

## THE MIDAS, MP/M and the MSC

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### Summary

The paper describes the acquisition of a microcomputer system, by the Winchester Archaeology Office and the effects of the new technology on its operations. The upgrading of the operating system from CP/M to MP/M is outlined, together with something of the features and facilities available under the multi-user system.

### Background

The Archaeology Office forms part of the City Museum, which is itself part of the Amenities Services Department of Winchester District Council. The Office has overall responsibility for all archaeological matters, not only within the urban area of Winchester itself, but also within a large rural district which surrounds it. The total area is approximately 66,000 hectares (163,000 acres). The Office came into existence, in its present form that is, with the reorganisation of local government in 1974. There are three full time staff, the City Archaeologist and his assistant, and the District Archaeologist, the present writer. Two further staff are engaged on short-term contracts funded by the Department of the Environment. A further half-time post is shared with King Alfred's College of Higher Education, which has a History-with-Archaeology degree course.

The City of Winchester has a long and admirable record of supporting the pursuit of the past by archaeological means. Notable work was carried out by staff of the City Museum during the 1950's (Cunliffe 1964, Collis 1978). However, this primary phase of archaeological research by means of salvage excavations was somewhat eclipsed by the major programme of both rescue and research excavations undertaken by the Winchester Research Unit under the direction of Martin Biddle from 1961 to 1971 (Biddle 1975). Following the Unit's decision in 1971 to cease excavations in order to concentrate on the post-excavation phase of the programme - a continuing task - Winchester Council accepted responsibility for any ensuing archaeological cover within the City, and subsequently from 1974, within the District also. The Council continues to fund the service, but major financial contributions are also received from the Department of the Environment.

Since its inception in 1972, the Office has executed an excavation policy based mainly on rescue archaeology; that is only investigating sites and monuments which are under threat of damage or destruction by redevelopment proposals. Despite financial restrictions over the past few years, this policy has resulted in the generation of a vast quantity of data from both

excavation and post-excavation operations. At the present time there are upwards of ten major sites from both City and District at various stages along the lengthy road to ultimate publication.

Until 1981 the majority of the data processing - which I take to include all aspects of collection, storage and manipulation - of the Office's excavations, and latterly sites and monuments records, was undertaken by various manually-based methods. The only exception was the processing of some ceramics data generated by analysis and comparisons. This material was processed on behalf of the Office by Hampshire County Council. However, because there was no direct access to that authority's mainframe by means of a terminal for example, the process was subject to limitations outside the direct control of the Office staff. These led in turn to a series of frustrating and annoying delays in the presentation and manipulation of large important batches of data. The situation deteriorated sufficiently to prompt an appraisal of the then present and future needs for computer facilities by the Archaeology Office. As a result, it was decided to purchase a microcomputer system which would both accommodate the present requirements, and would be available for any future demand.

#### **Hardware**

A number of archaeological units, and individuals with relevant experience in the use of microcomputers in archaeological data processing were approached for their advice, comments and experiences. Rather fortuitously, this coincided with the publication of the Museums Documentation Association Occasional Paper 4 - Microcomputers in Archaeology (Stewart 1980) which provided a further rich source of experiences and warnings. Perhaps more importantly, this publication listed what were considered to be, at that time, the optimum standards to be aimed at, for both hardware and software (Stewart 1980, 1-3). On the basis of such advice and guidance, a MIDAS 3D microcomputer manufactured by Sirton Computer Systems was purchased. This robust machine is built around a Zilog Z80 microprocessor, a \$100 bus system, and 64K RAM. It has twin 8" double sided double density floppy disk drives, which theoretically provides up to 2Mb of additional storage space. In practice this amount of space is not all available for the computer runs under CP/M, which is a disk-resident operating system. In most respects then it is exactly similar to the system in use by the Mucking Post-Excavation project (Catton, Jones and Moffett 1981, 41). The other hardware purchased at the same time was an ANADEX 9501 dot-matrix printer, which operates at 120 characters per second, and a TELEVIDEO 912C terminal and visual display unit. This equipment was purchased by Winchester District Council with additional capital from the Department of the Environment and notably from the Area Museum Service for South-East England.

The Midas has been in almost continual use since February 1981, and has proved itself to be extremely reliable and consistent in its operation. In the whole of the three years there has been no failure of the hardware, despite the best efforts - albeit

unwittingly - of some of the staff, including the present author. Sirton have been unfailingly helpful and encouraging when queries and problems have occurred. A better choice could not have been made.

#### Software and Usage

It is harder to be as enthusiastic about the operating system, CP/M. There is no doubt that the cryptic and terse responses sometimes generated by the pressing of the RETURN key may be to the unfamiliar user at least puzzling, annoying or worrying. However, despite this particular problem it is clear that once the vagaries of CP/M are understood - or mastered? - it is an extremely rapid and efficient reliable operating system which has much to commend it.

Since 1981, the majority of the operations of the Winchester Archaeology Office have gradually become computer-based; put another way, almost every aspect of the work of the Office is now conceived and executed either by the computer, or with the computer in mind. This changeover to almost complete dependence on the machine has been gradual, and has been subject to a number of false starts and hiccups. Many of these will be familiar to other microcomputer users. The problem of CP/M has been touched upon. Other difficulties encountered are more personnel based - wariness about the new technology, worries about so much machine dependence, inability to type, lack of formal computer training, and so on. Notwithstanding this kind of reticence and difficulty the following list indicates the ranges of connected and interactive uses to which the computer is put:

- 1) input, storage, verification, manipulation of:
  - a) stratigraphic data - context records of up to 40 fields.
  - b) artefactual data - ceramics up to 15 fields
    - faunal remains
    - floral remains
    - snails, shells, insects etc
  - c) illustrative data - plans, sections, photographs, drawings of finds
  - d) sites and monuments data - up to 20 fields
  - e) mailing lists, addresses etc
  - f) financial records
  
- 2) input, editing, preparation, formatting of:
  - a) catalogues, indices, lists
  - b) reports, summaries
  - c) stock or form letters

Much of the software necessary for the operation of this wide range of activities has been acquired or developed as a response to specific needs. A large portion of the programs, especially for ceramic and stratigraphic data processing was provided by the Department of the Environment Central Excavations Unit, who have been using them for a number of years (Jeffries 1977). Gradually this suite of programs has been altered to suit the more specific needs of the Office; as personnel have become more familiar with

BASIC, the language in which the programs are written, the individual user needs have become easier to accommodate. However these DOE supplied programs still form the backbone of much of the initial data processing.

A number of commercially produced software packages have been acquired to supplement and enhance the DOE suite. In particular, SUPERSOFT and DATASTAR have allowed great improvements both in the manipulation and in the input and verification of data. However, a major advance was marked by the purchase of the WORDSTAR word-processing package. Because of its ease of use, and its provision of housekeeping tasks presented in a "user-friendly" manner, the number of users clamouring for access to it immediately increased. The package is now in constant use as much for data processing as for word-processing purposes. In conjunction with SUPERSOFT and DATASTAR, it performs the majority of the tasks listed above quickly, efficiently and accurately.

#### **The Multi-user System**

In 1983, the Office embarked on three Community Programme Schemes sponsored by the Manpower Services Commission. Each of the projects was planned with a computer-based element. In particular the so-called Heritage Scheme consists of the compilation and computerisation of as complete an inventory as possible of all known surviving elements of the past in Winchester and its District; in other words the sites and monuments records for the whole area. Obviously this is a major task, and clearly the MIDAS in its original form would be hard pushed to cope efficiently with the problem of storage, and with the demands for terminal access. To alleviate this problem, it was decided to utilize some of the finance available from MSC to upgrade the MIDAS to a hard-disk based multi-user system.

It was logical to move from CP/M to Digital Research's multi-user system, MP/M. The adoption of this system required major changes in the internal configuration of the MIDAS, but all were easily accomplished because of the S100 bus and large mother-board structure of the original machine. In its current version, MP/M B, the system will theoretically support up to sixteen users at any one time, together with multiple peripherals. Practically the present configuration can cope with 2 terminals and 1 printer. It utilizes a bank-switched memory of 112K RAM, and supports a 20Mb sealed hard-disk drive, together with the two original floppy-disk drives.

#### **MP/M II - Features and Facilities**

All of the standard CP/M features and utilities are available under MP/M. However, the utilities or housekeeping programs have been extended and added to in order to facilitate the multi-user environment. The following table illustrates something of the relationships between CP/M and MP/M, and shows the development from CP/M 1.4.

Command	CP/M 1.4	CP/M 2	MP/M 1	MP/M II
ABORT			*	*
ASM	*	*	*	*
ATTACH			*	*
CONSOLE			*	*
DDT	*	*	*	*
DIR	*	*	*	*
DSKRESET			*	*
DUMP	*	*	*	*
ED	*	*	*	*
ERA	*	*	*	*
ERAQ			*	*
GENSYS			*	*
LOAD	*	*	*	*
MOVCPM	*	*		
MPMLDR			*	*
MPMSTAT			*	*
PIP	*	*	*	*
PRINTER			*	*
PRICOM			*	*
RDT			*	*
REN	*	*	*	*
SAVE	*	*		
SCHED			*	*
SDIR				*
SET				*
SHOW				*
SPOOL			*	*
STAT	*	*	*	*
STOPSP			*	*
SUBMIT	*	*	*	*
SYSGEN	*	*		
TOD			*	*
TYPE	*	*	*	*
USER		*	*	*
XSUB		*		

### Effects

The changeover to MP/M from CP/M has had a number of effects, although it is somewhat early to be dogmatic about these. On the positive side, the system can now support three terminals in use at any time, with a consequent increase in data input. The extra storage capacity of the hard-disk also facilitates the creation and manipulation of very large data files. The multi user facilities also leads to greater effectiveness in the use of the printer.

Rather more negatively, the changeover to MP/M has meant re-learning an operating system, which although akin to CP/M, has substantial differences which are not available on the single-user system. Equally important, the response times have increased significantly and are the cause of annoying delays when all terminals are in use. Some of the software, particularly

that produced in-house, or adapted so that it can operate in its new environment. Significantly DATASTAR does not operate under HP/M and is now to all intents and purposes virtually useless.

However, the increased capacity provided by the multi-user system, both in terms of storage and in terminal access is certainly most welcome. SIRTON computers as ever could not have been more helpful in ironing out teething troubles and operator-generated problems. There is no doubt that the upgrading, with its related difficulties, will as time goes on benefit the operations of the Office more and more.

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