many children at once, protecting them from the physical hazards of the day. In either case, the students were treated as a group, not as individuals.

The irony of this situation is that while the Enlightenment focused on the rights of the individual, the accepted model for education placed tens of students in a single classroom, treating them all the same. While this approach provided many with an educational experience they would not have otherwise had, it applied the principle of mass production in a situation involving the complex web of individual differences that typifies classrooms, today just as in either of the above settings.

The concept of individualization we are looking at here has made its way into much more trivial aspects of modern life and is documented by John Naisbitt in Megatrends. He entitles the trend "Either/Or to Multiple Choice" and shows how people today address their individual tastes in a myriad of ways, from choices in television viewing (cable TV and video rental outlets) to soft drinks. It was not that long ago that the main soft drink choices were Coke and Pepsi. When was the last time you walked down the soft drink aisle in your supermarket and thought about the unbelievable variety that is available? There is something for every taste, whim, or fancy!

And yet we subject each of our students to the same flavor of education, to the same process within each of our classrooms. As educators we pay lip service to individualization, but today's paradigm of educational delivery systems cannot address this very fundamental problem. Articles in a recent issue of the Kappan seem to come to conclude that while technology is not the solution to problems faced by education, there is no solution that does not involve the use of technology.

This use of technology is the paradigm shift that most educators face today. To make the appropriate adjustment, they must significantly change their frame of reference, substantially modifying the way they do business. We tell
visitors to our Language Learning Center that technology will not replace teachers, but rather it will change the way they do their jobs. One visitor changed this slightly to say that although technology will not replace teachers, teachers who use technology will replace those who don't.

But we all know these things and accept the existence of this paradigm shift. Otherwise we would not be here tonight. For after all, we are gathered at the Annual Symposium of the Computer Assisted Language Learning and Instruction Consortium. In fact I was a bit worried about "preaching to the choir" about the need to make changes in the current educational paradigm.

But then I decided that I would do well to address the need for a mini-paradigm shift. Those of us here tonight have already made the big jump, but we still need to look at things differently. Let's develop new ways to attack the problem.

At lunch yesterday, John Underwood described an exciting hypermedia environment and talked of ways we might use it. The really exciting thing is that all of this will get cheaper, but the problem is that we don't fully understand how to use it. We need to do the research to find the right ways. As my friend, Dr. Gabe Ofiesh, likes to say, "Let's not automate the past!"

I mentioned earlier Dr. John Fought's notion of "Ideology of Control." This points to what I consider to be a serious problem in that we are having trouble giving up "teaching." Rather than seeing ourselves as teachers, we need to see ourselves as facilitators. To explain this point, we have formulated a statement that explains how we here at the Academy wish to use our Language Learning Center:

Our purpose in using interactive videodisc as an instructional medium is not to "teach" language per se, but rather to "facilitate" language acquisition, by broadening the range of comprehensibility of video materials for use by a wider range of learners than would ordinarily be possible using conventional means.

This approach is somewhat of a drastic departure from the "normal" way of doing things. What will it take to make it happen? There are at least five things that when taken together enable the necessary changes to take place:

(1) Standards,
(2) Broad Outlook,
(3) Research,
(4) Collaboration, and
(5) Open-Architecture.

One of the first things we need to consider is finding standard was to configure our hardware and software. For hardware this means adopting
standards like a 640 X 480 screen resolution. For software this entails adopting standard character sets and file structures. There are new ways of representing data that will help us all do a better job. Let's do it the same way!

The second area, Broad Outlook, refers to the fact that not enough is known about how people actually learn languages. To find answers to critical questions, we need to consider the areas of learning theory and cognitive psychology to sort through the implementation issues we face.

Closely related to the concept of "Broad Outlook" is the need for research. I mentioned earlier our commitment to this notion here at the Academy and invite you to respond to ways that can help us all learn more about how to go about implementing technology in the instructional process. As we often say, for the moment we have more questions than we do answers. In fact we are just figuring out what the questions are that need to be addressed. Doing this right will help us learn a great deal more about how people actually do learn languages.

The need for "Collaboration" comes from the fact that we are all so strapped for resources. Thus, the last thing we need in our field of applying technology to language learning is the "Not Invented Syndrome." There is no room for re-inventing wheels. If any of you insist on doing work that might be construed as such, please make sure that what you are attempting to create is indeed conceptually better than what was previously available. And whatever we do, please, let's do it together.

Finally, if we are to all benefit from each others' work, we need not only standards but also ways for the tools we create to collaborate under common user interfaces. This is done most effectively using standard operating systems such as those for the Apple Macintosh and Microsoft Windows or OS/2 Presentation Manager for MS-DOS types of machines. Our research here at USAFA has convinced us that when processes can work together in an open-architected and window-oriented system, great gains in user productivity can be obtained.

In closing, let me say that the future is bright. Things such as interactive videodisc are proving to have great potential in motivating and in facilitating the learning of our students. The bad news is that it is an expensive technology to implement at present. The best news is that there are several compact disc-based technologies that promise to significantly reduce costs in the very near future. But let's not wait for the future to come to make progress. The work we can do right now will lay the groundwork for these technologies when they become available. Someone could hand us right now a cheap box that might do everything we could dream of. The problem is that we don't really know what is best. Let's go find out what is.

Thank you for listening.
Author's Biodata

Lt. Colonel Michael Bush has a very wide range of experience in the uses of high technology in education. He graduated in 1972 with a BA in Political Science from Brigham Young University, was awarded an MBA from the University of Missouri in 1976 and a Ph.D. in Foreign Language Education and Computer Science from the Ohio State University in 1983. Presently, Lt. Col. Bush is serving as Deputy for Research in the Department of Foreign Languages at the United States Air Force Academy.

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