Journal of Applied Communications

Volume 55 | Issue 3 Article 4

Publishing with Computerized Typewriters

Neil Dowlin

Publishing with Computerized Typewriters

Abstract

At the beginning of an otherwise routine conference the horticulturist asked unusual questions.

Publishing with Computerized Typewriters

NEIL DOWLIN

AT THE BEGINNING of an otherwise routine conference the horticulturist asked unusual questions.

"This 40-page manuscript was typed into computer storage. It has 20 big data tables. Can you handle editing of material typed by a computer? Will you want it typed on a regular typewriter?"

Three weeks later a farm management specialist was discussing problems involved in revising copy from long-term variety trials. "Can I update last year's computerized data tables and automatically type them without generating new tables?" he asked his editor.

In both cases, the editors told the specialists that computer-linked typewriters could handle their manuscripts with flexibility for revisions. Tabular characteristics of each job merited use of a computer during manuscript editing and review activities.

In another situation, the print shop representative asked, "Can you send us copy on paper tape punched by computer for our automatic phototypesetter? My keyboards are jammed with work but the typesetter is idle." Pre-punched tape probably would cut composition costs and get copy into production ahead of material moving through keyboards.

The printer got a rain check on his suggestion. Although exploratory checks indicated such tapes could be prepared with existing computer devices, automatic tape punching for typesetting specifications had not been tried on the campus. Timing was not conducive to a testing effort.

These are actual situations during a year of informal effort to explore uses of computers in publications work at The Pennsylvania State University. Uncommon situations? Probably not when you consider the growing use of computers by agricultural

specialists and by printers who serve land-grant universities of the Nation. Perhaps the surprising aspect of these situations is in learning that throughout the Nation authors and printers already have used computers to provide copy and composition to editors. In many instances editors are not aware of the developments.

Agricultural editors at Penn State set out to learn where computer-linked typewriters and other data processing equipment benefited authors, editors, and printers. Original emphasis was on copy heading for camera in order to obtain inexpensive reproduction of computerized text. Several years' experience with photography of data tables indicated that printing text by computer might be worthwhile for certain uses. Extension chemical recommendations, results of annual variety trials, and in-house reports are some suggested uses.

Briefly, editors concluded that computer-linked typewriters and photography of printout offer flexibility with computerized material intended for publication. The typewriters and associated storage media may be the strongest features of the computer system used at Penn State. Additional benefits include potential for state-of-the-art uses of input scanners, microfilm libraries, and automated typesetters. Opportunities exist for use in preprinting and printing-on-demand where the computer and a highspeed line printer can reproduce publications in limited quantities. Making complex readability scorings and content analysis also is possible.

Trial with Annual Job

Computer gear was used to input, edit, format, and print as camera copy the full text of the annual report of the Pennsylvania Agricultural Experiment Station. Some copy was input in manuscript format, the remainder was obtained from station records maintained on data process punch cards and magnetic tapes.

Primary objective of the informal trial was to prepare copy in a manner which would facilitate merging of new and standing copy for annual updating. A minimum of keyboarding was anticipated and conventional data process equipment was used.*

* Penn State's I.B.M. System 360 installation was used with the I.B.M. program FORMAT and other special purpose programs written in FORTRAN language. Further information about programs and operations—most of which is peculiar to the Penn State environment—is available from the author.

https://newprairiepress.org/jac/vol55/iss3/4
DOI: 10.4148/1051-0834.2033

Secondary objectives included gaining experiences and ideas that could be used in handling other publications for extension and station audiences. Special attention was given to handling information which originates on a computer or is stored on punched cards and various magnetic media.

Work horse of the input and edit sessions was a typewriter linked by telephone to the Remote Job Entry (RJE) System. The typewriter often is referred to locally as a terminal. Although the time-share RJE system was designed and programmed by Penn State specialists, its interactive operation is similar in many operations to typewriter systems used at other computer installations.

An example of usage might be made with a 10-page manuscript which has been entered through the RJE device and stored on a disk for 12 days. The editor finds a typing error on page 2, wants another word added to a line on page 4, and he writes another paragraph for the end of page 10. The typist probably would enter the new copy for page 10 first, and store it for later use. The typist replaces the necessary letter for the page 2 typo error and inserts the addition between appropriate words of the line on page 4. The new copy is moved from storage and merged into standing copy. The new draft is ready for automatic retyping or automatic cutting of mimeograph stencils.

Computer systems supporting the typewriter terminal permitted rapid and easy modification of copy. Excellent "turn around" response from the typewriter made results of batch processing work available within seconds for many jobs. Other batch processing jobs waited their turn up to three hours in the priority system. Waiting periods were determined by amounts of copy handled.

In addition to serving as a fine access and editing device, the RJE typewriter was used as a slow-speed printer. A faster line printer was used for proof copies and for camera copy. Upper and lower case text was handled at speeds of about 400 lines per minute on the line printer.

Ease of making corrections in spellings and changes in wording was dependent on the number and nature of data process steps involved. For instance, some copy could be handled on the typewriter terminal in a simple one-step manner, other revisions required alteration of program parameters and running through several processing steps.

Ideal for Repetitive Work

Some copy processed for this publication contained a large number of cross references and was subjected to a good bit of rearrangement. Therefore, the machine's precision in printing extensive cross references compensated for time spent checking some suspected errors and correcting inconsistent wordings. The machine also was used to read this material and insert command words for spacings and indenting for new paragraphs.

Programs can be written to check all spellings and cross references against a master set of instructions. This was not done in our work, but would have been helpful in numerous instances.

An important benefit of using the machine for repetitive printing and processing work was the knowledge that copy could be run numerous times with identical results except where revisions were intended. This provided some relief to the proofreader.

An I.B.M. library program named FORMAT performed with precision most editorial treatments needed to format the manuscript. FORMAT is designed to handle editing and reproducing of papers, reports, and other documents in the I.B.M. 360 System. It can produce index material, although an index was not made in this test. Format of the document is controlled according to parameter control cards and command words interspersed throughout the input manuscript.

The user controls width and depth of one or more text columns per page; spacing between columns, printed lines, and paragraphs; number of indented spaces for paragraph openings, hanging indentations, and for the left page margin. Several copies of a manuscript can be made during a single machine run.

Any length of line can be used as input to the program, with the program producing a line length specified by the user. Justified margins are standard but ragged rights can be requested in the control cards. Text lines are broken at the nearest whole word with excess line space inserted between words of a justified line. Words are split and hyphenated only by manual modification of the program input.

FORMAT program was used to create rough page layouts before moving the paged book to magnetic tape storage. This paging dummy indicated our book contained 33 body pages. A special purpose program was written and used to dress the rough pages. Another program was written to print final pages from

https://newprairiepress.org/jac/vol55/iss3/4
DOI: 10.4148/1051-0834.2033

tape in one of several optional methods. Options included use of special paper for camera reproduction, and conversion of lower case letters to upper case letters for faster turn-around periods during final paging runs. Page dressing consisted of removal of paragraph hangers, alignment of top and bottom margins of the double-column pages, and modification of spacings around headings.

Two copies of the final camera-ready pages were run with the following format: 37 characters per column line, two columns per page, five blank spaces between columns, ragged right margins, and a maximum of 65 printed lines per page. The second copy was held as back-up material.

Special maintenance of a line-printer and photographic reduction of pages enhanced density of printing images. The book was reproduced on a printed press and bound as a six- by nine-inch book of 32 body pages and four cover pages.

The 1970-71 version of that publication now is being printed. Adding new copy and updating of old copy went pretty much as anticipated. Final phases of proofing, correcting, and paging were handled in a more methodical manner this year. Also, copy "takes" were accepted this year in order to fit work schedules and priorities of editors and administrators.

Some Conclusions

Uses of a computer may well depend on other equipment available to editors and authors. Computer expertise and available computer gear are other considerations.

Considering alternative production systems and methods, such as MTST and Mag Card typewriters, editors made the following general conclusions regarding use of computers at Penn State. Also, it was noted that decentralized pools of office typewriters usually are more convenient for production work than are centralized installations of computer-linked typewriters.

Preparation time and skills needed in computer usage seem better suited to long and complex manuscripts. Copy which usually needs several clean typings and which might be subjected to several review cycles is a good candidate for computer processing methods. Copy for a short one time job is seldom worthwhile, but that which is updated and printed frequently for in-house and field-site uses is appropriate.

Mechanized handling of publication material probably will be

best used where repetitive treatments can be made automatically. A computer is ideal for sorting, merging, sequencing, punctuating, and printing listings with uniformity and speed. As we have found in our experiments, a computer also can be programmed to update and print text into uniform layout formats. It also can accept changes in instructions occurring within a job; even when instructions are provided by human interaction with the computer.

Computerized copy intended for composition on tape-fed machines has additional potential when a computer can automatically prepare tapes. Jobs which can be done without typesetter composition have extra benefits when the computer can be used to print camera copy. (We realize computer print-out lacks the eye appeal and compactness of typesetter copy.)

Editors learned that super speeds and automatic revision capabilities of a computer may not be fully exploited in text work. Speed was most beneficial when a format modification or several format solutions could be tested "while you wait." Those kinds of work involved minimums of preparation and waiting (turnaround) time. Speed was helpful when up to six copies of a long manuscript were prepared for review committees, job files, and administrative approval.

Expense of printing by computer may be appropriate to these kinds of reproduction efforts. Editors also were amazed at the vast storage available for various drafts done in our computer system. In practice, only the most recent versions are kept internally active within the machine system. Early drafts are maintained on cards or magnetic tape. And a hardcopy proof is filed. Thus, if operator error destroys an updated manuscript, another copy could be obtained from storage or recreated from earlier drafts. This probably relates to the ease of working with something you can see in hardcopy.

As expected, quality of reproduction from computer printing devices usually was inferior to that obtained from office-style electric typewriters or cold composition obtained from a print shop. Quality can be improved with special ribbons and other printer options which are available for many computer printers. Such optional accessories generally aren't needed for conventional computer work.

Using computer printers for proofing and test runs presents no real quality problem. However, special adjustments of the

https://newprairiepress.org/jac/vol55/iss3/4
DOI: 10.4148/1051-0834.2033

print devices and other kinds of special attention usually are needed for the camera-copy run. Special papers, over-sized pages, and expert camera work can enhance the results when pages are photographically reduced for the printing press.

Looking Ahead

Future work with computer methods at Penn State includes potential to send tailor-made, computer-punched tape to printers using tape-fed composition devices. Automatic tape punching is an alternative for flexibility in use of computerized information intended for publication.

A Penn State graduate student in computer science developed a program to rapidly and easily measure readability by Flesch, Gunning, Dale-Chall, and others. The program reads and analyzes samples of actual text punched onto cards. An informal effort will be made to use the program as a tool in predicting reading ease of manuscripts being edited for publication. It may be helpful in writing workshops, too.

Text processing appears to be an emerging field of concern for computer users and manufacturers. A growing number of specialized devices are being developed and marketed for editorial uses. Editors who have such devices available will find them much easier to use than conventional data process equipment. These specialized devices, each with its own computer, will be easier and more flexible to use than conventional equipment. They will work well between automatic typewriters and automatic type composers, too.

But, editors who must adapt all-purpose data process methods to communications tasks probably will find a few programs and routines which are effective. The bigger problems will be in knowing where to use a computer. Few data process specialists understand the needs of editors, just as few editors can explain their technical needs to computer specialists. Thus, use of computers involves trial and error. An important aspect of publishing with computer tools will be sharing ideas and experiences about computers as an editor uses them.

Forecasters have for many years predicted we will create publications with computer aids. Maybe the time is close when editors will consider a computer approach as another alternative to be used when it fits the situation. Or perhaps it has already arrived and we were too busy to notice!