

Dr Hall's Computer Comments

a quarterly commentary by
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Introduction

In this issue I offer two case histories on ways computers can be used in business. One involves my own computerisation of a company's written communications with the outside world. The other involves a success story in the fashion industry.

Many business people think computers are super powerful adding machines used primarily for accounting functions. However, computers are effective for storing and processing words as well as numbers. Many businesses are finding that computers are even more useful for indexing, filing and communications than they are for purely arithmetic functions.

Both case histories give examples of the use of the computer systems outside of the usual accounting applications.

1. The importance of the Written Word

I have recently begun work as a Documentation Consultant for Computerease Pty Ltd. The company is a well established computer systems and software house located in Melbourne.

When I started with Computerease, most of their correspondence was still being done on manual typewriters. It has been my responsibility to computerise all of their written contacts with the outside world. Some observations on this exercise provide the basis for my first story.

Through several name changes, Computerease traces from a small group of programmers who first incorporated ten years ago to develop custom software for mini- and main-frame computers. Five years ago they concluded that microcomputers had become powerful enough to support sophisticated management applications for the much larger small business market.

Since then Computerease has developed powerful and successful microcomputer applications programs in areas such as accounting, inventory control, medicine, insurance broking, club management and municipal library management. Computerease software is now used or pending

sales in all Australian states, and through agents and dealers the company is in the process of extending its marketing to other English speaking countries around the world.

Computerease now employs 10 people full-time: 2 in sales, 2 in customer support, 3 in programming (assisted by outside contractors), 2 in management and myself in the documentation area.

At the time I joined the company, its written words were no better produced than would be the case for many businesses of similar size. Despite all their computer skills, the development of proper manuals for their software packages was proceeding very slowly. Most letters were still being typed on a standard golf-ball typewriter. Correspondence was haphazard at best: There was little sense of a consistent corporate style, and many sales contacts were not followed up. One could argue that their failure to use computerised word processing effectively was the company's greatest impediment to rapidly increasing their sales.

Instruction Manuals

Computerease hired me primarily to produce instruction manuals for its software.

As is the case for most microcomputer software designed for specialised applications, the company's systems were being sold with little in the way of printed user manuals. To use such undocumented software successfully, the purchaser depends on the training and after sale support provided by the software house. Computerease's services in this area were excellent by industry standards. Formal training was provided when the businesses records were first installed on the machines, and this was supported by monthly user-group meetings, an up-date and maintenance policy, and 'hand-holding' via telephone hot-line.

However, the requirement for such a high level of support increases the price at which the software must be

sold and precludes sales in high volumes or distant locations. Proper manuals reduce the need for local support, and are absolutely required before software packages can be sold 'over the counter' by retailers — and as indicated previously, Computerease intends to expand into overseas markets.

Such documentation as existed when I joined was handwritten and had been sent out for bureau word processing. The long turn-around times discouraged editing, and the many delays in editing and revision greatly impeded progress.

My first task was to appropriate one of their standard computers that offered 10 megabytes (approx. equal to 10,000,000 printed characters) of storage and a medium-speed daisywheel printer. What is involved in the setting up of this system is described in the accompanying box.

Within five months of starting the job, I produced more than 500 finished pages for manuals. In some cases I work from the systems designers' hand-written rough drafts — written in ungrammatical computer jargon. In other cases I run the software being documented on my word processing computer to see how it works, and write the rough drafts myself. (With the Concurrent CP/M operating system, one keystroke instantly switches between the full word processing system and operation of the full applications software.)

In either situation, a rough draft is quickly typed into the computer, and while I do something else on the screen, the computer prints out the draft for editing, correction and modification by other staff. Any changes, expansions or deletions are easily incorporated without the need to retype or touch in any way text which needs no modification. Turn around time from the original typing to near-final draft is very fast — frequently less than a week even for a major section.

The advantages of composing my own work on the computer are equally important to me as an individual. Not only is the **quantity** of my own writing several times greater than it would be in a dictating/typing situation, but its **quality** is also greatly improved. With the word processor, I have instant and total editorial control over my written communications. As I hand write them or as I first put them on the computer screen, my sentences and paragraphs are terribly muddy, long-winded and ungrammatical. But, on the computer, within **seconds** of on-screen chopping and changing, cutting and pasting I can approach my ideal of clear and economical expression. With hand writing or manual typing this ideal is never achieved.

Computerised Correspondence

As important as the manuals I process are to Computerease's continued growth, this is by no means the only thing I do on a normal working day. Writing manuals only occupies about half my time.

My remaining effort is spent processing all other written communication that leaves the company premises, i.e., management reports, promotional documentation, and correspondence. The latter involves the company's existing customers individually and via the User Group; plus suppliers and dealers, and the whole area of sales. Thanks to the computer, new classes of letters are being written which were not even attempted by the company

when correspondence was typed.

For example, before the correspondence was computerised, only clearly interested sales prospects were followed up. Now every contact our two sales reps make in their canvassing is followed up within a week at least by a completely personalised and individualised letter. This correspondence alone may require as many as 30 to 40 full-page sales letters a day, yet the profit from only one extra sale generated through such a letter pays for several months of effort generating them. Similarly personalised letters may also be used in mail-shots to precede canvass calls.

The word processing program prints the finished letters automatically, taking variable information directly from a comparatively small amount of data entered into the computer through 'on-screen' data entry forms.

The word processed follow-up system prints 5 quite different form letters depending on the sales situation: (1) 'want a computer now', (2) 'interested — but later', (3) 'not interested at all', (4) 'have a computer and happy with it', and (5) 'have a computer and having problems with it'.

A single character entered into the data base selects the appropriate form. This basic letter is then customised by name and address details, type of company, type of software appropriate for their needs, and up to five lines of free typing to close the letter with a completely individualised selling point. The maximum amount of information which must be entered by the operator amounts to less than 10% of the letter. Hence, once the system has been set up, the labour cost to produce one followup letter is no more than 10% of what would be required to type the same letter manually.

Also, any part of this system can itself be word processed in minutes in order to alter a single letter or the entire system for any particular circumstances. Part of the system can be created, edited, multiplied or erased as easily as any one-off letter can be typed or printed.

Because the cost of producing one letter is so small, much more thought is given to crafting both the structure of the standard forms and the individual closing lines to ensure maximum impact. Both the quantity and quality of such sales correspondence is greatly improved.

Another very important factor is that the same data file the computer uses to generate followup letters also constitutes a complete and permanent record of the sales contacts we have made. This record can be aged and/or sorted on a variety of variables, or otherwise manipulated to generate additional correspondence and/or management assessments.

What I am able to do with word processing on a microcomputer in a commercially competitive business environment shows beyond any doubt the cost-effectiveness of the computer system for the business.

Personally, my own capacity to write has also increased several-fold over what I was ever able to achieve with a typewriter or a system where I depended on secretarial services to put my words on paper.

This has been achieved because I learned to use the computer effectively for the large amount of repetition encountered in any business typing. Most businesses sell a large number of only a few kinds of products. Similarly, most of their written communication will also fall into a small number of categories covering a limited range of

ideas. With the aid of the computer system I can concentrate on the differences and let the computer take care of the similarities.

Similar improvements should be achievable by almost any business converting a manual correspondence system to an intelligently used word processing system. Computerease may sell computer systems, but the company is no different from tens or hundreds of thousands of other small businesses when considering their needs to communicate on paper with their investors, suppliers, dealers, clients and prospects.

2. Fashionable Success

My second case history is provided by one of Computerease's clients — 'The House of Stitches'. As almost any Australian woman will know, the company concerned is an important manufacturer of fashion wear.

The fashion industry is one of the most rapidly changing, labour intensive and highly competitive markets in the world. Local industries like 'Stitches' are faced with high labour costs and compete with floods of imports from countries where labour forms a much smaller fraction of the cost of the goods.

'Stitches' experience with computerisation began with their selection of a computerised system to lay out patterns and cut cloth. A proviso to the agreement to purchase this system was that its supplier would contract to provide the 'Stitches' with a computerised order management system. This was intended to allow the actual sales of ranges to be precisely married to fabric on order. The supplier of the cutting system came to Computerease for a solution to the order management problem.

The nature of the fashion industry is such that 'ranges' are created and sold in very short and exceedingly hectic seasons. Managed well, sales made by such an industry can be highly profitable. Bad management can be catastrophic. Yet, when most sales are concentrated in short, hectic and highly demanding 'seasons', good management is achieved with difficulty.

In any event, Computerease wrote software that allowed 'Stitches' to manage the ordering chaos efficiently, effectively and when they needed it.

Helped by this system, 'Stitches' now knows within minutes of taking an order, precisely how much of what kinds of fabric are required to manufacture the garments ordered. Much more importantly: at any time during a selling season managers know to a very small percentage how much remains to be sold of each kind and colour of fabric they have on hand or on order for the season's ranges.

It is now safe and easy for them to order fabric in advance of sales and then ensure that their sales efforts are focused and altered as needed during the brief selling season to use up in productive sales the precise amounts of the various kinds of fabrics ordered.

Also, the confident negotiating power such timely management information provides is remarkable. After the system was installed, at any time during a sales season, Stitches knows exactly how many units of a particular style need to be sold relative to supplies on hand or scheduled for delivery. Sales and/or forward orders of

materials may quickly be adjusted during a short selling season to avoid problems of over-selling or over-supply. In the previous manual system, the quantities of materials required by the orders might not be known until considerably after the selling season closed.

Stitches' success is due to many things besides their installation of a computer. Clearly, they are good at creating styles that people want to buy, and they know their industry and market very well. However, they also knew in reasonably practical terms how a computer could help solve a major and costly management problem, and they found a software house which developed an affordable system to their specifications.

Almost any business should be able to afford the cost of a general purpose business computer system dedicated to word processing. If it can be used for other functions as well — so much the better!

The Computer System used at Computerease for Word Processing

Hardware

Computerease is an agent for the Vector Graphic computers, a range of powerful microcomputers offering a variety of operating systems including 16-bit Multi-User Concurrent CP/M-86, MS-DOS or 8-bit CP/M. For obvious reasons my wordprocessing is done on such a machine. However, it offers more power than I need for the word-processing task alone.

For the work outlined, I would recommend a computer with a 5 or 10 megabyte Winchester (= 'hard') disk for permanent storage and 64-128 Kilobytes of memory. More memory may be required if other applications are to be run. My average page of text has about 2,000 characters of information. Thus the 10 megabyte machine has a theoretical capacity of approximately 5,000 pages of text. After loading all of the word processing and related software I use, this should leave space for more than 4,000 pages of text files.

CP/M operating systems set an upper limit to the number of files that can be stored on a disk, and space is allocated according to a minimum block size. Thus, if you wish to file a large number of small items under separate file names, the disk capacity may be very inefficiently used. More recent versions of CP/M (e.g., Multi-User Concurrent CP/M-86) offer multi-user/multi-tasking capabilities for software houses like Computerease. By contrast MS-DOS (or IBM's PC-DOS) uses space more efficiently, as only the number of bytes required by characters in the file are used. Also, there is no upper limit to the file names that can be accommodated by the disk director. However, MS-DOS provides no built-in support for multi-user/multi-access software, or the concurrent operation of several programs simultaneously.

Professional quality computers of the recommended power can be purchased for \$4,000-8,000. A practical 55 characters per second daisywheel printer costs around \$2,500, and the full range of software for word processing applications should cost no more than \$600-1,500 — if this is not provided 'free' with the computer. Because of its inherent reliability, maintenance costs for such a computer

system will generally be less than for a single golf-ball typewriter.

If word processing/ mailing is to be the sole use of the computer, an 8-bit system without hard disk would probably suffice. Such systems (computer/ printer/ software) can probably be purchased for around \$5,000, or possibly even less, including the printer. Small offices can find fully functional systems for as little as \$2,500.

Software

The word processing software I use includes the following programs, all of which are permanently loaded onto the hard disk. The total cost of software, assuming that it is not included in the price of the computer would be in the range of \$1,500.

- MicroPro's WordStar (word processor)
- MailMerge (a separately priced WordStar module)
- The Word+ by Oasis Systems (spelling verification and dictionary)
- MicroPro's InfoStar (filing system compatible with MailMerge), suitable for the maintenance of mailing lists, indexes, reports on sales follow-ups, etc.
- MicroPro's SuperSort (a sorting and indexing utility that is more powerful than InfoStar but much less user friendly)
- a variety of housekeeping utility programs

Even with all of this software and the inefficiencies of CP/ M, on my 10 MB machine I still have enough space to hold a working version of the applications software I am currently documenting, copies of all the manuals I am working on, recent correspondence, and several mailing/ prospect lists — each containing several hundred names, addresses and other details — and copies of works I am processing for these journals or theses or other long documents I may be working on after hours for my bureau.

Many other excellent word processing packages are available, and have more automatic features than WordStar.

Since I have had access to a computer, I have tried many of these, but I have always come back to WordStar.

First, it is a true general purpose system, giving me control over all aspects of formatting except it offers no facility for proportional spacing. With the more automatic systems I am frequently forced to accept the programmer's decisions on style and formatting which often differ from what I would choose.

Secondly, for true touch typists, WordStar offers by far the best keystroking ergonomics of any system I have seen. This should be qualified: No QWERTY keyboard is ergonomic. And the nearly standard placement of the keyboard's [CONTROL] key on the left little finger is even less ergonomic. Most keyboards use the [CONTROL] key to distinguish commands to be acted upon from letters to be typed. However, WordStar makes the best of a bad situation. Also, WordStar's command structure also maps very effectively onto dedicated functions keys.

Thirdly, combined with MailMerge and the facilities provided by the InfoStar modules, WordStar offers a powerful and straight-forward list processing and merge printing system.

A final advantage that WordStar offers over many fancier packages is that it was the first widely popular word processing system for general purpose business computers. Something near a million copies have been legitimately sold world-wide. If pirate copies are included, there must be well over 10,000,000 installations in use. Your chances of hiring someone who already knows how to use WordStar are reasonably good.

The disadvantage to installing one of the newer word processing systems is that there are so many to choose from that none has achieved a level of usage corresponding to that of WordStar. However, if one wanted a package with many automatic features and a reasonable chance of finding someone already skilled to use it, I would recommend Multimate. This is based on the dedicated Wang word processors. Personally, I don't like Multimate's command structure or ergonomics — but it does have the benefits of being based on Wang's very popular dedicated word processing systems.

Another good system I have used is Word Perfect. I prefer this to Multimate, but few operators would have pre-existing skills on Word Perfect.

There are also many spelling verification programs around. Most will work with WordStar. I prefer the Word+ to MicroPro's SpellStar. The main Word+ dictionary is well compacted, and words flagged by the program because they are not in the dictionary may be examined and corrected in context and/or marked for more extensive editing later with WordStar itself. It will also support any number of subsidiary dictionaries of whatever size required.

InfoStar offers a series of reasonably user-friendly modules for creating data entry forms, for entering and accessing data, for selecting and sorting, and for preparing output reports. WordStar's MailMerge may either access the data files directly or the reporting module may output file structures suitable for processing by MailMerge.

In later issues of this journal, I intend to publish a series of tutorial lessons where I show how the WordStar/ MailMerge system can be used in various business applications. Although the details will be based on the WordStar/ MailMerge/ InfoStar combination, the principles may be applied to most word processing systems.

Staffing

Any business can buy the word processing system described here. Finding someone who can make it work for the business will be more difficult.

I believe my word processing contributes as much to Computerease's sales as does other single job in the company save the Managing Director, and I believe that skills like mine would be of similar value in many other kinds of companies. The only aspect of my academic training which in any way directly prepared me for my present work was that I learned proper touch typing in high school. What is it that I do besides bashing the keys?

I am a reasonably good editor, in that I can take my own or someone else's muddled notes and translate these into reasonably plain and clear English while keying them into the computer. This saves time for everyone else which they can use to increase their productivity in their specialties. Because they trust my ability, they put down their ideas in whatever form of expression least impedes

their thinking. I use my understanding of their expression into grammatically clear and economical English on the computer, without proofing myself, and return it to the author for reading and revision. I don't type what I see in front of me, but rather what I think the intended reader should see. Of course, this requires that I have a clear understanding of the business I am writing about.

Also, I am comfortable with the technology. As an academic, I knew my limitations and believed that once I learned to use a word processor, its on-screen editing capabilities would help me clarify my usually muddy writing.

An essential component of the mastery of any tool is the user's ability to use the tool effectively in new ways when they are given a new kind of problem to solve.

Although I knew nothing about how to operate the system when I started I wasn't afraid to experiment. Many operators fear the computer and are paranoid that they will permanently damage or destroy the system if they do something wrong. They don't experiment, and learn nothing they haven't been taught by rote. Then,

when they encounter a situation that wasn't covered in their training, they are lost.

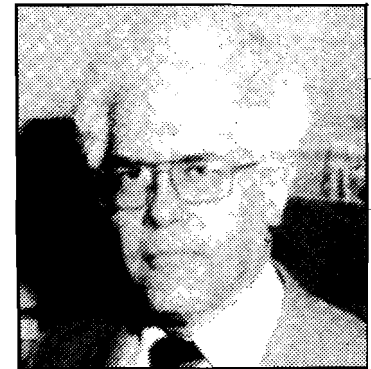
To summarise, a fully effective WP operator should be relatively autonomous, a good editor — able to translate quickly conceived communications from other staff into effective typescript, and willing to learn the technology through experimentation and trying new approaches to solve problems.

It is also my experience that many management practices will tend to work against fully realising the potential of word processing in business. By comparison to the US, where secretarial staff are given a high level of autonomy to get the job done with a minimum of management effort, many Australian managers seem to want to direct and interfere with every minute detail.

An effective WP operator has a specialised and complex skill comparable to that required for many management positions, and can contribute as much or more to the success of a company as any manager. Once the right person is found for the job — let them decide how best to do it!

Take the Current when it Serves, or Lose it

a cogent commentary by
Dr Brenton R Groves



Many managers fail to realise that the effects of computer technology on their own organisation have to be understood if that technology is to be applied effectively.

In the 1950's I was trained at MIT in Power Plant Design. But the Korean War was on when I graduated so I joined the leading military flight simulator company, Link Aviation, and became an analog computer designer. The company at that time employed 5000 people of whom 300 had the title engineer.

In July 1958 the US Air Force, which had stated many times that they would never buy a digital flight simulator, suddenly said that analog was dead and that from now on only digital computer flight simulator proposals would be acceptable. Within one year only 70 of the 300 existing engineers were still employed by the company.

It turned out that most of the engineering staff were 'empirical engineers'. They had many years experience and were very good at their job but their knowledge came from how their predecessors had done the work modified by cut and try procedures when things didn't work. In moving from analog to digital computing, they had to think in terms of

formulae and numbers instead of voltages and servo positions. *Their product and market still existed but most of them did not have the understanding necessary to make the changes in internal thinking needed to save their means of earning a living.*

Australian management in 1985 is in the same boat as those engineers were. Outside influences that cannot be deflected or ignored dictate that the productivity of individual managers within a company must be increased ten fold if the company is to survive. At the same time the old rules don't seem to be working any more. Purveyors of hope arrive on the doorstep with the answer — office automation — local area networks — electronic mail — videotext — communications — distributed processing — and so on. Each one has the hardware and sometimes even the software to solve your particular problems. They promise to speed up the process of receiving information and applying orders to the workforce, so decisions made will keep the company ahead of the competition.

Purchase orders are signed, money is spent like it is going out of fashion, the new VDU's are placed on every desk, but in the long run nothing much seems to change. In 1971 W.D. Scott gave the opinion that 70 per cent of the computers in Australian business did not justify the capital invested because they had been installed, "without anyone considering whether the computer allowed, or demanded, new patterns of organisation". During an Australian visit ten years later, *Dr. Herbert Grosh, the man who designed most of IBM's computers, said that, "less than 10 per cent of computer installations work efficiently, mainly because of a lack of management skill".*

Many managers think they know the markets they are trying to sell into and the internal workings of their own company but they are perfectly willing to leave the decisions on new technology to the experts as being in the too hard basket. *What they completely fail to realise is that the effect of the new technology on their own organisation has to*