THE CAVES OF AJANTA: India's treasure of art and history

Preparing to meet the Buddha incarnate.

(See story on p. 8.)
Speakers of the world’s 3,000 to 4,000 languages refer to their own languages as their mother tongues.

Many are aware that their mother tongue has cousins because closely related languages are often spoken in nearby lands. English, for example, may be called a cousin of Dutch, German and Swedish.

And persons with an elementary knowledge of linguistics know that their mother tongue also had a mother: The prehistoric language we call Germanic, the mother, or proto-language, of English, Dutch, German and Swedish.

Germanic, along with such other proto-languages as Celtic, Balto-Slavic and Indo-Iranian, is a daughter of an even older proto-language—Indo-European. The Indo-European languages constitute today’s most widely spoken linguistic family.

Until quite recently, though, even experts believed that we could not trace our linguistic family tree back any further than Indo-European. Researchers stopped at around 5000 B.C. with many presumably unrelated families, Indo-European being one of them.

But some linguists say this is a short-sighted view of our linguistic ancestry. They contend that through meticulous, systematic comparisons of the stabler roots of the world’s known languages, the conventions of logico-mathematical deduction and postulation allow experimental reconstruction of languages even more ancient than Indo-European.

Linguists with this view from the Nostratic School. They hold that in the early ‘60s two Soviet scholars reconstructed a language—called Nostratic from the Latin for ‘our’ (noster) — that was spoken around 12,000 B.C. They call Nostratic a proto-protolanguage, the mother tongue not of Indo-European but perhaps of six other macro-families of languages long thought to be distinct and unrelated.

Furthermore, they believe it is plausible, even probable, that the remote genetic relationships between Nostratic and the other proto-protolanguage families can be established. Such an achievement would involve reconstruction of an even earlier language of which Nostratic was an offspring—a proto-protolanguage spoken 25,000 years ago.

These and related discoveries in linguistics, says Prof. Vitalii V. Shevoroshkin, who describes the development of Nostratic theory and research in this article, may ultimately unearth a primordial language of mankind. Some linguists theorize that such a language was spoken in Africa 60,000 to 50,000 years ago, but evidence for this supposition remains skimpy.

In any event today’s research into our linguistic past provides evidence that conforms with and buttresses biological, anthropological, historical and other emerging knowledge about the common ancestry of human beings.

“The fact that we are in a human family appears in the family of languages,” Shevoroshkin says. “It is logical to assume that all languages are ultimately related, rather than that very many languages have nothing in common.”

Since most Nostratic theory appears only in Russian, Shevoroshkin and a U-M colleague, Prof. Thomas L. Markby, have published this year an English translation of a collection of such works, Typology, Relationship and Time (Karoma Publishers, Ann Arbor).

Professor Shevoroshkin will survey many language families and linguistic theories in a new introductory undergraduate course this academic year. Linguistics III: Languages of the World. — John Woodford.
The Nostratic Languages

Peppe greeted the Soviet linguists' discoveries with enthusiasm.

But let us return to Nostratic.

Since there were no other cultivated plants in Nostratic, one may suppose that the "Nostratic" gathered plants and used them for food but did not cultivate any. Nostratic also had no words for domesticated animals. Thus, in the Upper Pered Stog Stone Age (around 13,000 B.C.), the Nostratic people apparently hunted, ate their domesticated animals, and the dog, feline, which came to be applied more to domesticated mammals and the wolf in most other Nostratic offspring. In Indo-European, they have word, the genitive form of a word: in Latin, the parking lot, "wolf," and the feminine form of a word: in Latin, the parking lot, "woman." Again, in the Indo-Eu- ropean, the Nostratic "k" is "cat" becomes "bat," "dog," and "woman.

The Nostratic "k" (and "l") becomes in the Afro-Asiatic languages Early "l" (one of the wives). The Nostratic "k" (and "l") becomes in the Afro-Asiatic languages Early "l" (one of the wives). The Nostratic "k" becomes in the Afro-Asiatic languages Early "l” ("one of the wives.

But let us return to Nostratic.

The stablest 15 meanings were words for the stablest meanings in the world. They were the words for "one," "two," "three," "four," "five," "six," "seven," "eight," "nine," "ten," "eleven," "twelve," "thirteen," "fourteen," "fifteen," "sixteen," "seventeen," "eighteen," "nineteen," and "twenty."

The Indo-European word probably arose in the Near East, in the Aramaic, which is related to the Arabic and Hebrew.

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Reflections of a Hittitologist

Vitalij Shevoroshkin discusses the Russian mind, Stalin the linguist, ancient Carian writing and an Egyptian tomb

By John Woodford

Prof. Vitalij Shevoroshkin hopes recent Russian achievements in comparative historical linguistics will inspire American linguists just as the Soviet Spatnik helped launch U.S. space science 30 years ago.

"Until recently, only very few American linguists showed interest in research establishing remote relationships among languages or even experimentally reconstructing Nostratic [see preceding article] or other languages that predate Indo-European," says Shevoroshkin, who immigrated here from the Soviet Union a dozen years ago after "getting a little too much into politics.

Since most American linguists consider such investigations to be fruitless, "funding has been scarce in this area in the States," Shevoroshkin adds. Of the 30 or so of the world's scholars engaged in this work, he estimates that at least half live in the Soviet Union, eight in the United States and most of the rest in Eastern Europe.

Shevoroshkin suspects that some Western, especially American, resistance to the theory of and research into a common genetic foundation for all languages arises from the "rigidity of established patterns that bar any pioneering ideas, as well as from the collapse in the U.S.A. of long-range comparisons of the 70s, which were performed without any strict methodology."

When Shevoroshkin taught at Yale before coming to U-M, his department "told me not to discuss Nostratic theory in my classes," he recalls with bemused disbelief.

Shevoroshkin says his U-M colleague Prof. Thomas Markley of the Department of Germanic Languages and Literature thinks some nay-saying scholars could believe that the Nostratic hypothesis springs from ideological rather than scientific motives.

"This research is squarer in the Russian scientific tradition," says the lean and bearded scholar, whose whole being seems to respond to the energy of ideas at play. "The Soviet Union has a number of outstanding theorists in linguistics, just as in chemistry and mathematics, because these are fields relatively free from political pressure.

"In the Soviet Union, you can spend a lot of time just sitting and thinking about what interests you, keeping it to yourself as you like. It is a culture where energetic and imaginative people cannot channel these drives into entrepreneurial activity. This was true also in older times under the czars. That may, in part, explain why the Russian theoretical mind is very strong."".

His homeland's openness to controversial linguistic theories is also a consequence of the fact that its more than 130 ethnic groups speak approximately that many languages.

"The U.S.S.R. is a great language lab," Shevoroshkin continues. "But there has always been a deep interest in languages and history in that region. Even Lenin and Stalin wrote about linguistics — Lenin did so with some merit. Stalin's writings were done by somebody else.

Shevoroshkin's specialty is the Itinian languages of an empire that flourished from 1600 to 1200 B.C. in Asia Minor. More particularly, his field is the Hittite-Luwian, or Anatolian, family of Indo-European languages, and most particularly his subject is Carian.

The Carians were sea-faring merchants and mercenaries who lived 2,500 years ago on the southwestern coast of present-day Turkey, straight across the Aegean Sea from Greece. From 1200 B.C. or so until their assimilation by the Greeks around 300 B.C., the Carians were often dominated by neighboring cultures.

"Not much is known of Caria's history," Shevoroshkin says. "Its capital was Caunos, and we know the names of some Carian kings and many people from Greek sources. The most famous was Mausolos, whose tomb was the original Mausoleum at Halicarnassus, one of the Seven Wonders of the World."

The Greeks considered the Carians barbarians, an attitude that may have contributed to the long-held assumption that the Carians borrowed their alphabet from the Greeks. Only in the last two decades have Shevoroshkin and other scholars discovered enough Carian inscriptions to contend that the Carians developed alphabetic writing before the Greeks, that any significant borrowing between the two was done by the Greeks.

"The Carian inscriptions indicate that the Carian alphabet was closely related to other alphabets used by the Southern Semites around what is now Southern Yemen and the Sinai region," Shevoroshkin says.

Carian often wrote their names, and even some frequent verbs, using only consonants and omitting vowels. That is a significant feature of Semitic writing. For example, the name "MUSNIR" could be written "MSNR". Vowels, too, were often dropped from frequent words, like verbs meaning "write", "bore", and "spoke".

"The Carian writing seems to be quasi-alphabetic, because the vowels are not always written," Shevoroshkin says. "When you study Carian texts, you feel the origin of the vowels taking place, you feel you are witnessing the separating of sounds from the consonants in their writing."

The Carian writing system has convinced Shevoroshkin that Anatolians were closer to the origin of the alphabet than were the Greeks, that the alphabet emerging in Carian must have influenced Greek writing.

Shevoroshkin has discovered about a fifth of the 250 known inscriptions in Carian, mostly on tombs, temples, houses and other artifacts of the Carians in Egypt. Since there has been no digging in the former Carian region of Turkey yet (the first began this summer), most known Carian inscriptions are on Greek and Latin artifacts from Egypt.

Aided by U-M Rackham and National Science Foundation grants, Shevoroshkin has found 50 new Carian inscriptions in Egypt since 1983. His most recent find was really made by his wife, Galina, last December near Luxor. They were in the Tomb of Muiuhy, at the site of the Valley of the Dead of ancient Thebes, an appropriate setting for serendipity, as Shevoroshkin vividly recalls.

"After two hours, we had finished checking on 20 previously recorded inscriptions. As we left, we walked past a passage that had recently been cleaned out. Suddenly, my wife stopped, turned back and said, 'Look, there are some Carian inscriptions that we reached by sailing on feluccas up the Nile,' Shevoroshkin reports.

ALMOST NO ONE is working in the Carian language — just a Hittitologist here and there, like me," says Prof. Vitalij Shevoroshkin, who will teach an introductory linguistics course this fall.

TT ACTUALLY my wife, Galina, who found the Carian inscriptions that we reached by sailing on feluccas up the Nile," Shevoroshkin reports.

Egyptian hieroglyph  Sinai script Old Sem. (north) Name of letter (Hebrew)

[diagram showing letters]

THE PICTOGRAPH of the ox originally meant just that, 'ox'. But over centuries, the symbol turned on its axis and evolved into a letter, becoming the Hebrew aleph (α), the Greek's first letter, alpha, and then our 'A'.

CARIAN writing (novel examples of which are shown here) resembles both the Greek and the older Semitic systems, indicating that further disclosure of the origin of our alphabet is likely to depend upon deeper understanding of South Semitic languages.

"Increased explorations in places like Yemen could be fruitful," Shevoroshkin says.
For information about obtaining the Rogers City students' book, contact the U-M Introductory Composition Program, 444 Mason Hall, Ann Arbor MI 48109.
Phone: (313) 764-0419.
The Strategic Defense Initiative (SDI) is a large and highly visible government program. It is ambitious in its goals, even heroic in the technical challenges it poses. It addresses a problem area in which the stakes are very high, both in terms of the potential consequences and in terms of the investment required. It emerged on the research and development scene abruptly and at a time when resources for research are constrained but scientific opportunities abound. Given these characteristics and the timing, we should not be surprised that it has stimulated controversy.

Consider first three basic ways that the SDI program may have an impact on campus-based research and graduate education. It may influence research direction, research funding and conduct of research.

While broad research objectives are set as public policy via the authorization and appropriation processes of the House and Senate, the scientific community normally participates extensively in the allocation decisions for what specific research to pursue. Their participation may be formal as in the National Institutes of Health (NIH) and National Science Foundation (NSF) processes or more informal as usually used by the Department of Defense (DOD) and the Department of Energy.

In American universities, there is a long tradition that the choice of research direction is the province of the individual faculty member. It is not dictated by the department head, dean or central administration.

Some adjustments to this tradition of individual choice have been accommodated — in the land grant colleges, where some external direction is acceptable, and, of course, faculty do find it acceptable to respond to requests for proposals to conduct a specific scope of work. The choice to respond, however, remains with the individual faculty member, at least in the first order.

Our nation’s science support system was explicitly designed to place this choice in the hands of the individual, not the institution. This system, which differs from that in many other countries, has served us very well indeed.

The magnitude of the resources being made available in the SDI program can, indeed, be underestimated by, attract investigators to work on the specific research problems in areas relevant to that overall objective. For some investigators, no change in research direction is involved. But for others, the availability of funds will stimulate interest in a new direction.

The stimulating large funding opportunities and the challenge of the extremely difficult technical problems can function as a powerful stimulant to research. The SDI has certainly to date provided an infusion of funds and ideas that will not soon be drained away.

CRITICS SEEK TO WEAKEN CLOUT OF THE MILITARY

...
ulus to scientific progress with benefits for both civilian and defense objectives. We have seen evidence that the powerful stimulation in prior years of our R&D history, as for example in the space program, may be modest in terms of an institution's overall objectives, if that support is focused in only one or two departments and if it is the only support in the department, the range of choices for faculty and students in terms of the research problems they address will be curtailed. The challenge to us is to ensure that the quality of the graduate education delivered will be adversely affected.

It is for this reason that many in universities have watched with dismay as the defense R&D budget has increased markedly while the civilian R&D budget has declined over the last several years.

The major responsibility for continuing examination of the roots of our present difficulties lies with those who are charged to deliver the graduate education, that is, the faculty. The principal effect of the SDI program on the funding of research is on the level of support available and on the predictability or stability of support. The priority presently being placed on the SDI program has protected those funded from the 1986 Gramm-Rudman sequestration, but at the expense of other research programs, which had to be cut. In effect, the SDI program, therefore, must be reckoned as opportunity cost, that is, the cost of research foregone for other purposes.

Shifting of priorities and instability in research funding is not uniquely caused by SDI and is not unfamiliar in the U.S. R&D scene. But the magnitude of the shifts and instability at present is unusual.

The ambitious goals and technical challenges of SDI may stimulate some scientists to collaborate with industry as well as to increase the role of external sponsors and institutional lines. The program may also stimulate new research opportunities. Some universities would have to terminate the SDI research agreement if classification were imposed in contradiction to university policies that require open publication of research results.

In such situations, the university must be free to terminate without default or penalty, and the costs incurred or irrevocably obligated must be reimbursed. And finally, the sponsor may, because of the reponsibility of the work on destabilizing weapons systems should not be part of SDI research. Some have also signed resolutions demanding that classified research, the principles of free discussion and full dissemination must be compromised. If the U.S. elects not to participate in SDI research, the disadvantage of not participating in foreign national universities.

All those who are the same fur moral convictions against participating in weapons-related research on campus, those who believe that SDI research is in itself destabilizing, have decided to participate in SDI research. Some of those firmly believe that the project is feasible on technical grounds. They have exercised their right not to pursue such research. Some have also signed resolutions declaring their intention not to participate. Some have urged their institutions to join them in this declaration of nonparticipation.

In research universities we respect and protect the faculty's right to express openly and formally their choice. These are expressions protected by our Constitution in the latter case and by policies also in terms of SDI research. Some universities have banned or barred SDI research or attempted to persuade faculty to undertake the SDI research objectives.

He emphasizes, however, that his quarrel is not with Vice President Wilson, but with fellow faculty members in the School of Engineering and elsewhere who advocate loosening the restrictions in military research. He is hoping that Wilson will take a neutral stance and let the faculty settle their differences among themselves.

It is, therefore, the action and nonaction of the SDI program that is the source of confusion. If the SDI program proceeds, the disadvantages of complete elimination of classified research will not be compromised by the university's freedom to publish the fruits of such scholarly activity. If the SDI program is not launched, the principles of free discussion and full dissemination must be preserved. If the U.S. elects not to participate in SDI research, the disadvantage of not participating in foreign national universities.

The disadvantages of complete elimination of classified research, the principles of free discussion and full dissemination must be compromised. If the U.S. elects not to participate in SDI research, the disadvantage of not participating in foreign national universities.
I

If the Roman Colosseum was built in 10 years and Chartres Cathedral was completed in a generation or so, how long did it take to carve the Caves of Ajanta — 20 years or 200? Such questions pose a challenge for art historians like Walter M. Spink, who must, without recourse to precise chronological records, determine how long it took to construct magnificent monuments of the past.

The 1,500-year-old Caves of Ajanta, a parable of Buddhist devotional halls carved from a rocky cliff, are India's most famous tourist site after the Taj Mahal, but for Professor Spink they are "one of the three or four most remarkable creative achievements in human history."

Spink has reached this conclusion after 20 years of research on this royally commissioned monastic complex. His research has been aimed at a revision of the hitherto chronology. While earlier scholars held that the main phase of Ajanta's construction spanned two or more centuries, Spink has sought to prove that it developed in a burst of activity lasting less than 20 years.

Misleading Visit from Persia

"The original dating stems from a misinterpretation of a cave mural which depicts a group of Persian-looking figures," says Spink. "It was reasoned that, since a Persian delegation visited India in the year 625, the caves must have been in progress during the 7th century."

Spink claims that aesthetic, historical and technological data prove otherwise. Though a few experts still subscribe to the initial date, others are slowly accepting Spink's estimate, an estimate that fosters a new understanding of Ajanta's historical significance.

Spink's analysis of the Buddhist sculpture, painting and architecture in the caves, and of inscriptions and historical documents, has uncovered a consistency of style and iconography that bespeaks a brief period of patronage and production.

Spink believes that the site's florescence coincided with the reign of a single emperor, Harisena of the Vakataka Empire in Central India.

"Harisena, who ruled between A.D. 460 and 480, was in the eyes of the gods the most powerful and important ruler in India, and indeed the world, at that time," Spink says. "He is said to have been an ideal ruler, virtuous, pious and generous. Through his policies he stabilized India and dominated half the subcontinent. Furthermore, the period in which Harisena ruled was the richest and most assured of India's artistic past, a period often referred to as India's Golden Age."

"Given the wealthy patronage of Harisena and others, and the fervent piety and artistic talent of the time, it is reasonable to conclude that Ajanta could have materialized in a brief 20 years."

(Continued on page 10.)
A RICH MONK, Buddhabhadra, commissioned this magnificent worship hall in Cave 26. He left this inscription explaining the motivation behind his and other patrons' funding of Ajanta: 'A man continues to enjoy himself in Paradise as long as his memory remains green in the world. One should therefore set up a memorial in the mountains that will endure for as long as the moon and the sun continue.' These sentiments notwithstanding, Buddhabhadra sided with the rival dynasty that precipitated the fall of the Vakataka Empire and discontinuance of Ajanta's construction.

Computing the Chiseling

Spink also supports his chronology with more concrete evidence. He has attempted to calculate the number of workers at the site and the approximate rate at which they worked. By examining chisel marks in unfinished caves and comparing them with modern working techniques, he estimated the amount of rock a worker could remove in one day. Multiplying this by a force of 100 workmen, laboring eight hours a day 300 days a year, Spink arrived at a figure close to 12 years. This span, plus the additional time needed for decorating the caves, yields a rough total well within the suggested 20 years. This span, plus the additional time needed for decorating the caves, yields a rough total well within the suggested 20 years.

As well, Spink points to the Palace at Versailles. In the halls' varied structure, Spink sees a record of the craftsmen's growing confidence. "From cave to cave one can trace an evolution from simplicity to greater complexity in the handling of materials," he observes. "The initial work on columns, windows and porch facades is rough and cursory, gradually giving way to more intricate and sophisticated designs." While the varying degrees of sophistication have been cited by earlier scholars as evidence for a 200-year chronology, Spink reads them as signs of the craftsmen's rapid evolution, as they moved from simplicity to greater complexity in the handling of materials. "The initial work on columns, windows and porch facades is rough and cursory, gradually giving way to more intricate and sophisticated designs."

The Craftsmen's Confidence

The paintings on the caves' walls and ceilings provide the only surviving examples of the narrative genre from this rich artistic period. Amid the crowded and colorful compositions, one finds both Buddhist and Hindu iconography, pointing to the coexistence and crossbreeding between these two major religions. Stylistically, the paintings reveal a growing mastery of perspective, "a feature of Alexandrian culture that was gradually imported along trade routes from the West," Spink says. "The perspective from Alexandria"

The Way of Siddhartha

Since the caves were commissioned by royal patrons to "rival the palace of the lord of the gods," as one cave inscription reads, they were modeled after contemporary palace structures, providing a record of 5th century architecture and decor. A similar wealth of technical data is found in the caves' paintings, which often depict the Buddha as the young Prince Siddhartha or in earlier incarnations, when he indulged the worldly pleasures of court life. Along with the strong influence of patronage, Spink also detects the presence of other cultural traditions. "These influences were probably brought to the site by pilgrims, monks, traders and artisans who traveled on the nearby trade routes," he explains. "These outside influences are found in the rich variety of painting styles, reflecting the artistic tastes of distant provinces." Spink reads this diversity as a simultaneous creative flourish rather than a gradual progression in time.

The most immediate and accessible feature of the caves is their carved rock sculpture. A host of lesser divinities, devotees, animals and floral motifs are elaborately represented throughout this monolithic complex, but the most prominent sculptures, dominating the central shrines, are images of the Buddha. "As embodiments of human perfection, these Buddha figures provide insight into Indian ideals of beauty," Spink says. "Rendered in an idealized fashion, with smooth rounded limbs, they are admirable 'vessels of light and air.' " While this ideal existed in India long before the 5th century, it was only during India's Golden Age that it became fully realized in Indian art.

The Perspective From Alexandria

The paintings on the caves' walls and ceilings provide the only surviving examples of the narrative genre from this rich artistic period. Amid the crowded and colorful compositions, one finds both Buddhist and Hindu iconography, pointing to the coexistence and crossbreeding between these two major religions. Stylistically, the paintings reveal a growing mastery of perspective, "a feature of Alexandrian culture that was gradually imported along trade routes from the West," Spink says. "The perspective from Alexandria"
LETTERS

The pleasure of recognition

NOW THAT I have two copies of the June 1986 Michigan Today, I will enjoy sharing them. I know Professors Sadler and Cooley of the Department of Naval Architecture and Marine Engineering when I saw them; I was in college when Robert Frost brought the other poems here; I know Stella Osborn. The coed to the right (on the Whimsies board) is my oldest friend, Frances Swain Hayne, and the one to the right of her is probably Yuki Osawa. (Computers could save the U-M a lot of paper and postage if they could decide that the two addresses recorded on the reverse of this card represent just one person.)

Marjory H. Drake
Ann Arbor

We thank you and our other readers for attempting to eliminate duplicate mailings. Despite ouro computers (or because of them), this goal is still impossible in cases where individuals' names are on the data bases of two or more computers. We cannot remove such names from any of the data base lists without affecting mailings by other U-M units. We regret that story and hope readers will pass the extras along to nonrecipients. — Ed.

Robert Guzler
Chicago

A question of evil

BERNARD W. Gans's excellent question (letter, June), "Why do the lead articles in Michigan Today give credence to evil geniuses (Soviet and Moslem leaders) of our age?" deserves to be answered. Irving Kristol offers one explanation in "American Universities in Exile" (editorial pages, Wall Street Journal, June 17). It is fine that alumni and friends be left in on the little secret that, according to Kristol, "the faculties at most of the major universities and prestigious colleges... have moved rapidly and massively to the left over the past two decades.

Cyrus J. Shaver
Graduate School ’55
St. Davids, Pennsylvania

ROBIN Wright (in the March issue's "Sacred Rage" that we must neither our relations with militant Islam, but she fails to tell us what the bastards want. By yelding us and Western ideas. I doubt they know themselves. This was not a very helpful article and you will want to do better. More accurately, she will. I enjoy the publication, especially the earlier lead story on Roman life.

Robert Guzler
Chicago

PHOENCIAN TILE shows ramming device that is known as a bulbous bow in marine engineering.

The Victors at Sea

I JUST got your latest edition, and it was as fascinating as ever. It is always a pleasure to read about our Arboret. I was one of those who participated in the Coast Guard life jacket test in the towing tank in West Engineering (in the June issue’s cover story, "The Victors at Sea," about the Department of Naval Architecture and Marine Engineering). Boy did that story bring back memories.

Monica Ann Merva BSE ’84
East Lansing, Michigan

Delighted by 'God'

I WAS delighted to read your excellent article "Who Killed God?" in the March issue. It is not easy to analyze, explain and interpret a book as profound and complicated as James Turner's. You did it in a most effective and enlightening way. Every reader should be grateful for the valuable new philosophical and religious perspectives you provided. Such a stimulus to thought in religion is much needed and most timely. The article reminded me of Thomas Jefferson's admonition, "Questions with boldness even the existence of a God; because, if there be one, he must more approve of the homage of reason than that of blindfolded fear."

I had planned to write you earlier, but did not get around to it. However, after reading in the June issue the letters commenting on your article, I was prompted to write: I was appalled by the stereotyped fundamentalist attitudes revealed in most of the letters. Aarne K. Lahtil was a wonderful exception. Lahtil has done some thinking.

Michigan Today has become a highly interesting and stimulating publication at a time that you will continue to produce articles that will generate thought and challenge outdated stereotypes.

Wendall W. Haner
Mountain Home, Arkansas

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Michigan Today - May 1986


ded in front of room, 1-3 U-M Brunt (Os-

bourn, France) Swain (Hayne) and Yuki Osawa (Otsukii), and in the rear, Lyndon B. Johnson (left) and Lawrence H. Conard (right).
THE LEARNING TOOL: AN IDEA PROCESSOR

By Frank Blanchard

Students can type their notes from class into a computer, then use a U-M "idea processor" to study, sort text for concepts, based on the latest research in cognitive psychology, learning and memory, said John Van Roekel, former manager of U-M's Computer Aided Engineering Network, who worked with U-M education professor Robert B. Koza to develop the program. "It's an electronic notebook that also helps you learn."

The program can be envisioned as stacks of blank index cards waiting to be filled out, cross referenced and filed. But the Learning Tool can be manipulated much faster and in more ways than cards. For example, the program will automatically find and display text when the user enters a key word. To set up the electronic notebook, the user creates a "card" by typing a note card name on the left side of the computer screen. Then a card name can appear on a card map, which appears in a window on the right side of the screen. The user can then "open" the note card, marking it expand to fill the computer screen, create text and test graphics. The map window on the screen can be manipulated any time by moving the names under a single name on the map window for details. Interested persons may contact president's clubs around the country.

A's, contact John Grubb, 577-4333.

Sept. 11 kick-off luncheon, contact Walt Sigler, 782-1122.

Muskegon: Aug. 23 family potluck, contact Steve Marshall, 774-0907.

13 TV football party, contact Dick Hurst, 323-8020.

Dame game TV party, contact Ed Morrill, 774-0907.

Grayville, 323-8020.

Sept. 13 Notre Dame game TV party, contact Ed Morrill, 774-0907.
I have always been concerned with documenting some parts of people's lives in my photographs. This photo essay on death and dying in America came about as the result of my befriending John Barnwell, a young man in Massachusetts who is dying from internal neurofibromatosis, which is similar to the so-called elephant man's disease.

Despite numerous brain surgeries to remove his chronic and progressive neural tumors, John is now totally deaf, almost blind and severely limited in his mobility. Routine activities such as walking, talking and eating are sometimes impossible for him.

Despite his burden John maintains his sense of humor and love of life. It was precisely his courage and his appreciation for the life he was then living that prompted me to photograph other dead and dying people and some aspects of the funeral industry. It was my hope that these images would reveal important facets of the human condition.

These photographs represent a small fraction of my exploration. Some of the images may be difficult to look at. They are not, however, intended to shock, but rather to prompt an examination of an unavoidable consequence of being human.
IN BACTERIAL PROTEINS ‘14 IS MYSTERIOUS NUMBER

By Frank Blanchard

A University microbiologist has discovered an unexpected pattern in the size of bacterial proteins, suggesting that they adhere to a previously unrecognized basic unit of structure.

Profs. Kensall D. Wise and David J. Anderson and graduate student re-
search assistant Kenneth L. Drake, all of the College of Engineering, have filed an invention disclosure on the design of microelectronic probes that would permit to record the individual signals from clusters of nerve cells in the brain, giving

scientists a chance to learn the code by which brain cells communicate with each other.

A patent search is under way for Prof. Steven A. Goldstein and Larry S. Matthews of the Medical School, who have reviewed Savageau's work and determined the significance of Savageau's observation, it could have a far-reaching impact on the ability of scientists to modify existing proteins or syn-
thetize new ones. But scientists at the Massachusetts Institute of Technology who have reviewed Savageau's work strongly rebutted. The scientists, un-
der a formula set by the Regents in 1985, patent applications by faculty business startups by launching a spinoff company, Michigan Research Corp. (MRC), to help faculty inventors identify the commercial potential of their research and obtain the financial backing needed to launch their own businesses.

Midgley, who joined U-M in 1986, says the university's interest in market research has been much more favorable over the years, reflecting "pressures in the aca-
demic community to relate what one does to the real world."

But at the same time, he and other scholars add, universities must guard against going too far in commercializing the products of faculty research. As Vice President David B. DiEugenio has put it in a recent issue of Research News: "Universities have grown up as critical seekers of truth. To the extent that they get deeply involved with government and industry, their ability or drive to be social critics."
MALAMAZO’S BROWN’S HEAD ALUMNI EFFORT

KALAMAZOO’S BROWN’S HEAD ALUMNI EFFORT

"When our son Fritz comes to campus this fall, he’ll have the best in educational opportunities, because Michigan offers high-quality teaching in a diverse, stimulating environment," says Robert M. Brown, BSE ’63, now a businessman in Kalamazoo, Michigan. "That was true when my father came to school here in 1922, he continues, "and it is true for me back in 1959. It's easy to understand, then, that maintaining excellence, which is what the Campaign is all about, has real and personal importance to me."

Bob Brown and his wife, Susan Crumpacker Brown, BA ’63, an interior designer, have volunteered to serve as the national co-chairs for the Campaign for Michigan Fund, a special Campaign program that kicks off this month. The Campaign for Michigan Fund is the name given to the all-alumni solicitation phase of the overall Campaign. The Fund's goal is to raise an additional $20 million from alumni to help support the 17 schools and colleges at the University and the two branch campuses at Dearborn and Flint. This $20 million in expendable, unrestricted gifts will complement the $40 million effort for facilities and endowment. Together, the two programs will help meet both current and future needs.

The Browns will lead the first-ever comprehensive solicitation of the entire alumni body. In their case, solicitation may begin at home, since at least 30 members of the alumni body are members of the Brown and Crumpacker families.

"For several generations our families have been drawn to Michigan like a magnet," Susan Brown says. "Our grandparents, parents, aunts, cousins, sisters, nieces and nephews have come here. I know how strongly our families feel, and I think that, like them, alumni everywhere are very proud of The University of Michigan. Through the Campaign we'll be offering the opportunity to turn that loyalty into tangible support to the University.

Many alumni recognize the Brown family name, for Bob Brown and his father, Robert J. Brown, AB ’59, have the distinction of being the first father-son football captains in Michigan history. Robert J. Brown was a Regent Emeritus, a Michigan Benefactor and a volunteer in the $55 M Campaign. The only previous major campaign in U-M history, the $55 M Campaign, which ran from 1962 to 1967, raised more than $70 million for The University of Michigan.

A fellow volunteer of Robert J. Brown in that Campaign was Owen W. Crumpacker, father of Susan Brown. Members of the Crumpacker family have been attending the U-M since the turn of the century. In fact, Susan's grandfather, Frederick Crumpacker, his brother Owen and their cousin Harry Crumpacker all received undergraduate degrees in the same year -- 1903. Susan's mother and three sisters also hold U-M degrees.

Like other alumni, their family members will be contacted personally on behalf of the Campaign sometime within the next two years. After receiving a letter from Honorary Campaign Chairman Gerald R. Ford, a second letter from the volunteer chairperson representing the School or College from which they graduated. They then work with the Volunteer Phone Center to do the personal call. Volunteers are paid for their time and effort to contribute to the Campaign via this special fund.

Alumni who are already donors will be asked to increase their annual support; others will be asked to make their first gift. In both cases, graduates will be asked to consider a three-year pledge. Reaching the $20 million goal set for the Fund will mean increasing annual support to $30 million for each of two years as of July 1. All Campaign for Michigan Fund dollars will be recognized as making both a Campaign for Michigan gift and a contribution to their own School or College's annual fund program.

Telephone calls to graduates of the College of Literature, Science, and the Arts will begin this month. "If I could, I'd call each alumni personally," says Bob Brown. "I love Michigan, and I like to think they couldn't say no when I asked them to join me in the Campaign.

STUDENTS will handle 50 phone lines six nights a week to reach the more than 250,000 U-M alumni and alumnae in the United States.

REACHING 7,000 TIMES A WEEK

The Campaign For Michigan

BELLS ARE RINGING 7,000 TIMES A WEEK

Hundreds of telephones in every corner of the University will begin ringing this month when the U-M mounts its largest person-to-person fundraising effort in its history. The phoning will mark the first time that the University will attempt to reach all of its alumni and alumnae in such a personal way.

Fifty phone lines will be in use six nights a week until all of the more than 250,000 alumni in the United States have been called. U-M students working at a special campus phone center will make calls to alumni, typically placing about 7,000 calls each week. The current students will ask former students to contribute to the Campaign for Michigan Fund, the separate $20 million effort to meet current needs at the 17 schools and colleges at the University and the two branch campuses at Flint and Dearborn.

Phone center activity is being coordinated by the University’s new Annual Programs Office, under the direction of Melissa Allsaw Kwan. "We expect that the phoning will involve students on campus now, alumni will have a sense of the importance of the fundraising effort," Kwan said. "We hope that by the time the program is completed by July 1987, twice as many alumni will be donors to the University as by previous phoning campaigns when we will continue on an annual basis."

CHRYSLER FUND AIDS ENGINEERING

The Chrysler Corporation Fund, a charitable agent for Chrysler Corporation, has made a $1.29 million pledge to the University to support new developments in the Engineering Network.

"We at the Chrysler Corporation feel that The University of Michigan and its national co-chairs and academic programs are an outstanding asset for not only the state of Michigan, but the nation," said C. J. Steffan, executive vice president of Chrysler Corporation. "University of Michigan graduates are continuing to make important contributions to the field of engineering. We look forward to a strong, continuing relationship with the University, in terms of both attracting its graduates and utilizing its research facilities," Steffan added.

In announcing receipt of the gift, U-M President Harold T. Shapiro said, "We are delighted that the Chrysler Corporation’s success has made a gift of this magnitude from its charitable fund possible. We are proud that The University of Michigan has been selected for the first major gift of this type in its history."

The Chrysler gift will enable the U-M College of Engineering to complete an instructional complex that incorporates a fully integrated Computer Aided Engineering Network.

"The Chrysler Corporation's gift comes at a critical time for the College of Engineering," said Charles M. Vest, dean of engineering. "It provides a major step toward the development of our instructional complex and to the achievement of our long-term goal of significant investments from private sources. This will support our efforts to respond creatively to the changing needs of American industry and engineering education during the 1980s and 1990s. We believe that the College of Engineering has become an active partner with us in this venture."

A HERITAGE OF LEADERSHIP

The University of Michigan has spent more than $200 million this fall on improvements for the all-alumni solicitation phase of the Campaign. Their son Frederick (Fritz) Brown (right) will be a freshman at Michigan this fall.
A CELESTIAL spirit carries garlands from heaven in praise of the Buddha. These fat dwarf-like creatures from India are emblems of auspiciousness akin to cupids and cherubs. (See 'The Caves of Ajanta' on Page 8.)