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Word Processor Applications at the USDA's Technical Information Systems

Introduction

Since this is a clinic on library applications of data processing, we ought to be able to answer a few very basic questions before proceeding with the topic of word processor applications at the U.S. Department of Agriculture. First, why do we want to automate our libraries and their numerous operations? Is it self-evidently necessary that we do so? Is automation in all its many, varied forms, in and of itself, always a good thing? When is it not? Second, given the widespread availability of inexpensive and easy-to-use hardware and flexible software, what, within our libraries, do we want to bring under automation's electronic control? Should our long-range goal be to automate everything from the reference interview (now possible with voice-activated and voice-responding machines) to the traditional functions of cataloging and indexing? What about management? Can the management of a large library be automated? In short, is our goal to automate everything the librarian now does? And if not everything, then what should not be automated? And what is the principle by which we determine what can and cannot be accomplished automatically? I suggest that we must be able to answer these questions before we can proceed with an intelligent discussion of our topic.

All of these questions, in fact, can be answered, and the answers are surprisingly simple. The basis of our argument is this: anything which can be specified can be automated. Anything which we cannot specify we cannot automate. All those activities of the first category belong to the province of the machine. They should be automated. Human intelligence,

imagination and creativity are too precious to expend energy on them. On the other hand, all of the items of the second category—the ambiguous, the indeterminate, the complex—belong to the province of the librarian. The librarian's sole task, therefore, is to separate the two orders, to bring under the control of the machine the first category (the specifiable), and to bring under the control of the mind the second category (the ambiguous, the amorphous, the complex). The true task of the librarian, then, is managing complexity.

With this as a preface, let me proceed directly with my topic—the application of word processors at the U.S. Department of Agriculture's Technical Information Systems (TIS). I want to share some of the many activities, reports and processes which we have found necessary to automate via word processors. In using the term *word processors*, I am referring primarily to the Lanier No Problem word processor. It is the one machine which we have found most suitable for our needs. There are many different kinds of word processors, and you should probably check with a representative of each to determine which will suit your specific needs. Also, note that I make no distinction between the Lanier word processor and a computer. As far as I am concerned, the differences are only those of degree, not of kind. The Lanier is a fully programmable, stand-alone device. It is capable of adding, subtracting, calculating, accepting alpha or numeric data, storing, sorting, searching, matching and displaying these data. We have even programmed our Laniers to communicate with outside, off-site, mainframe information retrieval systems, such as Lockheed's DIALOG and BRS. We regard the Lanier, therefore, as a fully operational computing system. We have dozens of different applications for our word processors. Because our applications are diverse, I have grouped them according to three classifications: (1) management information systems, (2) program support systems, and (3) online information retrieval systems.

Management Information Systems

Technical Information Systems is a large and complex organization, with a staff of 264 people, a budget of over \$9 million, a 15-story library building in Beltsville, Maryland, and a collection of over 1.7 million items. We produce our own databases, offer current-awareness literature services and online information retrieval services, and operate a regional document delivery system which spans the entire continent. To provide these services, we must employ a staff which includes not only catalogers, indexers and reference librarians, but computer programmers, systems analysts and administrative personnel as well. The support personnel include mail-room clerks, building engineers, heating and air conditioning specialists, and more. Managing such an organization is complex. To enable the

administrator to manage this complexity, we have endeavored to automate all of the routine functions which we could identify and describe. In the realm of management information, most of this has been accomplished on the Lanier.

Consider first the organization chart (fig. 1). An administration needs to know where people in an organization are at all times for the most efficient grouping of their talents. The Repagination program allows us to create charts, draw blocks and diagrams, and move them around at will to maintain an accurate and up-to-date picture of the way the agency's personnel resources are organized. It also enables us to visualize alternative structures, an important theoretical activity.

Second, we automated the agency's phone directory. At last, we have an up-to-date phone book, another simple and routine function suitable for the word processor.

Next on the list of management information systems is our Personnel Breakdown program (see fig. 2). Here the picture begins to get complicated. This chart shows the various categories of employment, and the relative strengths of the individual units within Technical Information Systems. As a government agency, we have numerous categories of employment ranging from permanent full-time to temporary part-time. Keeping track of our employment picture can be complicated. Again, this is a management information system designed to give the administrator feedback about his personnel resources.

At any given point in time, we may have dozens of outstanding personnel actions: promotions, resignations, transfers to other units, changes in status, etc. In 1980 alone we processed over 500 separate personnel actions. We now keep track of these on a word processor, which can alert us if an action has been outstanding for an unacceptable length of time (see fig. 3). By updating this information regularly, the administrator can spot actions moving too slowly through the system and take action before a crisis develops. Again, this is an important management tool for keeping in touch with the flux of reality.

Our Personnel Funds Report is an application for which the word processor was especially designed. The Personnel Funds Report is used to keep track of the payroll (no small task when it is over \$3 million). It is a complicated but routine report consisting of employees' names, positions, pay scales, salary types, hours worked, hours cumulated, salaries earned, and other bits of essential information. Compiling this report manually for 264 people used to be an immense task. Using the Math Master/Snap program designed by Lanier, it is now nearly automatic. Once the necessary elements and data have been identified, the machine calculates the rest of the information and produces a report. What is remarkable about this process is that the word processor is performing as a fully functional

OFFICE OF THE ADMINISTRATOR
AND
OFFICE OF ASSOCIATE ADMINISTRATOR

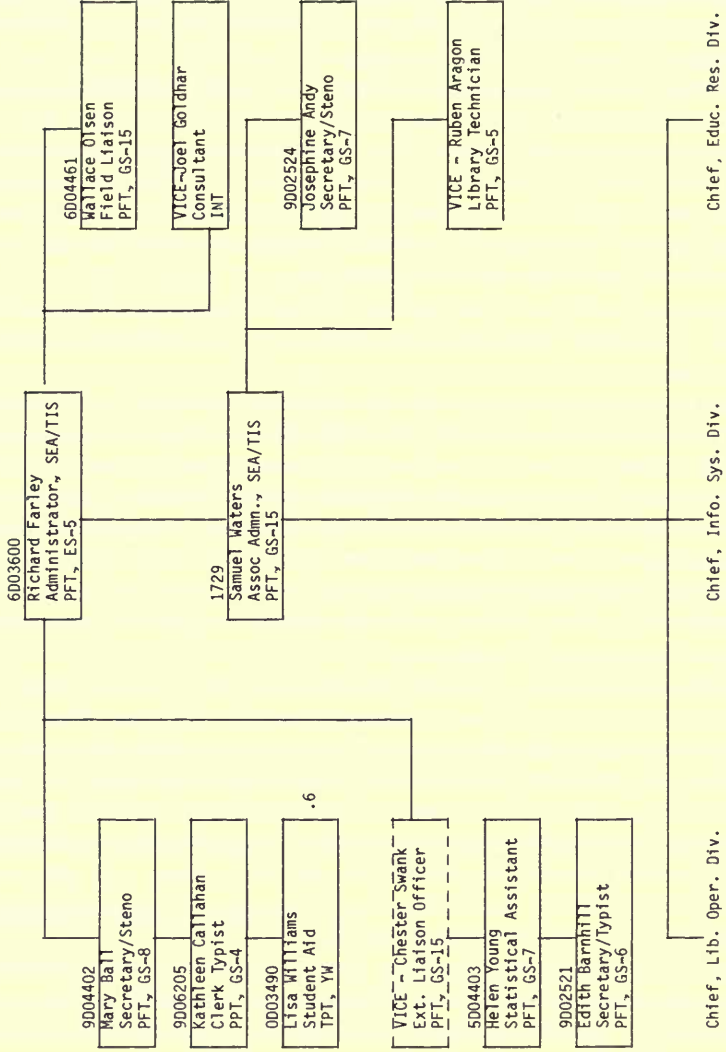


Fig. 1. Organization Chart for the USDA Technical Information Systems Office

	PFT on duty	PFT vac	PPT on duty	PPT vac	PFT/TPPT vac	FTT/TPPT vac	Student Aids				VACANT TOTAL	ON DUTY TOTAL	GRAND TOTAL
							Yrs on duty	Yrs on vac	GWS on duty	GWS on vac			
OFF. OF ADMN.	07	02*	01	00	00	01	01	00	00	00	03	09	12
SUB-TOTAL	07	02	01	00	00	01	01	00	00	00	03	09	12
LIB. OPER. DIV.	02	01	00	00	01	00	00	00	00	00	01	03	04
ACQUISITIONS BR	18	01	02	03	04***	00	00	00	00	00	00	06	06
SER CTRL & EXH	10	01	01	00	02	00	01	00	00	00	04	21	25
SEL. & ORD. SECT.	01	01	00	00	00	00	00	00	00	00	01	14	15
ANALYSIS BRANCH	18	02	00	04	01	01	00	01	00	00	08	19	27
CATALOGING SECT.	15	03**	00	00	00	01	00	00	00	00	06	15	21
INDEXING SECT.	00	00	00	00	00	00	00	00	00	00	00	00	00
LEND/REF BRANCH	01	00	00	00	00	00	00	00	00	00	00	01	02
LENDING SECTION	19	03	00	00	00	00	00	00	06	02*	05	25	30
UTILIZ. UNIT	13	00	00	02	01	00	00	00	04	00	02	18	20
MAINT. UNIT	01	01	00	00	00	00	00	00	00	00	01	01	02
REFERENCE SECT.	04	00	00	00	00	00	00	00	01	00	00	05	05
AUT. RET. UNIT	07	00	00	00	00	00	00	01	00	00	01	08	09
INFO & BIB UNIT	00	01*	00	00	01	00	00	00	00	00	02	00	02
FLD & DEPART BR.	06	00	02	00	00	00	00	00	02	01	01	10	11
DC BRANCH	04	00	00	01	00	00	00	00	00	00	01	05	06
LAW BRANCH	12	15	05	13	09	02	02	15	03	03	35	152	187
SUB-TOTAL	121	15	05	13	09	02	02	15	03	03	35	152	187
INFO SYS DIV.	03	00	00	00	00	00	00	00	00	00	00	03	03
SYSTEMS DEV. BR.	04	00	00	00	02***	00	00	00	00	00	00	06	06
SYS ADMN & MGMT BR	11	00	01	00	00	00	00	00	00	00	00	12	12
LIB SYS BRANCH	12	00	01	00	01	00	00	00	04	01	01	18	19
TECH PROD SER BR.	04	00	00	00	00	00	00	00	00	00	00	04	04
SUB-TOTAL	34	00	02	00	03	00	00	04	01	01	01	43	44
EDUC RES DIVISION	10	00	00	00	00	00	00	00	00	00	00	10	10
FOOD NUTR INFO CT	06	00	01	00	00	03	00	01	00	01	03	08	11
SUB-TOTAL	16	00	01	00	00	03	00	01	00	01	03	18	21
TOTALS:	178	17	09	13	12	06	03	20	04	04	42	222	264

** - includes 1 NOT FUNDED position.
 *** - includes 2 NOT FUNDED positions.
 **** - includes 3 Coop. Educ Stu. - New Mex. Highlands Univ. on LWOP until June, 1981.
 ***** - includes 1 Coop. Educ. Stu. - Univ. Maryland on LWOP.

Fig. 2. Personnel Breakdown of TIS Units—FY1981

CNTR #	DIV-UNIT	ACTION	NAME	CURRENT POSITION	APPROVED BY RAF	PROPOSED EFF. DATE	STATUS & DATE	COMPLETED DATE
TIS-493	0-0A	Recruit	Vice-Soden, J.	Stud Aid/YV	08/20/80			
TIS-494	L-L&E	Recruit	Vice-Hamilton, Y.	Lib Stu Aid/GM-1	08/20/80			
TIS-495	L-SC&E	Resign-Summer	Vice-Lee, A.	Clk Typ/GS-2	08/20/80	08/22/80		
TIS-496	L-UTL	Termination	MacKlin, Sharon	Lib Aid/GM-3	08/20/80	08/22/80		
TIS-497	L-CAT	Prom/GS-4	Hilliard, Irene	Clk Typ/GS-3	08/22/80	08/24/80		
TIS-498	I-LSB	Pay Adj PT	Jefferys, Maria	Stu Aid/GM-2	08/22/80	08/26/80		
TIS-499	I-LSB	Pay Adj PT	Clark, Mary	Comp Aid/GM-3	08/22/80	08/25/80		
TIS-500	L-NMT	LWOP-11/30/80	Ho, Judy	Lib Tech/GS-6	08/22/80	08/24/80		
TIS-501	L-UTL	Pay Adj PT	Butler, James	Lib Stu Aid/GM-2	08/22/80	08/24/80		
TIS-502	L-UTL	Ext Temp Appt	Butler, James	Lib Stu Aid/GM-2	08/22/80	09/21/80		
TIS-503	L-CAT	Prom/GS-5	Souder, Shirley	Lib Tech/GS-4	08/22/80	09/21/80		
TIS-504	L-SC&E	Resign	Morris, Bernadine	Lib Stu Aid/GM-1	08/22/80	08/29/80		
TIS-505	L-SC&E	Recruit	Vice-Morris, B.	Lib Stu Aid/GM-1	08/22/80	ASAP		
TIS-506	L-NMT	Pay Adj PT	Vaughn, Daryle	Lib Stu Aid/GM-2	08/22/80	08/18/80		
TIS-507	L-NMT	Pay Adj PT	Barton, Judine	Lib Stu Aid/GM-2	08/22/80	08/18/80		
TIS-508	L-I&B	Pay Adj PT	McKellar, Karen	Lib Stu Aid/GM-1	08/26/80	08/24/80		
TIS-509	L-SEL	Termination	Humphrey, Curtis	Summer Aid/YV	08/26/80	08/29/80		
TIS-510	L-UTL	Termination	Simms, Johnetta	Lib Stu Aid/GM-1	08/26/80	08/15/80		
TIS-511	L-SC&E	Termination	Sevier, Kimberly	Summer Aid/YV	08/27/80	08/29/80		
TIS-512	L-LAW	Prom/Pay Adj	Cureton, Adger	Lib Stu Aid/GM-1	08/28/80	09/07/80		
TIS-513	L-LAW	Resign	Richards, Valarie	Lib Stu Aid/GM-2	08/28/80	08/29/80		
TIS-514	L-I&B	Chg Duty Hrs	Brown, Jesse	Lib Tech/GS-5	08/28/80	09/01/80		
TIS-515	I-MIS	Resign	Gallagher, Wendy	Sect Typ/GS-5	08/28/80	09/20/80		
TIS-516	L-UTL	Chg Duty Hrs	Raff, Nancy	Lib Tech/GS-5	08/28/80	08/24/80		
TIS-517	L-UTL	Pay Adj PT	Hall, Gayle	Lib Stu Aid/GM-1	08/29/80	09/07/80		
TIS-518	L-UTL	Pay Adj PT	Little, Angela	Lib Stu Aid/GM-1	08/29/80	08/17/80		
TIS-519	I-USD	Appoint	Paulsen, Gerald	Comp Sys Ayt/GS-1	309/02/80	09/07/80		
TIS-520	I-USD	Reassign	Harnick, Edward	Comp Prog/GS-11	09/02/80	Immed		
TIS-521	L-UTL	Pay Adj PT	Raff, Nancy	Lib Tech/GS-5	09/03/80	09/07/80		
TIS-522	L-SC&E	Pay Adj PT	Black, Drema	Lib Tech/GS-5	09/03/80	09/07/80		
TIS-523	00-LAW	Retire	Jones, Robert	LEG Spec/GS-11	09/04/80	08/29/80		
TIS-524	I-USD	Recruit	Vice Sue Biederman	Comp Tech/GS-4	09/04/80	ASAP		
TIS-525	L-L00	Termination	Pratt, Sheri	Clk Typ/GS-2	09/05/80	08/23/80		
TIS-526	I-USD	Play Adj PT	Swan, Charles	Comp Tech/GM-2	09/05/80	09/02/80		
TIS-527	I-FNIC	Temporary	Chisholm, Thomas	Lib Stu Aid/GM-3	09/09/80	10/01/80		
TIS-528	L-SC&E	Pay Adj PT	Reeves, Gerald	Lib Tech/GM-5	09/12/80			
TIS-529	I-USD	Reassign	Lin, I.	Comp Prog/GS-9	09/12/80			
TIS-530	I-USD	Reassign	Spath, Carl	Comp Tech/GS-5	09/12/80			
TIS-531	L-OCB	Promotion	Cheney, Sheldon	Librn	09/12/80			

Cancel

Fig. 3. SF-52 Personnel Actions—FY1980
(TIS Personnel Funds Report)

automatic computer—adding, subtracting, calculating, updating and modifying data, and producing a fresh report every other week. For this application, we use the Records Manager and Math Master programs. By using these programs, we maintain better control over the flow of funds.

The next application is very interesting, but simple. Suppose you want to know who in the organization speaks Basque, or possesses a special skill, or who was assigned to be a representative to a special analysis budget team for nutrition standards or some other topic. For an organization as large as ours, assignments such as these and identification of special skills can be immensely difficult. To solve this problem and provide management with essential information about who is doing what, or going where, we developed the Official Representation Special Assignments, and Areas of Specialization database. We create and update this database on the Lanier, and circulate it frequently among the staff for improved communications and better coordination. It is amazing how people come forth with their own skills once they see what somebody else has identified on this list as their own.

An accompaniment to this is the SEA/TIS Travel and Meeting Calendar. This calendar lists scheduled meetings outside the agency, and allows us to keep track of who is going where, when, and for what. This is an essential tool for coordinating outside activities and maximizing the use of scarce travel resources. No longer can the left hand be accused of not knowing what the right hand is doing. For this application, we use the Repagination program.

The next two items are crucial to the successful management of every large organization, and their importance cannot be overemphasized. They are the Operating Plan and the Status of Funds Report. The operating plan is a statement, by individual units and divisions, of how much money is available to spend in a given fiscal year, how it is expected to be obligated, and what funds have actually been spent thus far (status of funds). The operating plan is the primary tool used by management for controlling the budget, establishing priorities for the disbursement of funds, and maintaining control over the budgetary process. The word processor enables us to maintain an accurate and current picture of our internal state of fiscal affairs. Without it, I cannot imagine how we could manage a \$9 million budget. Each secretary for each division keeps the records for that division, and inputs the data into a word processor in the administrator's office. By using fixed formats, standardized terminology (i.e., object class categories) and procedures, we are able to keep firm control of what could easily become chaotic. In short, we are once again managing complexity by automating routine functions using the word processor. The word processor also allows retrieval of selected bits of information, such as how much has been spent on training, or travel, or

database management, and produces separate reports on any given aspect of the budget. Managers often want to know how much has already been spent on a particular class of items, but are unable to extract the information because of inflexible budgetary procedures. The word processor's Financial program enabled us to change that situation at TIS.

The larger budgetary process itself is outlined in figure 4, which shows that at any given point in time, we are working on three separate budgets simultaneously: the current year's operating budget, the next fiscal year's budget request working its way through Congress, and the following year's budgetary estimates and justifications being submitted to USDA and the president's Office of Management and Budget. This chart helps us to keep track of the whole process. While the politics of a budget are complex, and could never be automated, the figures and write-ups can—and should be.

Finally, we are constantly called upon to prepare special reports for higher management about our Equal Employment Opportunity and Affirmative Action or other special programs; the word processor produces charts to satisfy these requests. We use the Lanier to calculate our personnel profile, indicate minority hiring, their grades, percentages of the whole staff, promotions, etc. Once the data have been input, the reports can be generated and updated almost automatically. We use the Math Master/Snap program to generate these reports.

As can be seen from the above examples, our use of the word processor for supporting management's information needs is extensive, and the earlier applications are not even exhaustive. By utilizing the various records management, financial management, math, and other programs, we are able at any given moment to know how our personnel and financial resources are allocated, and to what activity they are committed. This has resulted in a tremendous improvement in the efficiency with which management expends energy, and, correspondingly, it has resulted in an overall improvement of the agency's operating environment. Confusion, chaos and overlap are, if not eliminated, at least greatly reduced.

Program Support Systems

Our use of the word processor for program support is not as extensive as it is for management information systems. The reason for this is probably twofold. First, our major products, such as the AGRICOLA and CRIS (Current Research Information System) databases, are too large to be either created or managed on word processors, though this may change in the future. For this we depend on outside commercial systems, such as *DIALOG* Information Retrieval Services and the Washington Computer Center. Second, while word processors have been utilized by management for

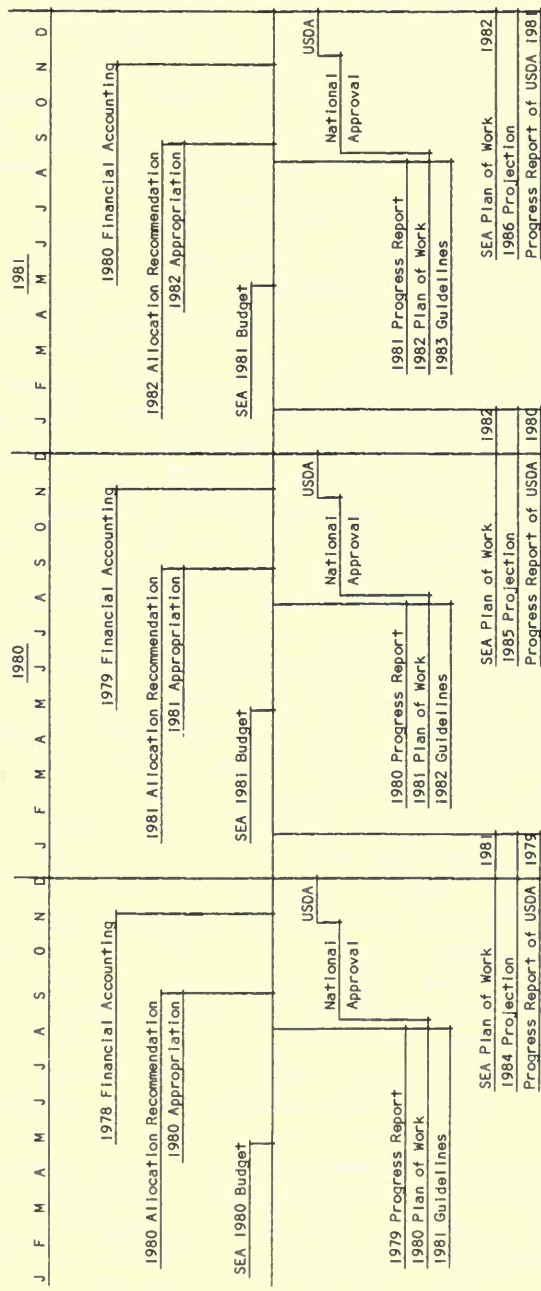


Fig. 4. Calendar Outline of Budgets of Technical Information Systems Office.

several years for administrative support, they are just now beginning to be used in program support areas, and we have not fully discovered their potential. We have used them to create and track our "management by objectives" (MBO) reports. (These are clearly worded statements of objectives linked to program activities, which show accomplishments and milestones toward completion. We have tracked our MBOs on word processors for more than five years.) We use the Lanier in program areas primarily for storing and updating essential information necessary to create and search the databases. This includes items such as the AGRICOLA category codes, CRIS classification codes, and Current Awareness Literature Service (CALIS) retrieval codes. These are extensive alphanumeric classification schemes used in indexing AGRICOLA, profiling for CALS, and CRIS or AGRICOLA database searching. These classification manuals are lengthy and complicated, and would be difficult to manage, update or prepare for publication on non-word-processing equipment. In the future we expect to discover more innovative uses of the information, since it is now stored in machine-readable form.

Another very important use of the Lanier in a program area relies on its ability to handle mailing labels and correspondence. Using the List Merge program, we can create and store several hundred mailing labels; sort these labels by zip code, last name or other alphabetic descriptor; search the list by state or descriptive element; print out on gummed labels; and even insert addresses automatically into individually typed, personalized letters. The search, sort, list, and insert capabilities of the word processor are impressive, and, except for its speed, mimic those of a larger computer. We find that its use has become essential in supporting and handling our large volume of correspondence and mailings to extension centers, experiment stations, and land-grant institutions.

A final application of the Lanier word processor is our agency newsletter, *Agricultural Libraries Information Notes* (ALIN). This is a monthly newsletter of agricultural library information which we prepare almost entirely on the word processor. It has an international distribution of over 2500 copies. Producing it, publishing it, and making sure it is timely is quite a task, but it is edited and composed by a staff of two people using the word processor. By typing ALIN in-house on the word processor, our production costs are greatly reduced, and our timeliness correspondingly enhanced. As a result, we have an attractive, inexpensive and timely newsletter of current library information. In addition, we may be able to send it electronically to a photocomposition machine in the department and eliminate another step—pasting up titles and headings, of which the Lanier is not yet capable. In the future we may also work out a way of automatically indexing the newsletter.

Online Information Retrieval Systems

When we first acquired a word processor, we did not fully appreciate or utilize its capabilities. But the idea came to us one day that, if the Lanier No Problem could communicate with other Lanier word processors, it ought to be able to communicate with other computers as well. The possibilities this communication would open to us for decentralized automated data processing seemed limitless. Word processors were springing up everywhere. If we could link them together, we could augment their power and capability with larger mainframe systems. A call to Lanier confirmed our hunch. Since the Lanier word processor uses a TTY/ASCII data communications format, the only problem was to reconcile the different computer dialects.

For several weeks we worked closely with Lynne Karsh, a Washington-based Lanier representative, who called all the computer centers with which TIS did business. She wrote separate programs for the Lanier No Problem for each incompatible communications dialect, rendering them compatible. The transmission rates and duplex switches had to be programmed. In the case of OCLC, the keyboard had to be modified to accommodate special keys, such as the backward slash key and the Display Record key. Once this programming was accomplished, and each system was fully tested, we had a set of tables (see Appendix A) which would turn our Lanier word processors into fully operational "smart" terminals. We could now communicate in an online mode with outside information retrieval systems, and store their output internally. We had, in effect, just doubled the value of our original investment. The only additional equipment necessary was a telephone acoustic coupler and the TTY/ASCII program available for purchase from Lanier.

The possibilities this programming opened up for us were tremendous. While working on a manuscript or bibliography, or researching a topic, we could now log into DIALOG and retrieve information from our databases (CRIS and AGRICOLA); store the output on Lanier diskettes; log off; further edit, merge, sort, or otherwise modify the citations; insert the results into letters; or store for further use. Assuming no copyright issues were involved (and they were not with our own databases), we could even retrieve several hundred citations, memorize them on the Lanier, and then mail the diskettes to another firm in Washington, D.C., which would process the citations further according to our own specifications and deliver to us camera-ready copy for rapid publication. The BOWNE Company experimented with us on this project, and offered valuable advice and programming assistance. Since the Lanier is able to communicate with other Laniers, we could transmit our search results to another word processor in another state or region and use the system for special delivery or

electronic mail. We produced our first online bibliography using this new word processor capability when the Secretary of Agriculture wanted a search done immediately on the effects of volcanic ash on agriculture, as a result of the Mount Saint Helens eruption.

For those wishing to program their own Laniers for online searching, Lanier was kind enough to allow inclusion of their communications procedures and program instructions in appendixes to this paper (see Appendixes A and B). Included are tables for DIALOG, BRS and SDC, the National Library of Medicine, OCLC, and the two leading timesharing networks. You will probably have to ask your representative to interpret the tables, but should feel free to use the programs, as they are nonproprietary.

Conclusion

In conclusion, then, let me return to my original theme: managing complexity. Complexity is the very stuff of librarianship. But to manage it, we need both our minds and our tools. For a while, however, it seemed that we had lost control over one of our tools—automation. It seemed that automation was in the hands of data-processing specialists, and that we and our library operations were entirely at their mercy. Mechanization is essential to our work, but mechanizers seemed to be in control.

TIS has demonstrated that this need not be the case. By creatively programming word processors to perform small-scale automated data processing tasks, and by linking word processors to outside systems for larger assignments, librarians can regain some semblance of control over the automation process. Routine but complicated assignments necessary to provide management with information about the organization can be put on the word processor; numerous program activities can also be automated in-house. This frees the librarian for more important, and human, assignments. By linking word processors online with such default-driven language/systems as NOMAD, even larger automation projects can be accomplished, freeing even more the mind and imagination of librarians. And, all the time, the librarian is in command—not an outside computer specialist, program analyst, or systems designer. Once again, automation is in your own hands.

APPENDIX A

Program Instructions for On-Line Searching with Lanier Word Processors

02 00 00 03 02 00 05 00 2A 01 00 00 00 00 FF 01
 00 00 00 00 00 00 00 FF 00 00 00 00 00 00 00 00
 E1 00 05 'LANIER TYPING ' E1 00 01

USDA
 NAL, Rm. 109
 Beltsville, Md.

David Hoyt 344-3937

00 06 FF 19 FF 7F FF 1B 08 09 0A FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF 09 0B 05 11 FF 13 FF
 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F
 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F
 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F
 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0F FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 10 FF 04 FF FF FF FF FF FF FF FF FF FF FF 13 03 12
 0D FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF 0D 1A 17 18 02 09 FF 20 20 FF FF FF FF FF
 FF FF FF 01 06 07 0C 15 16 0E 07 06 FF FF FF FF

DD/IRS (Direct Dial,
 Information Retrieval Sys.

Lockheed
 PRIME
 Library of Congress
 Bibliographic Retrieval Sys.
 Systems Devel. Corp.
 Control Data Corp.
 Federal CSS
 Juris
 Medlars

REV. 2.1.1 TTY TABLE
 HALF DUPLEX
 300 B/SEC
 NONE PARITY
 7 DATA BITS
 1 STOP BIT

BREAK - BREAK

FF FF FF FF F7 1B FB FA 08 09 0A 1A F6 E1 F9 F8
 FF 1C F3 1E F4 FF F5 FF FF FF FF FF FF FF FF
 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F
 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F
 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F
 5C 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E FF

APPENDIX A—Continued

02 00 00 03 02 00 05 00 2A 00 00 00 13 11 FF 01
 00 00 00 00 00 00 00 FF 00 00 00 00 00 00 00 00
 E1 00 05 'LANIER TYPING ' E1 00 01

USDA
 NAL, Rm. 109
 Beltsville, Md.

David Hoyt 344-3937

00 06 FF 19 FF 7F FF 1B 08 09 0A FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF 09 0B 05 11 FF 13 FF
 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F
 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F
 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F
 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 10 FF 04 FF FF FF FF FF FF FF FF FF FF FF 13 03 12
 0D FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF 0D 1A 17 18 02 09 FF 20 20 20 FF FF FF FF FF
 FF FF FF 01 06 07 0C 15 16 0E 07 06 FF FF FF FF

TELENET

REV. 2.1.1 TTY TABLE
 HALF DUPLEX
 300 B/SEC
 NONE PARITY
 7 DATA BITS
 1 STOP BIT

BREAK - BREAK
 CTRL X - CTRL X

FF FF FF FF F7 1B FB FA 08 09 0A 1A F6 E1 F9 F8
 FF 1C F3 1E F4 FF F5 FF FF FF FF FF FF FF FF
 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F
 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F
 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F
 5C 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E FF

APPENDIX A—Continued

02 00 00 03 02 00 05 01 2A 00 00 00 00 00 FF 01
 00 00 00 00 00 00 00 FF 00 00 00 00 00 00 00 00
 E1 00 05 'LANIER TYPING ' E1 00 01

USDA
 NAL, Rm. 109
 Beltsville, Md.

David Hoyt 344-3937

00 06 FF 19 FF 7F FF 1B 08 09 0A FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF 09 0B 05 11 FF 13 FF
 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F
 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F
 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F
 60 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF 0F FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 10 FF 04 FF FF FF FF FF FF FF FF FF FF FF 13 03 12
 0D FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
 FF OD 1A 17 18 02 09 FF 20 20 20 FF FF FF FF FF
 FF FF FF 60 5C 07 0C 15 16 0E 07 06 FF FF FF FF

OCLC and/or TYMNET

REV. 2.1.1 TTY TABLE
 FULL DUPLEX
 300 B/SEC
 NONE PARITY
 7 DATA BITS
 1 STOP BIT

BREAK - BREAK
 CTRL C - CTRL C
 BACKSLASH - BOTTOM LEFT KEY

FF FF FF FF F7 1B FB FA 08 09 0A 1A F6 E1 F9 F8
 FF 1C F3 1E F4 FF F5 FF FF FF FF FF FF FF FF FF
 20 21 22 23 24 25 26 27 28 29 2A 2B 2C 2D 2E 2F
 30 31 32 33 34 35 36 37 38 39 3A 3B 3C 3D 3E 3F
 40 41 42 43 44 45 46 47 48 49 4A 4B 4C 4D 4E 4F
 50 51 52 53 54 55 56 57 58 59 5A 5B 5C 5D 5E 5F
 5C 61 62 63 64 65 66 67 68 69 6A 6B 6C 6D 6E 6F
 70 71 72 73 74 75 76 77 78 79 7A 7B 7C 7D 7E FF

APPENDIX B

Procedures for Communicating with Computers

1. Turn system on; the switch is on the back left side of the system; flip it up. It will sound with a high-pitched tone. If it is already on, push the red button on the front and the system will sound.
2. Insert TTY/ASCII (yellow) program disc into the top disc drive with the label facing the ceiling and toward you; close door. Red light on disc drive will go on and off two times. Remove disc.
3. Insert "TIMNET" disc with the label facing the ceiling and toward you; close door. Give command:
 FNC + L + DD/IRS, TELENET, or OCLC-TYMNET + EXEC
 (Note: See last "tip" for which table to load!)
 When red light goes on disc drive goes off, remove disc.
4. If you will want to print anything you are getting from any computer, insert blank disc. Anything to be printed must be memorized on disc first. This is explained in steps 9 & 10.
5. The screen will automatically default to 80 characters wide. If you need to change this: FRMT + H + width needed + EXEC
 Set vertical to 26 lines: FRMT + V + length needed + EXEC
 Clear margins: FRMT + K
6. To go into the communications mode: FNC + C + EXEC.
 Format line will look like C---
7. You are now ready to dial up. When you get the high-pitched tone, place the phone in coupler. When the handset indicator on the front of the Lanier No Problem lights up, you have a link with the computer.
8. From this point on, you are on your own. Use the commands for whichever computer you are talking to.
9. If you are receiving from any computer and you want to print the data, you will have to memorize these on the Lanier disc first. Do the following:
 Before giving the display command, set a memorize mode on the Lanier first:
 CMC + M(memorize) + file name* + EXEC.
 Format line will look like CW--M
 After you have given your display command, DO NOT CARRIAGE RETURN. Erase your screen first: CMC + E + EXEC. This will clear the screen of whatever is on it. Then you can carriage return and the display will begin on line 1.
10. Since there are no printing capabilities using the TTY/ASCII program, you have to memorize the data on disc. To print out any information after you are done communicating and have signed off completely, do the following:
 Remove all discs from system.

*This can be any name you want. It can only have twelve characters, none of which can be spaces or periods. Use slashes or dashes instead. Page will be automatically memorized when the vertical is filled up. To force the page to memorize if the vertical is not filled up, hold down the "down" arrow until you reach the vertical maximum.

APPENDIX B—Continued

Push red reset button on front of No Problem; it will sound the high-pitched tone again.

Insert blue word-processing program (Repaginate or List/Merge) with the label facing the ceiling and toward you; the red light will go on and off two times. Remove program disc.

Insert working disc that has material you want to print on it.

Give print command: FILE + P + name of file + spacebar + T + EXEC. Have paper in printer because the first page will print when you EXEC; put second sheet in printer and touch STOP/CONT. Continue until entire text has been printed.

Tips

To clear screen while in communications: CMC + E (erase) + EXEC.

To use Lanier for word processing while remaining tied to computer: FNC + O (online editor) + EXEC, use standard word-processing commands in this mode.

To go back to communications after using the online editor: FNC + C (communications) + EXEC.

To end communications after you have signed off of the computer: FNC + E (off-line editor) + EXEC.

To determine which table to load for communicating, find the database under the following table types:

LOAD DD/IRS (This stands for Direct Dial/Information Retrieval System)

Library of Congress

Prime

Lockheed

Bibliographic Retrieval System

Systems Development Corporation

Control Data Corporation

Federal CSS

Juris

Medlars

LOAD OCLC-TYMNET

OCLC

TYMNET

LOAD TELENET

When accessing any database but dialing the TELENET phone number.