

The Editor in the Computer Age — The Pennsylvania View

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BACK IN MY undergraduate days at Kansas State University, Sputnik was happening and computers were used to do math problems and adapted to do accounting work. As agricultural journalism students we were reporting state-of-the-art uses of computers in farm management and research problems. My first enrollment was handled on punch cards. Newspapermen were being told that computers would someday work in the back shops and—heaven forbid—would replace the slot and rim tables.

Computers have followed me since my college days. My first employer installed a computer to maintain 3.5 million subscription records. My second employer used a computer to hyphenate and justify copy sent to a Linotype on paper tape. At USDA's Soil Conservation Service, we coded our daily activities for a management information system. And at Penn State a computer was used to prepare CRIS reports, project expenditures and remote sensing data.

Editors at Penn State have worked with computer oriented agricultural researchers so that programs used to process data tables also format and produce camera-ready pages. Accuracy of data tables was maintained throughout printing operations. Photography of printout sheets cuts printing costs and speeds production of publications.

Editors sought ways of using this same process with full narrative style (text) manuscripts. An annual report of the Agricultural Experiment Station was selected for a trial. Project titles and workers for this report could be obtained from existing punch cards. It was hoped that time would be saved in typing, editing,

and printing of this publication. A computer would be used to format and cross reference information to editorial requirements. And the machine would never tire of making revisions and re-typing clean copy!

In the first year, clean printout was sent to a Linotype operator. For the next two years copy was formatted in two columns per page and the printout was photographed to cut printing costs and to speed production.

This past year (1972-73) a computer prepared punched paper tapes for operation of a phototypesetter (electronic). Pasteups and print negatives were prepared from output of the phototypesetter.

Although we called our computer experience a developmental job under production conditions, it really was a series of trial and error methods. Some different routines were used each year. Yet the four years of work did have some common factors.

First, we spent more time generating a manuscript than we did in non-computerized years. We no longer used our second draft with its pencil notations in approval and printing stages. We devoted more effort to exhaustively checking facts and spellings against various source records. Most of this extra attention came while bids were asked and purchase orders obtained. A clean draft was produced as often as desired. By former methods, many errors were fixed after the type was set, but style inconsistencies often were allowed to stand.

In such instances, we gained greater control over the manuscript because we were not reluctant to ask for another clean draft. Remember that we were handling long lists of citations and other routine but difficult typewriter work.

This past year, our fourth cycle of this computer system, manuscript preparations went much faster than in the previous three years. We lost this extra time in developing and testing a program and methods for setting type with tapes made by computer. Time was gained again at the actual typesetting phase, after which the job became a typical offset printing job.

With each passing year, the computer has been used more heavily in making cross references and printing standard information,

such as "In cooperation with . . ." statements and footnotes. This is a very useful capability of the machine.

Now, I believe a picture is beginning to emerge so we could use the computer to handle other publications of the college. While I can't tell you how to duplicate this effort at your university, I would like to offer some thoughts about our experiences.

I want to stress that our efforts involved many people. In addition to thoughts provided by graphic designers, editors, and printers, we also had assistance from numerous computer students and professionals. Our first programs were written and tested by the Station's assistant director in charge of project records. Finally, it has not been a pushbutton production, nor will it ever be so easy!

Penn State has several computer installations. We used two of them, one of which is a centralized student and research facility. The student and research center offers text format programs and typewriter terminals, two excellent editorial resources. A paper punch is available at the second computer installation.

I doubt that we would have stayed with the effort without the typewriter terminals. Our terminals simplify computer input with office style upper- and lowercase letters captured on magnetic storage disks. In addition, this terminal makes interactive editing and rapid revision of some jobs available instantaneously.

Our uses seldom exploit the extreme speed of a computer, particularly in batch processing operations. However, we find that fast turnaround can be helpful. For example, I have approved a draft, then watched the 15-minute process of producing three approval copies of an 80-page, double-spaced manuscript.

Costs of using computers vary among manuscripts, among installations, and among program packages. In our earlier text work, costs per batch-process run of 80 doublespaced pages were about \$12 and several runs were needed to solve the problem. Now our runs cost about \$6 and the work can often be done in three runs or less. About 50 percent of our machine charges represent processing work with the remainder going to surcharges such as printing of records at five cents per hundred.

We continue to look at the idea of paging publications by computer, especially for the typesetter. Costs mount rapidly when the

fine points of widows, tombstones, and spacings are included in the pagination. However, it sometimes is simple and convenient to solve copyfitting problems by making several different versions of a rough paging dummy on computer equipment. Cathode ray tube (CRT) installations are suited to such applications.

Appearance and density of the computer printout are not what we desire. In addition, extensive preparations are needed to get suitable camera-ready printout from our computer. Note that we are working in a center that often produces 10,500 individual jobs per day on the IBM 370 system. Results are satisfactory with the printouts of data tables containing uppercase characters only. We are less satisfied with text pages containing both upper- and lower-case letters.

Two or more printing fonts are available when copy is printed on a typewriter terminal using interchangeable printing elements. Typewriter terminals—even at 180 words per minute—are relatively slow printers. Jobs exceeding 15 pages are appropriate for line printers.

Getting manuscripts into machine-readable form still prohibits production of many jobs by computer. This hangup is one reason most university editors are not printing one-time books by computer. Most of this objection is overcome when the review draft is prepared and updated on terminals. However, access to terminals is not as handy as we desire.

At Penn State we seek a balance of personal involvement in computer operations and use of vendor services such as those provided by a complete print shop. Right now we think a centralized pool of trained computer users would speed our jobs through a computer and into print shops. Also, it would cut down on the editor's trips to the computer center or to the centralized typewriter terminals.

Some problems were found when we processed an author's file into formats needed for a print shop. Early involvement of the editor has helped iron out some of these problems.

In the hills of Pennsylvania are several printers who want to set type with computer-punched tapes. A few can do it. We worked with one such print shop this past year to set type in two publica-

tions. This appears to have potential savings of time and money. For example, we set 3,500 lines of 8-point type on 13-pica measure and reset 900 lines for \$194 plus \$41 in computer costs. A total of \$235. The printer hangs our punched paper tapes on his electronic phototypesetter and mails the galley sheets to us, *usually within a few hours*. We are going to follow this one up with more work. This system might be used to cut waiting time at the print shop and upgrade computerized products. This should include table sets, which we can't handle at present. One bottleneck is the distance to the print shop. At least two days are needed for mail delivery (one day each way).

Another bottleneck will be training typists to use computer typewriter terminals under office situations. In many cases, terminals could speed manuscript revision and reproduction. Right now, available time in our office for editing, punching, proofing, and pasting up is often more of a restriction than the print shop backlogs.

Purchasing and bidding practices are unknown influences upon computerized typesetting. Great variation exists in what print shops can accept on tape and what they charge for the final product. Prices often include development and start-up costs.

One of the interesting aspects of our experience is that you might not need a large, general purpose computer to obtain some benefits I have mentioned. Small, special purpose, computerized typewriters of various forms can be used in limited updating and reproduction operations. Magnetic Tape Selectric Typewriter (MTST) cartridges made in your office can be used in-house or sent to print shops that use an IBM composer. In addition, paper tape punching devices are reported as being available for some automatic typewriters.

Optical Character Recognition (OCR) devices, popularly known as scanners, are hitting the market for typesetting uses. Again, your manuscript need not be keyboarded at the print shop.

Of interest to some editors and pasteup people is the idea that some phototypesetters are capable of producing multi-column page formats if you know how to set up the work.

Our computer center staff uses typewriter terminals to generate

activity reports and system status notices, some of which are displayed on public bulletin boards and printed in a public newsletter. Library writeups and program manuals are handled in this way, too. I believe such operations make good models for editors who handle technical materials, and who might consider computer systems as media outlets.

Other potentials being talked about for information processed with computers include multi-state computer networks, printing on demand, computer output microfilm, publishing without printing, and content analysis. Associated Press recently announced it is transmitting photos from electronic darkrooms via laser beams.

As this paper was being sent to the typist, the mailman brought a sales leaflet showing a new type of computer terminal. It displays information on a home television set. Connection to the computer is by an acoustic coupler and a standard telephone handset. The device is available from a Canadian firm and probably could be useful in many information programs involving computers.