

A GREEK COMPUTER AT CHAPEL HILL

This report describes a time-sharing computer system installed in the Classics Department at the University of North Carolina at Chapel Hill. The hardware includes a Hewlett-Packard 21MX computer with 64K bytes of memory, one fixed and one removable disk drive, a 9-track dual density magnetic tape drive, an upper-lower case terminal printer, and two HP 2640A CRT consoles equipped with full Greek character sets including all accents and diacritical signs.

For many applications of interest to classical students and scholars this system provides significantly better service than could be expected from a large central university computing center.

The computer normally operates under the MINOTAUR monitor (specially written for it here), which supports services in three basic areas : a) computer-aided teaching of Greek and Latin, b) searching large collections of Greek and Latin texts, c) text editing and typesetting.

COMPUTER-AIDED TEACHING OF GREEK

A major purpose of the system is to provide a language laboratory for students in Elementary Greek courses. During the Fall Semester of 1975 the thirty-five students enrolled in these courses had access to the system. In using the computer to review vocabulary and grammar they were often

required to type Greek words and phrases on the consoles. All of the teaching programs have a common mechanism for detecting and correcting mistakes in accents, breathings, and subscripts.

The program QUIZ carries on a dialogue with the student on the basis of a programmed 'lesson' created by the instructor using the AUTHOR program. The program displays Greek and English text and compares the student's reply with a list of expected (correct or incorrect) responses. Depending on the student's performance, the lesson can follow various paths.

Another program, WORDS, provides vocabulary practice. Normally the computer displays the English meaning, with the student producing the corresponding Greek word; but the opposite order is optional. Words are presented in a random sequence; those missed on the first trial are asked a second time (again in random order). The cycle repeats until all words have been correctly identified.

The program VERBS gives the full grammatical description of a Greek verb form and then asks the student to write the Greek word itself. The forms are constructed randomly from a table of stems and endings. By selecting the appropriate tables the student can rehearse various types of verbs and endings.

The program TEXT asks the student to give a full grammatical analysis of selected words in a specific Greek text. The response can be given in a free format, with the computer noting ambiguities of errors. The grammatical analysis itself must have been stored previously on a disk file. It is normally produced automatically by another computer program (and verified by an editor who knows Greek).

SEARCHING GREEK AND LATIN TEXTS

Since the computer is dedicated entirely to the Classics Department, very fast response can be obtained in searching large collections of texts. The magnetic tape drive will read 120,000 characters per second. A full reel of tape, containing over forty million letters, can be searched in about seven minutes. When the tapes prepared by the Thesaurus Linguae Graecae are made available, it will be possible to scan all Greek literature down to the Second Sophistic in about thirty minutes. Pilot programs are already available for searching Homer and other authors.

The program SCAN searches a text for a given string of letters, which can be a phrase, a word, or part of a word (such as a suffix or ending). Every passage in which the string appears is displayed on the screen with the string itself highlighted. Optionally the program can search for passages containing the string more than once. More sophisticated searching strategies are now under development. This type of service, if widely available, will supplant concordances in many cases.

The program HEX searches the Homeric poems for verses meeting requested metrical criteria for word-breaks.

OTHER FUNCTIONS

Additional programs are available for editing files of text, programs, or other information such as dictionaries. Programs can also be prepared under MINOTAUR for later execution in batch mode, either on the 21MX itself (in Algol, Fortran, or Assembly Language) or on the University's IBM 360.

The magnetic tape drive makes it easy to share files between this computer and other machines such as the 360. Automatic morphological analysis of Greek texts, for example, is more efficiently done on the large IBM machine; but the texts and dictionaries can be edited more conveniently on the smaller machine.

The system presently has no hardware for printing Greek (apart from the CRT display consoles), but a magnetic tape containing Greek text can be printed on a nearby Videocomp. Local photocomposition hardware may be added at a later date. It is hoped that this system will eventually provide members of the department with a complete editing and typesetting service, from first draft to photocomposed camera-ready copy.

APPENDIX : THE HP 2640A CONSOLES

The HP 2640A CRT terminal is central to the design of this system. This is the first terminal on which it is possible to implement a complete Greek character set in a fully satisfactory way. It is not a storage terminal and does not have the disadvantages familiar to users of the Tektronix terminals (lack of selective erasing, poor character definition, awkwardness in correcting typing errors). The only other economical alternative, an IBM selectric terminal with a special Greek type ball, is about twenty times slower than the HP 2640A (which runs under MINOTAUR at 240 characters per second) and is limited to one alphabet at a time.

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