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THE PRODUCTIVITY CHIMERA

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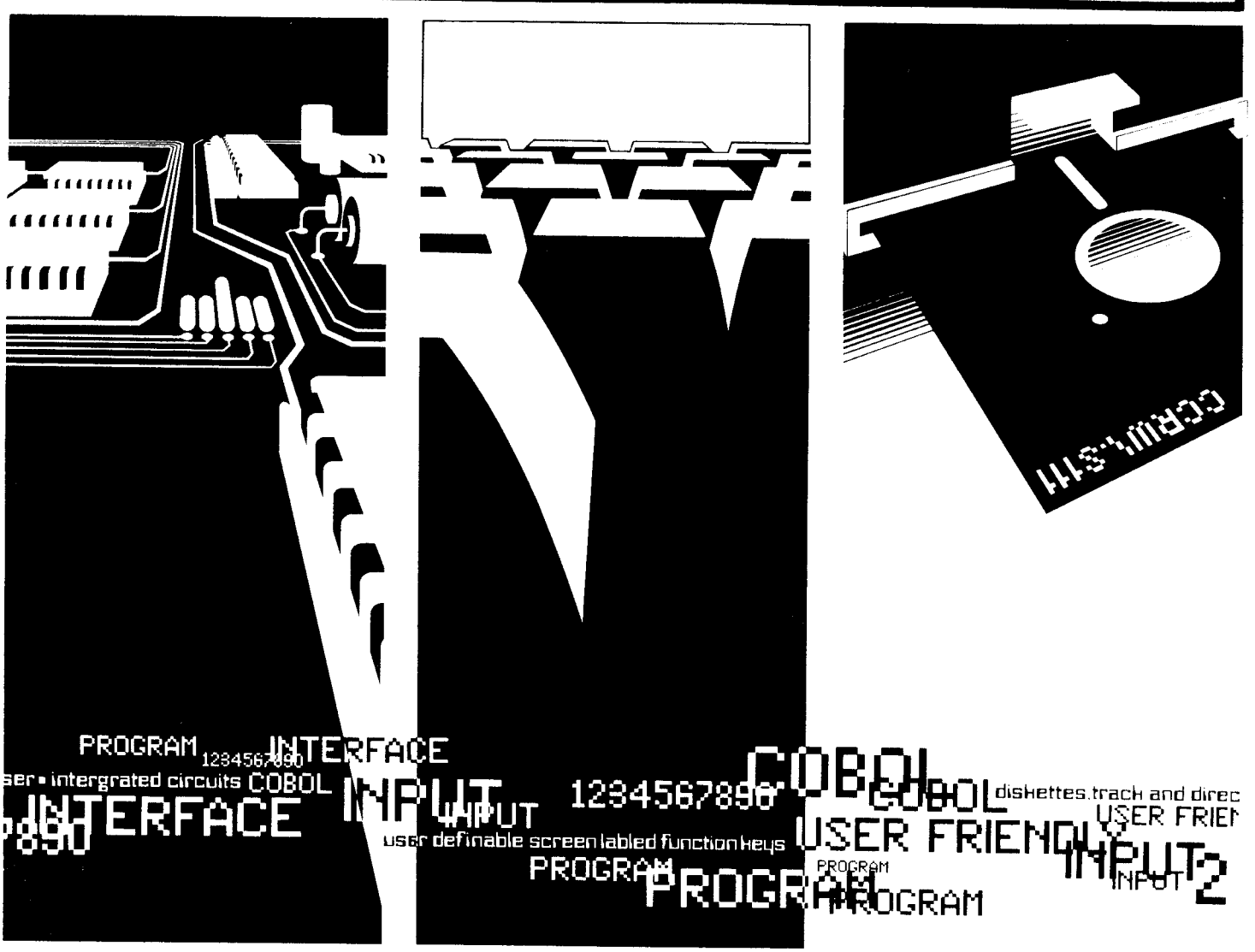

Desktop Publishing and the Writer: An Outline of the Future

Tom Carney

SUMMARY OF PAPER

Introduction:

Main thrusts of the argument and how they're presented:
What's all the fuss been about? What's going on now? What's next?

Outline of main points in the argument:
1. How DTP went from nothing to a $5 + billion market in a year.
2. The issue of the PC versus the Mac.
3. The next generation of micro hardware & software.

Conclusions:
The empowering of the writer
The emergence of a new communications environment

Body:

1. What's all the fuss been about?
   1. What the combination of the Mac, the LaserWriter and PageMaker did.
   2. Consequences for publishing by business & govt—and by (small) printers.
   3. Background changes in graphics and in readerships.

2. What's going on now?
   1. The 'advantage' of an open architecture environment for DTP.
   2. The 'single, coherent design centre' approach.

3. What's coming next?
   1. What DTP has difficulty with: books.
   2. The next generation of micros and software.
   3. CD ROM

Conclusions:

1. Serious writers will move from the typewriter to the micro.
2. Writers will increasingly think of themselves as publishers.
3. The 'universe of discourse' will be expanded for writers.
4. Desktop publishing will require interdisciplinary design teams.
5. Major organizations will be publishing centres, in the new electronic publishing environment that is coming into place.
6. The print culture is in transition.

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WHAT'S ALL THE FUSS BEEN ABOUT?

What the Mac-*PageMaker*-LaserWriter combination did:

Linked a long chain of technology:

1. Micros (essentially, the Macintosh)—with modems & scanners inputting to them—running word processing programs, business graphics, drawing & paint programs (and 'art grabber' & 'frame grabber' programs) and engineering drawing programs.

2. A cheap WYSIWYG page composition machine (the Mac) and interactive (NOT batch) page makeup programs (outstandingly, *PageMaker*)—the "great integrators."

3. An intelligent printer (the LaserWriter), a page description language (*PostScript*), registered ITC typefaces; also Linotronic phototypesetters—and Videotex.

The combination that linked this long technological chain was the trio consisting of the Mac, *PageMaker* and LaserWriter.

The consequences for business & govt, the major publishers:

1. Elimination of labour-intensive & costly work (printing) mostly done by micros (Macs) as page makeup machines—producing camera-ready copy cuts printing costs by c. 90%.

2. The desktop publishing (DTP) technology enabled 70% of printing to be done in-house. Once most printing came to be done in-house, its (hitherto fragmented) costs became visible en bloc. Business & govt thus became aware of the magnitude of their expenditures on printing. Their findings: 6-10% of business companies' gross goes for paperwork: Xerox reported 2.5 trillion pages copied in 1984, a year in which Boeing spent $2 billion on its paperwork.

3. Publication of about 70% of corporate documents was now possible in-house. This resulted in savings of up to 50% cost and 70% time, along with complete in-house control. Companies whose publications require frequent revisions (technical manuals average 13 revisions, the last ones coming, typically, just before deadline) benefited most. Hence a big—and growing—demand for the new technology, emanating from business & govt.

4. Cost of a printing press drops, from over $120,000 (usually over $200,000) to less than $12,000, and new systems are easy to install and to use, so in-house transferees are used as in-house publicists. By developing cost-cutting products, vendors of desktop publishing systems thus created a completely new market within the space of a year.

The Background:

1. A revolution in graphics:

1. For the last 400 years words have been easier to reproduce in publications than pictures. Suddenly, in the 80's, with the advent of computerized drawing (the fourth major development, in the history of print, in the technology of reproducing pictures), it became relatively easy for anyone to produce sophisticated drawings.

2. People had become receptive of images as result of TV habituation—also, they had the model of the producer (and production teams) to range over against that of the lone author. There was a growing awareness of the power & efficacy of graphics (especially business graphics)—and their use increased the appetitie for them.

3. The information transmission model of communication (as opposed to the rhetorical or empathizing models) has brought with it a new kind of text: visually informative text (VIT). VIT differs from the undifferentiated text block by itself providing meaning to the context it conveys: an analogy—it's like body language when talking about punctuation at the level of the page (rather than the sentence). It's only easily possible with programs like *PageMaker* which allow interactive construction of page layouts.

2. Changes in readerships:

1. By 1980 specialist magazines grossed more than TV: $7.8 billion to $5.1 billion. A new type of magazine & format had been developed, with VIT and lots of graphics.

2. Also by 1980, 94% of Americans were reading a magazine once a month, and 228 million Americans & Canadians were in receipt of newsletters (3 times the readership of daily newspapers).

3. A burgeoning self-help/support group movement was in place; regard for the postal services was diminishing, as modems & electronic information services were coming into favour.

4. Impacting on the other electronic media, the micro led heavy users of information to favour an interactive, user-initiated approach to communications.

5. Attitudes to text changed (word processed text is provisional, not virtually unchangeable as with typescript; click art brought similar provisionalism to art; database information is also provisional—and essentially group-produced & thus authorless). So did attitudes to copyright: think of Xerox morality; VCRs, the copying of audio cassettes, the making of videotapes as well as computer piracy. The publisher, printer and producer lost their control of the production of electronically-mediated communication.

6. Narrowcasting is taking over from broadcasting among producers of text. Consider the following changing patterns of media use among heavy-print users:

1976	**1986**
Books & newspapers	Specialist magazines, newsletters, manuals
Typewriting	Word processing
Postal services	E mail electronic information utilities
TV, film & radio	Xeroxing, VCRs, audio-cassettes click art & copy programs

WHAT'S GOING ON NOW?

The Open Architecture Environment

Advantages:

1. Third party developers rapidly expand hardware & software resources.

2. The market spurs on constantly leap-frogging growth.

3. The user can expand his system as his needs grow.

Disadvantages:

1. No industry standards; incompatible hardware and software; files not transportable between applications.

2. Solutions compound these difficulties. Thus MDS's new 10 x 8'' screen for the PC, which gives it 100 dots per inch (to the Mac's 72) is incompatible with certain of the cards designed for producing graphics on the PC, runs into problems with the 'hole' in the RAM after 640K, and, if virtual memory is used on the new more powerful chips, requires MS DOS 5.0—a FOURTH variety of MS DOS.

3. No-one is responsible for the overall system of microcomputer & peripherals. There can be no support for end-users: it's a retail mass-market. Besides, the dealers can't know more than a fraction of the products that they're handling. No concerted, focused growth plan is possible in a clone-driven market.

4. The beginning end-user is paralyzed by over-choice when putting a micro together (let alone a system).

> To do DTP on a PC, for instance, you'd have to add an EGA (expanded graphics adapter) board, a 'windowing environment' and a mouse. This would require boosting your RAM to 640K, and adding at least a 10 MB hard disk drive. And after all this, you still wouldn't have much choice of fonts—and you'd be much better off with the 80286 chip that's in the PC AT.

On top of all this, the command-driven PC and its non-compatible programs make for a difficult learning curve. Learned helplessness and reactance result.

> The consequences of all of the above are that desktop publishing requires a system integrator and turnkey solutions. So it tends to be costly—and oversold. The PC has become the standard tool for composing and editing (rather than publishing) text: its word processing and text-editing programs surpass those available (so far) for the Mac.

Closed architecture: the single coherent design centre approach:

Advantages:

1. Uniform, user-friendly interface:

   1. Easy to learn (the Mac interface has an 8:1 advantage, in ease of learning, over MS DOS).

   2. WYSIWYG (What You See Is What You Get).

   3. Program compatibility reinforces learning.

2. Standard graphics file format—and *PictureBase* (a database management system for graphics) as an additional pressure towards standardization:

   1. Graphics transferable from one program to another.

   2. Libraries of clip art pour in for computerization as click art.

3. Novice users can buy, and easily install, fonts from an extensive and expanding collection of typefaces—from many languages (including Arabic, Greek, etc.).

3. Portable software files:

    1. Microsoft's programs (which number many of the best selling programs for the Mac) form a 'family' which is especially portable to the key Apple programs (designed in close consultation with Microsoft).

    2. Even a relative beginner can leverage his investment in program expertise: each new program learned reinforces previous learning while adding to it.

4. Planned growth possible: this is virtually a one-company market niche.

5. Planned support programs are affordable in a one-company market:

    1. For users: user groups; specialist magazines & electronic bulletin board services.

    2. Dealers: vendor support (as with *PageMaker*).

    3. Desktop publishers: editing services.

Disadvantages:

1. DTP involves a market of opportunity. The idea of porting a high-end publishing program to the Mac-LaserWriter combination was Paul Brainerd's. Apple's planning and technology was positioned to take advantage of such a development. But the move into DTP involved taking advantage of a suddenly available niche market; it wasn't planned from the outset. So there are some problems.

2. Not all programs are in fact fully transportable. The Mac + is a second generation machine, and its SCSI ports have made some adaptation to pre-existing software necessary. Besides, not all the hard disks are fully compatible with all software running on the Mac—nor all the RAM upgrades.

3. The dealers know less than even relatively beginning users, as the latter are quick to use a range of programs (including utility programs).

4. Problems plague the LaserWriter II, and many users aren't aware of the disparities between printing on the LaserWriter and the ImageWriter.

5. Neither the vendors nor the dealers are able to deal with bugs in the system—that is, where these involve, or occur in, interaction among a supposedly integrated complex of hardware and software.

End result: the resulting easy-to-install, plug-and-play desktop publishing system is saleable through dealers, thus realizing a decrease in price for the end-user. A model marketing strategy has resulted in the first publishing system to be sold through retail outlets—and a one-product niche market.

But the system, especially with a hard disk running a hierarchical filing system off an SCSI port, is complex (hence the promised development of a new, simpler interface—*Servant*). Many beginners experience difficulties getting their systems operational, and have to find veteran users to help them do so. Still, the Mac + has become the standard page makeup terminal.

WHAT'S COMING NEXT?

What desktop publishing technology has difficulty with: books

1. A lengthy editing process needs an editing system (problem areas are bolded, in what follows).

    1. **Copy flow:** as well as the writer(s) of a book, the editor has to deal with reviewers of the writers' work. Also, the writers are involved at several stages of the proofing process.

    2. Economic transfer is occurring: editors are constraining writers to submit their material on disk. This saves editorial costs by passing on to the writer the costs of purchasing computing equipment and learning to use it. And a problem of **media conversion** arises: authors use a variety of media (disk formatting) formats, word processing programs (which don't necessarily have the same storage formats) and even communications programs. So, if writers do input material on disk, filters are generally needed because of problems of hardware & software incompatibility.

    3. **Mark-up**: author's alterations can cost more than the initial print run, so an **audit trail** has to be kept on their changes. Again, a special editing system is required for this.

    4. **Trafficking**: authors are scattered around the country (and abroad, sometimes). Sending proofs to them is a difficult and costly business.

        On-line transmission and storage: sending large batches of text via modem is risky under these circumstances; but going the hard copy route is expensive & time-consuming, and loses many of the advantages of using computers.

    5. Most publishers shop around for text to print their books: more problems of incompatibility can result.

    6. Complex and difficult-to-learn (and to operate) **batch programs** are necessary for printing long, text-and-graphics-intensive books. Only professional typesetters can reasonably be expected to learn and master (mastery involves daily use) such programs.

2. High-end publishing via DTP (publishing of long, text-&-graphics-intensive books):

    1. The DTP technology was not invented with the problems of such books, or of learned journals, in mind. Page makeup programs were developed by newspapers to break the print unions' stranglehold on their profits. Graphics programs were developed by the military-industrial complex, as CAD/CAM, to speed technology development and adoption (they were subsequently ported to the micros for spin-off profits). The same happened with business graphics.

    2. In-house publishing cuts out many of the above difficulties, but no. 6 above remains a stumbling block. But business and govt seem determined to gain full control of their printing. This means that they have to control that other 30%—the high-end publishing.

    3. The solution is a batch program which the user doesn't have to operate blind: he or she should be able to pre-screen its pages to check on the accuracy of his or her programming.

    4. Such programs now exist for the Mac: *MacTEX* is one of the better ones. It requires a powerful microcomputer system, and has a long and difficult learning curve.

A solution: the third-generation open Mac:

DTP is now the driving force behind the development of microcomputers. Soon the ability to do desktop

publishing will be simply another basic feature in such computers. The Mac is currently in the lead in the race to produce such a micro (relatively) cheaply. Persistent rumours have it that this machine will be a relatively cheap (under $10,000) workstation, with something like the following characteristics:

1. A 32-bit, Motorola 68020 chip, and probably a floating point math co-processor chip—something like Levco's Prodigy 4, and a special memory management chip. 2 megabytes of RAM, expandable to 20 MB (and beyond, with cards), would be standard. This combination would run at 25 MHz, and permit fast graphics handling.
   There is a suggestion of a 68030 chip: this would be the first use in a micro of a chip with the 'Harvard sytle' parallel architecture. So far such chips have been used only in supercomputers (the 68030 provides 8 MIPs, and is nearly twice as powerful as the 68020 chip).

2. To prevent cloning, there will be a proprietary ROM chip, containing *Servant*, the new user interface which permits multi-tasking.

3. A big hard drive: 70-140 megabytes, possibly.

4. This means a big machine, with expansion slots. One slot is to be for an MS DOS card with an Intel 80286 chip. ASIC-type technology will probably be used, to cut down on the numbers of chips used and thus on the price of boards. A (Nubus) system bus, compatible with Intel's Multibus II, will allow for fast development of add-on cards by third-party developers. The SCSI interface will do the same for peripherals.

5. The monitor will have a 12'' (monochrome) or 14'' (colour) screen, 640 x 480 pixels. There will be the option of having a 19 or 20 inch screen—something like the MegaScreen (over a million pixels on the screen and totally compatible with the Mac).

6. This system will be capable of running under Unix, and will be interfaced to an Ethernet LAN. It will run C, Fortran-77, Assembler, with MPW Pascal as an option.

This means a new generation of software; much of this is already here, at least in beta testing stage:

1. These developments make it likely that there will be a move to micro workstations as the next generation of micros. Given the above, it's probable that much formerly high-end software will be ported to the new micros. Certainly, much work previously done on workstations will be done on these much cheaper machines. So the high-end workstation manufacturers will have to adapt to the changing market for their products.

2. Word processing programs have by now become more like page makeup programs: they can handle graphics and incorporate spelling checkers etc. So they're large and require hard disks. This trend seems likely to continue.

3. The pressure is on page makeup programs to incorporate both batch processing and WYSIWYG prescreening. This means that they, too, are becoming larger and more powerful—and more greedy for memory.

4. 'Print' will come to mean 400 dpi—for scanners as well as printers (future systems will be sold with both of these peripherals).

5. There will likely have to be some industry standards for such things as page description languages and graphic file formats. So industry-wide wars over these matters can be expected.

6. LANs and networks, now seen as basic to maximizing office productivity, will become the norm in the DTP environment. So system integration will become a key issue. There's clear evidence of moves by vendors to establish connectivity with the VAX, LANs and gateways, and of making transfer of files between the PC and Mac easy to carry out.

7. Several of the major programs running on each of these machines have by now been adapted, or are in process of being adapted, to run on the other machine (for instance: *Excel, Database III, PageMaker, ThinkTank, Word, WordPerfect*). This trend, too, seems likely to continue: it enables software developers to exploit the large, established user bases for these machines.

CD ROM:

1. As CD ROM provides a thousand times more storage than a floppy—4,000 MB on an 11" disk—at about the same price, and as it's far cheaper (and gentler on the environment) than the books which it replaces, it's clearly going to come. It will bring with it:

    1. Hypertext: a mass of related documents on the one disk, probably linked much as is a city neighbourhood by roads. A reader will be able to move about in this mass of information by free association, thus facilitating discovery learning. The navigation will require new ways of thinking about thinking.

    2. New types of art will be developed: this technology can provide moving pictures and sound as well as text. Third-generation game designing programs such as *WorldBuilder* require the kind of interdisciplinary design teams which are also necessary to exploit CD ROM, the most interactive technology yet known.

    3. Major changes in book publishing can be expected to result: disks will be cheaper than books, and powerful, networked micros widely available.

CONCLUSION

1. **Serious writers will have to move from the typewriter to the micro, because the latter makes them so much more productive, and also empowers them.**

    1. Writing text is easier. There are programs for automatic indexing and footnoting; mail-merge; automatic hyphenation and justification, just as there are programs that check spelling (and provide a thesaurus to generate ideas for other ways of expressing oneself), and other programs that check punctuation and even (some) grammatical forms. Desk accessories allow a writer to develop an outline, then insert it into his or her text.

    2. Revising text is so much easier and speedier: there are sentence disassembly programs, and global search and replace programs, for text editing. Reformatting text is ENORMOUSLY easier; besides, many requests for re-submission of material assume that one can readily word process it in other formats. Up-dating of resumes and of year's work reports, for instance, is a nightmare unless you can reformat captured keystrokes.

    3. Product quality is improved: there's a wide variety of fonts available, and all kinds of graphics, from business graphics (charts and graphs) to line art, and there are style sheets which facilitate page formatting.

4. Word processed materials, along with graphics, can be dumped into a page makeup program and camera-ready copy speedily produced. A writer who can produce camera-ready copy to an editor's specifications is likely to have an 'in' with that editor.

5. Text can be transmitted easily and quickly, via a modem, to distant locales.

2. The writer—who will increasingly think of him- or herself as a publisher, or at least as a personal imprint editor—will recover more control of his or her product, both in regard to 'publishing' it and marketing it.

1. Just as word processing is reactive, page makeup is proactive, giving control of the publishing process.

2. The page makeup technology is being forced on many writers by editors and publishers, who require the writer to produce computerized text and graphics files to their specifications. The writer thus has to buy the technology and learn to use it. However, this compulsion, now known as economic transfer, puts a virtual co-worker at the disposal of the writer, equipping him or her with the equivalent of an editor, a publisher and a team of printers.

   The new workstation will function as an even more powerful knowledge tool. It will be an elaborate and powerful system consisting of hardware and software, tied in to information utilities and networked groups, configured to its owner's learning-style and problem-solving style and customized to his or her writing and drawing/drafting capabilities. Competent writers who control such tools will increasingly be able to name their own terms when dealing with editors and publishers, so cost-effective are they.

3. Just as TV requires different skills in actors, DTP requires different skills in writers and editors. One of these skills will be in microcomputer systems integration. Such skills give power in the new communications environment that is now dawning.

3. The 'universe of discourse' will be expanded for writers.

1. Provisional text can be easily transformed into a paper in a set of conference proceedings; a journal article; a manual/workbook or a regular book. Programs such as *WorldBuilder* and communications channels such as CD ROM make new kinds of products (simulations, for instance) possible.

2. It will also be available on electronic bulletin boards, on disk and in electronic journals.

3. Author-generated books will thus be able to generate niche markets, cheaply and on short notice. The value-subtracted costs of writing a book will become increasingly apparent to authors, and publishers will likely lose some of their clout.

4. DTP will require interdisciplinary design teams.

These will likely function much like the "skunk works" talked about in *In Search of Excellence*. These teams will provide a complex set of skills that will likely be in much demand and in short supply. DTP editors who can co-ordinate the work of such teams will be in great demand.

5. All this will occur in a new communications environment.

In this environment, all major organizations will be publishing centres and where there will be networked support and self-help groups. A wide range of communications will be in use, with far more publishing done by ordinary people.

6. The print culture is in transition.

1. Text is increasingly becoming seen as an interactive process rather than as a product: it is something that one 'massages', and there are new theories of audience, involving reader co-construction of meaning.

2. There's a changed visual sense: there's much more frequent use of graphics; the producer/director (as an alternative to the author) is seen as a possible model for a writer—in the writing of simulations, cases and suchlike.

3. Composition is likewise, increasingly, viewed as interactive: a writer may be jointly composing a work on an electronic network; he or she may pull down material from a database or an electronic utility, for instance.

4. Attitudes to literary property are changing as interactive production becomes commoner and as copyright becomes harder to enforce, what with Xerox, VCRs, audio-recorders, optical character readers, frame grabbers, copy programs—clones themselves, for that matter. Concepts like public domain software are symptomatic of this change.

5. It's the end of an era, for typographers. Visually informative text is replacing the monolithic text block (product of the hard-to-use batch pagination program). There are niche markets for short runs of specialized books, personal imprint editors, and 'intrapreneurs' (the Knight-Ridder chain's graphics artists who sell their work as click art, for example).

6. CD ROM provides sound and moving pictures along with text; has produced a new kind of text—hypertext; and requires a new approach to information retrieval.

7. The author is becoming empowered over against the publisher: economic transfer, once the writer has paid his or her dues for the technology, gives that writer leverage with editors. Such writers are now accompanied by virtual co-workers: their customized and extremely powerful computer systems. This accompaniment makes them a very-hard-to-replace combination.

   Changed readerships—owed, in no small part, to concentration in mass media publishing—means readers oriented towards the types of publications (newsletters and specialized magazines) that are easy to produce via DTP.

8. Common to many of the above developments is a new emphasis on metacognition. To work with this new technology, a writer has to be much more aware than in the past of his or her own thinking process, whether it's a matter of consulting an (invisible) database, or of customizing a computer system, or designing visually informative text, or 'invoking' a reader, or of selecting planning frames in scenario building. New capacities of mind are being discerned—the 'triune' and the 'societies of mind' models, for example, to help us to become more conscious of the new mind sets and thinking- and learning-styles involved.

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Footnote to "The Global Microcomputer"

Willard McCarty

I read with interest William Kemp's article on "The Global Microcomputer: Multi-Lingual Word Processing for the Macintosh" [*RWPN*, 4, 8] and was pleased to find the exhaustive list of software tools discussed there. Professor Kemp favoured me with a citation of my two most recent software reviews, but he attached a comment that is only partially correct and by its tone suggested something that is not at all right.

He says on page 9 that my reviews are concerned with "two IBM PC word processors which ('real soon now,' as vendors will often say) will provide multilingual word processing." Several things are wrong with this statement. First, "real soon now" originates, as far as I know, with Jerry Pournelle, who has a rambling column in *Byte* and who uses that phrase to characterize what others have called "vapourware," i.e., software that is promised but never seems to materialize. No vendor in his right mind would use that phrase about his own stuff, and he would be subject to legal action if he used it about others'.

In any case, the slur on *T3* and *Nota Bene* is not deserved. The user of these programs and the reader of my reviews will know what the packages in question can do: both have always been capable of handling the standard Western European languages, and *T3* has always been able to represent any set of alphabetic, mathematical, or similar sets of symbols, though it does not allow right-to-left entry conveniently, as far as I know. *Nota Bene*, version 2, has been promised for about a year and is about to be released (no snickers, please—I have the polished beta version, which I am using to write this letter, and a photocopy of the finished manual). Its "special language" modules, available sometime after release of version 2, will with the aid of a Hercules Plus card be able to do some rather impressive things with languages such as Hebrew and Greek. A beta version of these modules exists, though I have not seen it; I refer you to the highly laudatory review by someone who has: John J. Hughes, "*Nota Bene*: State-of-the-Art Academic Word Processing," *Bits Bytes Review* 1.1 (Oct. 1986): 9-15. True, the *Nota Bene* that handles "special languages" is still in the future commercially, but the implications of "real soon now" are all wrong.

There is a larger problem with Professor Kemp's article, a problem he shares with many. Except for those few whose work is paralyzed by the inability to get such languages displayed and printed on a computer, the priority that should be given to providing that facility is relatively low. The worth of a word processing system (that is, computer and software) to the majority of academic users is primarily determined by how well it does the most common operations, not the most sophisticated. Sophistication needs to be built on the successful implementation of the basics. There are currently a few prominent examples of word processing packages that have been designed precisely backwards in this respect, so that they provide admirable tools for entry and represenation of "special" characters but are woefully primitive as word processors. I would also like to be able to quote the Hebrew *Bible* in vocalized Hebrew characters, but I'm not about to sacrifice the editing and formatting powers of *Nota Bene*, for example, to do so. Soon I won't have to.

Professor Kemp rightly celebrates the wondrous invention of the alphabet. I wonder, however, if he has noticed that the Macintosh's user interface is essentially anti-alphabetic, that is, iconic. I refer not merely to the abundant icons ("I want that thing there!") but more to the way it treats alphabetic characters, as if they were pictographs. This approach has certain advantages, but considering the evolution of the alphabet, is it unambiguously a step forward—or backward?

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WYSIWYG: The First Newsletter on Electronic Publishing

Now approaching its third volume, *WYSIWYG: The First Newsletter on Electronic Publishing* is intended for those wanting to keep abreast of product releases and corporate movements in the fast-breaking desktop publishing field, including hardware/software features and inside looks at corporate finances and personnel changes. Under the leadership of publisher Jose Ramos, the newsletter is published 12 times each year for $215 (US), $225 (Canada), and $250 elsewhere. Contact *WYSIWYG*, 127 Columbia Avenue, Redwood City, CA 94063, or call (415) 364-4867.

Bits & Bytes Review

John J. Hughes is the editor and publisher of *Bits & Bytes Review: Reviews & News of Computer Products & Resources for the Humanities*, a new periodical which seeks "to provide in-depth reviews of computer products and resources that can help students and scholars in the liberal arts be more productive in their computer-assisted research," including grant opportunities, conferences, projects underway at colleges, and similar announcements. Nine 16-page issues will appear between September and May, with separate student($40), faculty($55), and institutional ($70) rates in the U.S., increased by $7 in Canada and $15 elsewhere. Contact Bits and Bytes Computer Resources, 623 N. Iowa Avenue, Whitefish, MT 59937, or call (406) 862-7280.

Humanities and Technology: An Information Service

Computer-using scholars in the humanities are being studied by Cleveland State University's David A. Richardson, a project funded by the National Endowment for the Humanities (NEH) and supported by the Association for Computers and the Humanities (ACH). A project survey is exploring the feasibility of establishing an information service about computers and related technologies in the humanities to improve access to technical information. Contact David A. Richardson, Department of English, Cleveland State University, Euclid Avenue at East 24th Street, Cleveland, OH 44115 or call (216) 687-3950.

Humanities/Social Sciences Database Conference

The biannual International Conference on Data Bases in the Humanities and Social Sciences (ICDBHSS) will take place in Montgomery, Alabama, on June 11-13, 1987. As before, proceedings will be published by Paradigm Press in Osprey, Fl (Joseph Raben will be one of the keynote speakers for the conference). One-page abstracts of proposed papers were collected until January 15, 1987. Attendance will be limited, with participants pre-registering by March 15, 1987, and others registering by June 1, 1987. Contact Dr. Lawrence J. McCrank, Dean, AUM Library and Resource Center, Auburn University at Montgomery, Montgomery, Al 36193-0401, or call (205) 244-9202.

THE PROFESSIONAL WRITER'S WORKSTATION: THE PRODUCTIVITY CHIMERA

Bryan Pfaffenberger

Malcolm Baldrige, the U.S. Secretary of Commerce, recently charged that the U.S. continues to lead the world in technological innovation, but this lead is being squandered by managerial myopia. Concerned with a rigid calculus of short-term benefits and incapable of a broader vision, the new class of business-school managers is strangling America's economy.

No better example of this myopic thinking can be found than the skepticism about personal computers that is now becoming prevalent among corporate managers. According to Bill Kirwin, an analyst for a Connecticut consulting firm, "Sooner or later all capital investments get the hairy eyeball, and we're finding a growing degree of skepticism [about PC productivity claims] in corporate boardrooms." (Daniel Ruby, "PCs in Business: Do They Pay for Themselves?" *PC Week*, 3:44 [November 4, 1986], p. 73.)

The claim that PCs increase productivity is, to be sure, the slogan *par excellence* of the personal computer revolution. From the start of the PC's charge into the world of white-collar work, it has been expected to increase the productivity of professional workers, technical specialists, and managers. And productivity increases are desperately needed in these areas. After all, these workers (together with clerical, service, and sales workers) now account for almost 70 percent of labor costs in the U.S., and most of them were working just five years ago with tools whose design dates to the late nineteenth century. If these workers can labor more productively, or so the argument goes, our economy is sure to gain. And so PCs by the millions have been placed before white-collar workers of all sorts.

Following the PCs came legions of management consultants, who seek to document the productivity and profitability gains (if any) that stem from office automation with PCs. The results, to the corporate mind, are profoundly disturbing.

Some analysts argue that white-collar productivity cannot be measured at all. Unlike industrial labor, in which there are clear and repetitive work inputs and outputs that can be quantified and measured, white-collar work is varied, complex, and resistant to simple measurement. After all, a 5 minute phone conversation is not necessarily more "productive" than a 10 minute one, especially if the 10 minute conversation closes a deal. Other analysts argue that white-collar productivity *can* be measured, and report that no correlation at all can be found between office automation technology and department productivity or profitability.

Viewing these results, several large corporations are said to be holding back on planned PC purchases until "hard evidence" can be obtained that PCs contribute to white-collar worker productivity. And here, pure and simple, is myopia in action.

It is doubtless true, to be sure, that the analysts are right: PCs can contribute to white-collar worker productivity, but in practice it is hard to prove that they do. Furthermore, when standard measurements are used, it often appears that they do *not* increase productivity. And it's also true that computer vendors have justified their machines by pointing to the prospects for productivity gains. So the skepticism is justifiable. What *is* myopic about the corporate view is its failure to look at these findings within a broader context.

Consider what happens when a white-collar worker—say, a professional worker such as a college professor—gets a personal computer. The learning curve (and DOS) being what it is, productivity probably goes down initially. Our professor soon learns, however, that tasks that formerly took all day—such as sending out form letters to participants in a conference symposium—can be done far more quickly with a PC, and the worker becomes convinced that the computer is raising work output. What happens next, however, is telling. ***The worker discovers that personal computer technology facilitates tasks that could not have been done at all or could not have been done well before the computer came along.*** The professor, for instance, learns that it is possible to do

fifteen or twenty drafts of a scholarly manuscript and to submit it to a publisher with letter-perfect spelling. And so the productivity gains get swallowed up. Instead of producing 15 bad papers, the prof writes one paper well. Productivity, in other words, doesn't necessarily go up. But quality does.

The significance of personal computer technology is that it imbeds information processing tools in the midst of a professional or managerial worker's day-to-day activities. These tools can be made to increase the worker's productivity, as legions of studies in Draconian typing pools demonstrate. Left to their own devices, however, workers are liable to sacrifice these productivity gains for the sake of doing the job right—doing it, in other words, the way they always wanted to and the way the job *should* be done.

Precisely the same process occurred as "labor-saving" machinery—vacuum cleaners, washing machines, dishwashers, etc.—were introduced into the home. As Ruth Cowan has shown, women are now spending just as much time on housework as they did 50 years ago even though they now use machines instead of tubs, buckets, and elbow grease. (See, e.g., "The 'Industrial Revolution' in the Home: Household Technology and Social Change in the 20th Century," *Technology and Culture*, 17 [1976]), pp. 1-23.) Why haven't the "labor-saving" devices reduced the time spent on housework? The answer, Cowan shows, is that women have used the productivity gains made possible by the machinery to improve standards of household cleanliness. And they did so to raise the quality of life for themselves and their families. Laundry, for instance, is now done three times per week or even daily instead of once per week. The underwear of 50 years ago were worn for a week; today's underwear are worn for only a day. What is more, the average American of today has far more clothes than our counterparts of a half-century ago, and this innovation is also made possible by the new domestic technology.

Technology, in short, can be used to do two things. It can be used to do the same old tasks that people used to do and in pretty much the way they used to do them, except that now the tasks can be done much quicker. (Thus, one encounters the word processing pool, in which the goal is to increase typist's output.) Alternatively, it can be used to do tasks that could never have been done before, or at least could not have been done *well*. And doing jobs well is at least as important as doing them more quickly—and, considering the example of Japanese craftsmanship, it is probably much more important. There is every reason, in short, to insist that PCs belong on the desks of professional, technical, and managerial workers—even if productivity gains cannot be demonstrated.

Contributing Editor **Bryan Pfaffenberger** is a writer and anthropologist who teaches in the Division of Humanities, School of Engineering & Applied Science, University of Virginia. He's the author of numerous articles and books, including *The College Student's Personal Computer Handbook* and *Macintosh for College Students* (both published by Sybex Computer Books). His more recent *The Scholar's Personal Computing Handbook: A Practical Guide*, is available from Little, Brown and Company. Bryan has currently published another text, *Dynamics of Microsoft Word*, in both IBM and Apple Macintosh editions for Dow Jones/Irwin. Comments and dialogue are welcome; contact Bryan at 107 Woodstock Drive, Charlottesville, VA 22901.

Manuscript Submissions Welcome

The *Newsletter* welcomes article submissions that pertain to word-processing, text-analysis, and research applications in professional writing situations. Also, hardware and software reviews are accepted, but please contact Dr. Jim Schwartz, Hardware/Software Review Editor, **before** submitting them (call Jim at 605-394-1246). Manuscripts either may be submitted as hard copy or on 5¼" diskettes using *WordStar*, *MultiMate*, DCA, or standard ASCII code. If submitting disks, please make sure they are formatted either in MS-DOS, PC-DOS, or a popular CP/M format (Kaypro, Zenith, etc.) The Editors reserve the right to edit manuscripts, if necessary. If you want your manuscript or diskette returned, please send enough postage to cover the return along with a self-addressed envelope. Address all correspondence to the Editors, *Research in Word Processing Newsletter*, South Dakota School of Mines and Technology, 501 E. St. Joseph, Rapid City, SD 57701-3995. The Editors may also be reached on *CompuServe* (70177,1154).