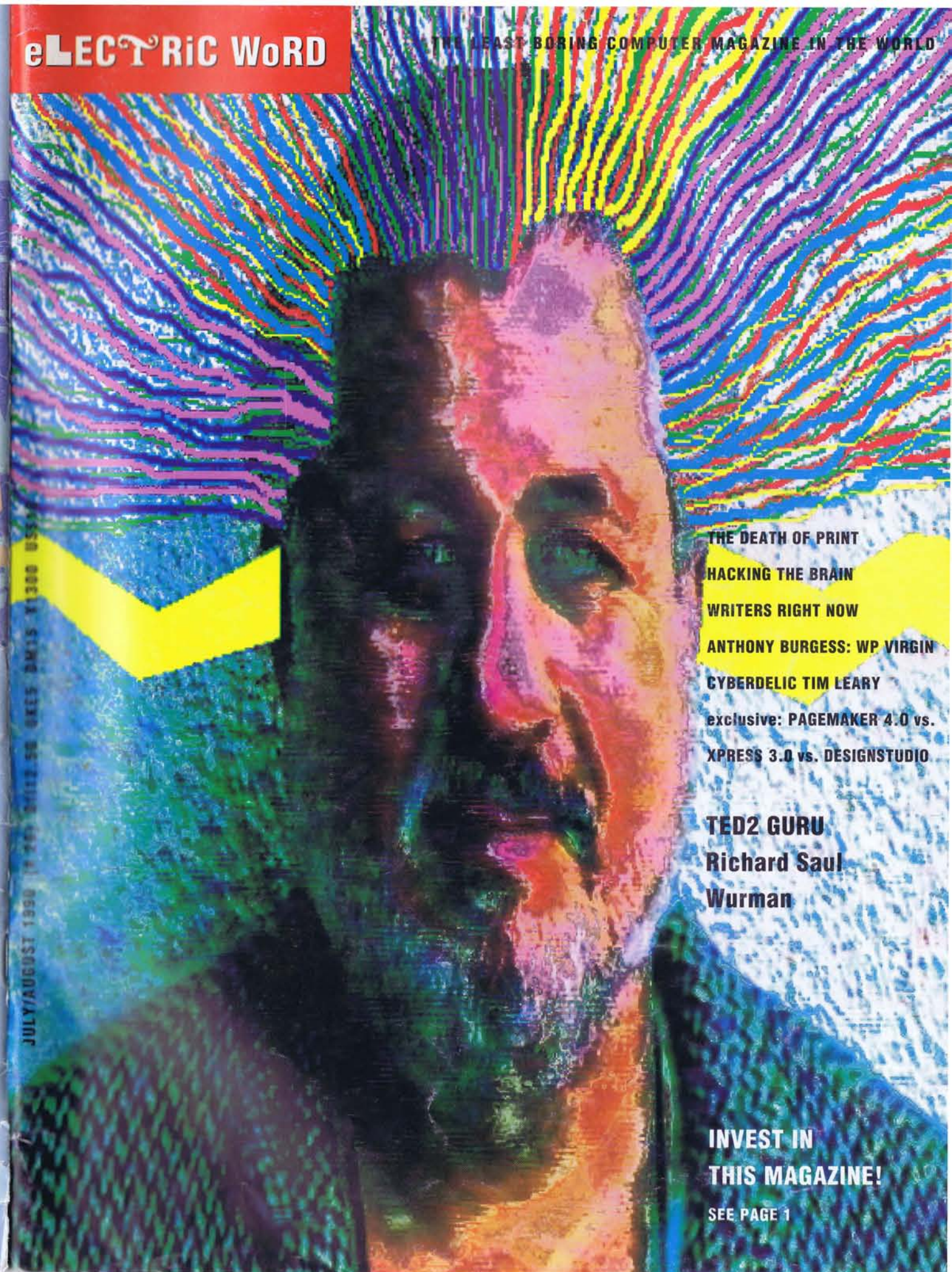


THE LEAST BORING COMPUTER MAGAZINE IN THE WORLD



SEE PAGE 1

FOCUS



MacUsers AWARD the Focus Scanner
as the best new input device of 1988



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Invest in EW

It's always a crap shoot, you never know how an issue is going to turn out. Just coordinating all the elements is a task only slightly less humbling than trying to align all the planets. No wonder it's become a standing joke around the EW office: that moment each issue when we start laying out pages and I get to see the magazine in its final form for the first time, when I proclaim in genuine surprise, hey, this issue isn't so bad – in fact, it's even better than the last.

What makes it doubly gratifying this time is that this is the first issue of the rest of our lives. Thirty six months and two publishers later, Electric Word is independent.

That means that this summer we will be devoting our energies fulltime to raising new funding, and/or finding a new publisher. We believe strongly that the world needs a magazine like Electric Word, one written not for an utterly mythical corporate CEO ready to buy 5,000 computers at a throw, but for the thinking computer user involved in the global revolution of information technology and word-crunching. And we are very optimistic that the commercial potential of the least boring computer magazine in the world will attract new investors.

Thank you for all your calls, faxes and letters of concern and/or congratulations, as well as your offers of help and equipment. And while we are already doing our utmost to line up new backing, you can certainly help: if you know anyone, or any company, that would like the opportunity to invest in Electric Word, we would appreciate your informing them and us. My personal number is +31 (20) 123 731.

See you in the fall – with yet again our best issue ever.

– Louis Rossetto



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COVER PHOTO

Richard Saul Wurman at the TED2 conference, shot by a participant with a Sony Mavica electronic camera. Image then manipulated using Adobe's PhotoShop.

KEY INTO OUR LANGUAGE TECHNOLOGY

Microlytics is the Leading Supplier of Linguistic Technology in Software & Firmware.

We offer spelling verifier/correctors in English (U.S. and U.K.) and nine European languages. Our Word Finder* thesaurus is the best selling electronic thesaurus on the market, with over 1.5 million copies sold. The *New York Times* recently called it "The finest electronic thesaurus available."

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We provide the technology in the SelecTronics WordFinder WF-220 handheld dictionary/thesaurus. Other applications of our technology include OCR and speech recognition verification. We can customize for any requirement.

GOfer™, the high speed text retrieval program that works without indexing on the IBM PC and Macintosh is another of our products. A powerful grammar checking system outperforming anything else on the market, and requiring far less overhead, will be available soon.

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Gasps at DRUPA: Direct-to-paper press

Following the reduction of the Berlin Wall to a paperweight, the walls of the print and publishing industries could be the next obstacles to free movement to go. Interoperability was the name of the game at the recent DRUPA '90 high-end print and publishing fair. Held once every five years, the jungle that is the world's largest single trade exhibition featured a plethora of products designed to break down the walls between systems, companies, industries, individual country markets and even between media for delivery of information.

David Henry Goodstein

The entry of computer technology into the global print and publishing business originally served to deepen lines of fragmentation caused by differences in language, culture and labor. With programs created on different hardware, in different software languages, the problem of the last few years hasn't been with getting digital data from Paris to Melbourne, but from a Hell system to a Scitex, Dainippon Screen or Crosfield computer next door. PostScript worked a miracle for interoperability of information in the monochrome world of publishing systems a few years back.

Unfortunately, Adobe didn't deal so completely with color data. Color PostScript is coming, but much more slowly than users had hoped. The DDES interchange format proposal has been around forever, and is in the ISO/ANSI standardization process. But that could take another decade to finalize.

For a wide variety of technical, commercial and cultural reasons, it has been almost impossible to move information between color equipment from different vendors. So Scitex's announcement of its Intercompany File Exchange Network, IFEN, ought to gladden the hearts of prepress users.

IFEN includes standards for hardware, software and data file encoding which will be adopted by Hell and Crosfield as well as Scitex itself. It will be based primarily on opening and enhancing further the Handshake protocol. Hardware and interfaces for machines will be based on the emerging Fibre Distributed Data Interface, DDFI.

Basic mode operation will link sites with only one type of equipment, while a more sophisticated inter-systems mode (involving a DDES-like encoding scheme) will be used to transfer data

between the systems of different vendors. Contone images, linework, and page description files will be handled, as well as high resolution edge/contour information.

Obstructions to the free flow of information from desktop publishing to full color systems appear to be melting away too, as manufacturers adopt the new religion of interoperability. Companies that once refused to recognize that programs like Xpress and PageMaker could do the layout job properly are now supporting them.

Scoop: First portable CD-I player



Sony demonstrated this functioning portable CD-I player at the Philips-sponsored "Multimedia Conference on Interactive CD," held in London in June. Unlike Philips, which is pouring money (through its Polygram and American Interactive Media subsidiaries) into developing CD-I software, Sony believes that the market will be hardware-driven. Sony senior general manager Nobuyuki Idei told *Electric Word* that Sony expects its first player to carry a \$500 price tag. "When we introduced CD audio," Idei stated pointedly, "there were only 25 titles available."

INTELLIGENT NETWORKS

The propaganda machines have been pounding away for years about how intelligent networks are finally coming, but in fact DRUPA was the first time that products to implement distributed networks looked real. A few advanced users have had multi-site, even multinational, linkups in operation for several years, but suppliers now intend to make this the norm, rather than the exception.

Networks were the hottest news from Scitex, which ran what it described as "the world's largest prepress configuration" from its booth. Remote scanning, proofing and recording were in operation with customers all over Europe via SciNet. This product runs on a very high speed link, but uses only a part of the bandwidth for digital data transmission. Remaining transmission space is available for video and voice teleconferencing, allowing operators as well as machines at communicating sites to be linked to each other in real time.

Following its deal for exclusive marketing rights to the Prepress Express service of GTE Spacenet in the USA, Scitex also becomes the first of the printing equipment suppliers to cross the line from selling applications and products to selling total environments. Scitex hopes >>

HYPERDOC REVAMPED

The new 2.10 version of Hyperdoc, from UK-based Hyperdoc PLC, allows IBM/clone users to build complete multimedia presentations with moving or still images from video or camera, scanned images and drawings, text and graphics from computer databases, and audio material. It also supports touch screen technology and multiple text fonts, as well as Sharp JX300/450 color scanners. All function keys are now programmable, and there is improved support for GEM, Ventura and full color TIFF graphics format. Hyperdoc now comes with new graphics libraries.

From UK£1800.
Hyperdoc PLC. Tel: +44 (81) 541 1877.

RADIATION

Apple shares fell 1-1/4 points when Wall Street heard on CNN that Mac monitors emitted "worrisome" levels of extremely low-frequency (ELF) electromagnetic radiation. CNN picked up the story from the July issue of MacWorld, which ran tests on 10 common industry monitors two months after EW broke the story (EW #19 news).

Meanwhile, the European Commission has published proposals to restrict the use of software that monitors employee work rates - unless they agree beforehand that they should be used. Other safety measures planned by the EC include hourly breaks for computer workers and allowing pregnant women to work away from screens without loss of pay. The moves, supported by the European Parliament, will require approval by national governments.

MOUSE ON A KEYBOARD

KeyTronic Corp (Spokane, WA) offers PC users the point-and-draw capabilities of a mouse without having to take their pinks off the keyboard. Pressing the "Alt" key allows the keyboard's J key to pivot and act like a mouse: push it to the right and the cursor moves to the right. KeyTronic expects Home Row technology to be most useful in portable computers, where space and weight are limited.

BLUE LASER

When Japan's Iriden Co. announced in May it had developed a blue semiconductor laser, its stock became so popular the Tokyo Stock Exchange suspended trading. Now IBM has developed one 20 times more powerful than Iriden's. A blue beam's shorter wavelength could read much smaller grooves on a CD, quadrupling the storage capacity of infra red laser-based discs now used. A commercial version is at least three years off.

POSTSCRIPT 2

Adobe has announced the first major update of PostScript since it was introduced over five years ago. New features include improved form handling, color support and pattern manipulation. In addition, transmission time for PostScript language programs has been reduced. Adobe is now writing drivers for the Macintosh, Windows 3.0 and OS/2 environments that will take full advantage of PostScript level 2.

Adobe Systems Inc.
Tel: +1 (415) 961 4400.

QUOTEMASTER

Lost for words? Try Quotemaster Plus, a new package from Houston-based Penn-Comp Software. It's a computerized quote data base containing 3,000 gems — this may seem paltry next to the

to bring the Spacenet product to Europe, thereby creating a cost-effective and technologically unified high-bandwidth network for printers, trade shops and publishing companies worldwide.

Networks were also flavor of the month, with Dainippon Screen, whose new multi-protocol server-based network, OmegaNet, provides support at 148 Mbits per second to up to 32 nodes sharing over 60 GB of magnetic disk and another 180 GB of optical storage for Ethernet, T1, T2 and a variety of other standards simultaneously. The concept is not totally new, but the emphasis that Dainippon is placing on networking for its customer base, many of whom are very traditional (and often smaller) businesses, just getting started with electronic page composition, is very telling.

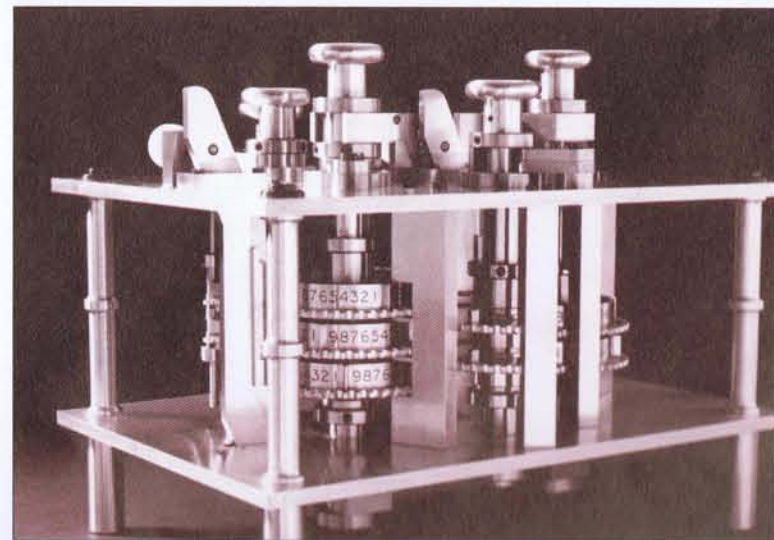
The next development is to build more intelligence, such as data format transformations, into the phone lines. A step in this direction is the new UK-

based TECSA facsimile transmission system, which allows users to attach their choice of input scanners and output devices to a telecommunications processor built around ISDN. TESCO changes the price/performance ratio of facsimile publishing applications by letting users eliminate duplicated purchases of input and output devices.

NEXT: THE TRANSFORMERS

While many new systems were introduced at DRUPA on standard platform computers such as Sun SPARC or Apple Mac, there was a counter-trend towards a group of systems sometimes called *transformers* (since they look like standard platforms above, but have non-standard, high powered board and display components beneath).

Transformers can run standard software as well as their own packages, but they are most often closed systems, like Linotype's LinoColor.



DAVID EXTON

Tower of Babbage

A team of scientists from London's Imperial College of Science and the London Science Museum have teamed up in an attempt to recapture Britain's lead of a hundred years in computer science.

Charles Babbage, an engineer and mathematician born in 1791, designed what many believe is the first digital computer, but was never able to obtain funding to build it. But now, a working model, built from steel and brass, is under preparation at the Science Museum. With more than 4,000 moving parts, the "2nd difference engine" (not PC/compatible) is three meters long and two meters high.

If the difference engine — a complex calculator — is a success, the Museum hopes to build the Analytical Engine, a general purpose machine controlled by none other than punchcards. The proto-programmer of this legendary machine? Babbage protégé Ada Byron, daughter of the legendary poet and sword sheath.

Imagining how different the world would be had the computer been invented in the beginning of the 19th Century is oddly enough the premise of William (Neuromancer) Gibson's new book set in the 19th Century.

Crosfield, Scitex, Hell and others agree that Unix is good, that Suns, Macs and PCs are very nice, but that the only way that products can be built with sufficient performance for graphic arts applications is to have bunches of custom development tucked in under the hood. Rather like the difference between a Ford Sierra and a Cosworth Ford Sierra, transformers have the same shell, but a different animal inside.

The brilliant new Crosfield Mamba, perhaps the best new creative illustration tool in the business, is a good example. Its software could be ported to any Unix hardware. But on its own hardware, it is one fast mother, setting a high level of expectation for users and a blistering pace for competitors.

The DRUPA show also suggests customization will become a major trend. Numerous product developers from various companies were voicing the same opinion: high performance, especially in color imaging systems, requires customized and proprietary technology.

DIRECT-TO-PAPER BREAK-THROUGH

Another key breakthrough was the first link between DTP and fully composed platemaking output. Polychrome's Synardica-170 Direct Laser Pre-Press System is a major breakthrough. Developed by Dainippon Ink and Chemical, the system takes files from standard DTP programs, composes them into fully imposed plate images and outputs directly to a metal plate with up to 1536 dpi resolution and a maximum plate size of 82 x 102 cms.

But the biggest gasp at DRUPA was undoubtedly the introduction of the first direct-to-paper web offset printing press — ElectroPress, from AM Graphics' Wohlenberg Division. This is a business forms and check printing web offset press, directly linked to a Barco electronic page layout system and a database of variable information. Paper moving through the unit is directly imaged with liquid toner at 300 dpi on two sides or in two colors. And every page can be different.

This US\$1.5 mn press is in many ways the crowning creation of three decades of development. And it's now in the process of being equipped with a PostScript interface.

ElectroPress created incredible excitement at DRUPA and is sure to launch a rush of development, as competitors scramble to match the achievement. By Print '91 in Chicago, there should be three or four other vendors with products or announcements of similar systems; by DRUPA '95, every major press supplier could have some way of getting from prepress composition systems to the moving sheets or webs without plates, film or delay.

Invasion of the CD-I snatchers



Commodore added to its growing reputation as a "CDI-killer" by unveiling an Amiga-based multimedia CD player for release in the fall for "under US\$1,000."

This would make the Commodore Dynamic Total Vision (CDTV) player the first consumer-oriented product to combine CD technology and a personal computer in a single, simple to use, affordable unit, beating Philips's CD-I by at least six months to a year.

The CDTV looks like a standard CD audio player (and plays CDs and CD ROMs) that plugs into a TV set and hi-fi system to become an interactive infotainment and education center. However, it reportedly has only partial-screen full motion video.

It can be converted into an Amiga home micro by adding a keyboard, 3.5in floppy drive and mouse or joystick, all cordlessly connected by infra red.

Commodore hopes to have 100 titles available by launch date and 200 by Christmas, on topics such as cooking, foreign languages, sports, games and learning packages for kids.

"CDTV is the next logical step in the evolution of consumer electronics," said Nolan Bushnell, founder of Atari and now general manager of Commodore's new Interactive Consumer Products division. "It provides capabilities far beyond any currently available entertainment or computer system, yet is remarkably simple to use. If you know how to change TV channels with a remote control, you can take full advantage of CDTV."

AUDACITY OR BLIND OPTIMISM? However, although CDTV uses the High Sierra CD ROM standard and the CD+G graphics system (CD audio plus video), it won't support existing DOS or Apple Mac CD ROMs, or CD-I. Neither will it play discs created for Fujitsu's FM Towns or NEC's PC Engine, both already well-established in Japan, or Sony's new Data Discman (see page six, this issue).

"This is not a problem. I don't believe there will be a single standard for interactivity," Graham Brown-Martin of Cambridge, UK-based Next Technology

told EW. Next Technology are producers of the first European disks for CDTV (and authors of CD-I disks). "Interactivity is a red herring here. The world doesn't know if we're ready for interactive technology. Everyone is banking on the semi-mythical 'typical family.'"

The key will be marketing, he says. Commodore plans to sell through high-end audio outlets, upmarket department stores and selected retail chains, though this may prove more difficult for a computer manufacturer to arrange than they expect. Philips, Sony, Matsushita and the other CD-I makers, on the other hand, obviously have much better consumer

Computer recognizes typist

The computerized equivalent of the signature is finally with us in the form of a program that can recognize individuals by their keystrokes — a characteristic apparently just as unique in each individual as handwriting is.

The innovation, by Dutch company GRIP (General Recognition and Identification Program), could end the primacy of the signature, for centuries the only sure way of identifying the author of a document, or proving that a document is authentic. Although the computer has been taking over the tasks of pen and typewriter for some years, there has been no real computer equivalent of the signature up to now. Passwords and codes have to be memorized by the user, all too often to be forgotten shortly afterwards. Even more problematical is the fact that they have proven easily breakable by hackers.

Eindhoven-based GRIP's approach is the first real innovation in the quest for a computer signature. Gerrit Lebbink discovered that no two people have the same typing rhythm. He developed a program that registers the length of pauses between the pressing and releasing of the various keys on the keyboard and the time taken to move from one key to the next. Lebbink applied this pattern-recognition algorithm to produce Keysign, a program for access control.

After you've typed a word or pass phrase as little as three to 20 times using Keysign, the program has enough information to recognize your typing rhythm. GRIP advises spreading the learning over several sessions so that your typing rhythm will be recognized both early on Monday morning and late on Friday afternoon.

Keysign can register the "signatures" of more than 40 typists, and in tests so far no one has been able to imitate someone else's typing style closely enough to fool the program. And if the program doesn't recognize the right typist, it simply announces "not recognized" and refuses to proceed further. So from now on you can tell your password to anyone around, even to the Hamburg Chaos Computer Club.

GRIP has applied the recognition algorithms used in Keysign to several other programs. One of these is the Identivox, which recognizes people by their voice. This program was developed in close cooperation with banking organizations to prevent fraudulent financial transactions by telephone.

Keysign and Identivox both run on IBM PCs and compatibles.

GRIP, PO Box 233, 5670 AE Nuenen, The Netherlands. Tel: +31 (40) 447820.

retailer contacts.

CDTV's strength, according to Brown-Martin, is that it's a simple adaptation of an existing product (it's based around the Amiga 500) using mature technology. Furthermore, "development equipment is cheap and out there in the thousands. Anyone competent at Amiga programming can develop for CDTV," he said. The Amiga can also be used to author CD-I applications.

Also, CDTV will have the home market to itself for a year, though conversely, says Brown-Martin, this may help CD-I too by introducing interactivity to the public in advance of its own launch.

A future development that may muddy the waters yet more is that a CD-I emulator could be created for CDTV, especially if Motorola, who makes the CD-I chips, owns the copyright. Commodore might be able to license these for its own system.

●INTERACTUS INTERRUPTUS Polygram's American Interactive Media-brought into existence to produce programs for Philip's imminent CD-I player — has indefinitely postponed the previously announced "The Sexual Universe." Electric Word's informants have not been able to verify a rumor that this was due to a lack of available hardware.

Oxford Dictionary of Quotations or Bartlett's, but it's makers claim it's faster than plowing through a book. Quotemaster Plus costs \$89 and is available in IBM and Mac versions.

RATTUS CYBERNETICUS

One for all you cyber-punks: researchers at California's Stanford University have implanted a silicon chip riddled with tiny holes into a lab rat. According to *AI Expert*, nerve axons can be induced to grow through the holes and be individually accessed. The nerve chip is part of a project to create a chip containing active circuitry that sends biological signals to artificial limbs. Stanford says they are still 10 years from putting such a chip in humans.

CD GUIDE — ON CD

CD Guide, the magazine out of New Hampshire, USA covering — you guessed it — the CD world, is now available on CD ROM. The quarterly CD version is packed with 40,000 product listings, 4000 reviews, sample audio tracks and other goodies. Should you lose your way among all this information, you can search for a particular CD by name, disk label number — even its rating. A single issue is \$99, a subscription \$259.

WGE Publishing.
Tel: +1 (603) 525-4201.

NINTENDO AND MIT

Video game giant Nintendo is giving \$3mn to researchers at MIT to study how video games can be used to teach children. Learning specialist Seymour Papert will work on the project with AI pioneer Marvin Minsky and the Media Lab's Nicholas Negroponte. Papert developed the computer language Logo, used in one-third of US elementary schools.

MIT is not obliged to create video games for Nintendo, but is expected to develop ideas which designers can then apply to commercial games programs, not necessarily educational in nature.

E-MAIL: AFTER X.400, X.500

A year ago, the Aerospace Industries Association (AIA) warned e-mail suppliers: either connect your incompatible systems, or risk losing the income from the 150mn e-mail messages sent by AIA members every year. E-mail companies woke up, scrambling to adopt the X.400 standard for interconnection. The world applauded. Now major players like IBM, AT&T, MCI and others are hurrying along the development of the logically-named, next-step X.500 standard. This will allow messages to be automatically passed to a mailbox on any e-mail system, worldwide.

WORDPERFECT 2.0 FOR THE MAC

WordPerfect 2.0 for the Mac is coming this fall. New are an integrated drawing program (allowing users to edit and draw files in PICT, PCS, and WPG file formats), the ability to manipulate graphic images embedded within a document while in "edit" mode (i.e. without having to enter "page preview" mode), a macro editor, programmable macros, and customizable style sheets. \$395.

CULTURE FOR MS/DOS

Culture, the hypermedia guide to civilization from Cultural Resources Inc., is now available for MS-DOS/IBM compatibles for \$175. The DOS driver is a new hypermedia product called Hyperwriter, from Connecticut-based Nterga, which comes bundled with the product.

Is your Mac making you stupid?

Your Mac could be making you stupid, according to recent research conducted at the University of Delaware by Marcia Peoples Halio, assistant director of the English Department's writing program. It all started when she noticed a marked difference in quality between the work produced by first year writing program students using IBM PCs, on the one hand, and those working on Macintoshes on the other.

Even though the two groups of students were of equal (average) ability, and were given the same amount of computer training and the same choice of assignments, the Mac writers consistently produced work of inferior quality. They showed less ability in spelling, punctuation, vocabulary, sentence structure and, most disturbingly, in development of thought.

Even the subjects they chose to write about revealed less sophistication and maturity than the IBMers, though both groups were given the same selection of possible topics. The Mac users tended to pick the most superficial and ephemeral of topics – dating, fast food, television and rock music – while the IBM toting students went for the weightier matters of capital punishment, teenage pregnancy, nuclear war and drunk driving.

To test her observations, a concerned Halio decided to run twenty essays, randomly selected from both user groups, through the Writers' Workbench Text Analysis programs on the VAX mainframe. The results confirmed her initial impressions. Only 30% of the Mac writers used complex sentences, as opposed to 50% of the IBM users. The Mac students also scored a much higher use of "to be" verbs (32% as opposed to 23% with the IBM users), a sign of weak and lifeless prose, according to the composition theorists.

Sentence length averaged 16.3 words among the Mac writers, but 22.6 words with the IBM writers. And far more Mac students (80%, as opposed to 67% IBM writers) resorted to the use of the sentence subject as their sentence opener – another indication of unsophisticated writing technique. Although nine percent of IBM sentences used subordinating conjunctions, none of the Mac sentences did. And Mac users made poorer proofreaders, averaging 15 misspellings per essay, compared to four per IBM essay.

Readability scores, reckoned according to the Kincaid scale, averaged 12.1 (first year college level) for the IBM writers but only 7.95 for the Mac writers, which is below high school level.

In an article on her research in *Academic Computing Magazine*, Halio highlights several contributory factors for the

greater stupidity of Mac-using students. She notes that the loose, conversational structure of Mac writing could be linked to the toy-like, user-friendly features of the Mac – features which have a particularly strong effect on youthful users. Indeed, Halio thinks that the Macintosh is too much like fun, and too easy to use, to encourage an "adult" working attitude in its student users.

This is in part the result of the graphics-oriented Macintosh user-interface. She believes that the emphasis on graphics discourages students from developing a serious, analytical attitude towards text. In addition, Mac-produced text may simply look so good that it fools students into thinking their work is better than it actually is. The small screen of the Macintosh is another suspect factor – it could be that young writers just can't see enough of their text at once to be self-critical.

Data Discman: Dawn of the electronic book?



Sony Corp. is hoping to revolutionize our reading habits with this remarkable new product, due for Japanese release in July. Called Data Discman, it's a portable data retrieval system. The postcard-sized (4" x 7") player reads 3-inch compact disks. An LCD screen on the outer lid displays 15 characters horizontally and 10 lines vertically at a time, scrolling its way through whatever text you are reading. If your eyes can't take the strain, a video adapter lets you display your text on a TV screen.

There's also a tiny Roman-alphabet keyboard, on the top cover of the disk-loading mechanism, to help you make searches. Retrieval software integrated into the circuitry of the Discman allows various methods of data retrieval: word search, keyword search, menu search and multi search, among others. Users will also be able to listen to regular 3-inch audio CDs by using the earphones.

Data Discman will cost around US\$380. Although initially marketed in Japan only, sales overseas are expected in less than a year. Data Discman currently comes with a CD containing five different dictionaries: three Japanese, and two English-Japanese. As words are entered with the Roman keyboard, they are automatically converted into Japanese hiragana or katakana characters.

Assisting Sony in its ambitions is the Electronic Book Committee – a consortium of 28 Japanese book publishers working in cooperation with Sony to develop the format. 18 CD electronic book titles are due for release in July, including reference books and guides to travel, entertainment and medicine. Costing around US\$20 to \$33, each electronic book CD can store around 100,000 pages of text – that's over 300 paperbacks.

Computer discovers Shakespeare's poems

Computers are being used in an attempt to solve the most famous literary enigma of all: the question of who really wrote the plays and poems attributed to William Shakespeare. The latest development in the four hundred year old controversy is the claim, made by Professor Ward Elliott and Professor Rob Valenza of Clermont McKenna College in California, that computer analysis "proves" Shakespeare to have been the only author of the works attributed to him.

Some 58 Elizabethans have been held up, at various times and with varying degrees of convincingness, as contenders in the "real Shakespeare" stakes. The claims have been based on what is perceived in some quarters as the unlikelihood of William Shakespeare – from a humble background and with no university education – being the creative genius with a known vocabulary of 17,000 words (twice that of Milton) behind the plays that bear his name.

Professor Elliott's Shakespeare Clinic fed three million words of Elizabethan English into a mainframe computer. To the Shakespeare corpus researchers added 34 works from 18 pretenders to the Bard's crown, including time-honored favorites like the Earl of Oxford, Francis Bacon, Christopher Marlowe, Queen Elizabeth I, and Sir Walter Raleigh.

Finally, the Shakespeare Clinic added 16 works by non-claimants to the title, and the King James Bible. The resulting corpus is the largest collection of machine-readable Elizabethan and Jacobean texts ever, though it is far from definitive.

The database was created by Professor Elliott and his colleague Rob Valenza, of computer sciences. The program, devised by Valenza, runs every text through a number of tests designed to establish its stylistic profile. The result is then compared to the Shakespearean mean.

The main test, modal analysis (aka the Valenza test), divides a text into blocks and counts for 52 keywords in each block. Then it measures and ranks relationships between the keywords. In Shakespeare, the test reveals a very few strong interrelationships, or modes, tailing off quickly into many weak modes. "Preliminary modal testing has shown high consistency between each block of Shakespeare's poems and Shakespeare's poems as a whole," says Elliott. "It has also shown high discrimination between Shakespeare and other poets – not as high as fingerprints, but perhaps as high as hat sizes."

CRITICISMS

So far, the modal test has established only two writers with results in any way comparable to Shakespeare's: Fulke Greville (ironically never considered as a

plausible author of Shakespeare's plays), and Queen Elizabeth I.

Elliott and Valenza conclude that Shakespeare was indeed the author of the works, as no other writer so far tested matches his stylistic profile. He uses many more compound words, exclamation marks, open lines, feminine endings and long sentences, and fewer relative clauses, than his contemporaries.

In addition, the computer "discovered" eight new Shakespeare poems, previously thought uncharacteristic of the Bard. *The Passionate Pilgrim* was a collection of 20 poems first published in 1599. Although the collection has Shakespeare's signature, only five poems in the book are attributed to him, and four to other poets. The other 11 are anonymous, and few scholars think they have anything to do with Shakespeare. But the computer has earmarked eight as bearing his linguistic signature.

Professor Elliott reports that criticisms of his computerized dissection of Shakespeare have been flooding in. One of the most serious concerns the tests for punctuation, hyphenation and compound words. We have no real idea how Shakespeare used any of these, as his works have not survived in manuscript form, and the punctuation of the early printed versions may only reflect the preferences of his editors and printers. In fact, only one short piece of manuscript thought to be by Shakespeare's hand has survived – a speech by Sir Thomas More which is skimpily and carelessly punctuated.

On the other hand, the computer revealed distinct similarities in the incidence of compound words and exclamation marks in Shakespeare works pub-

lished by two different printers, George Eld and Richard Read, and marked differences from other works – even those printed by the same printers.

Professor Elliott hopes to see his research refined and continued by other scholars as well as his own team. "Computers can reveal things which the naked eye misses," he says. Or, as Shakespeare might have said, they "make the truth appear when it seems hid." (*Measure for Measure*, V, i, 66)

Multimedia Shakespeare is on its way. The innovative Voyager company, whose multimedia CD-ROM version of Beethoven's Ninth Symphony stunned participants at the recent TED2 conference, is currently testing the viability of a multimedia series of Shakespeare's plays.

These would combine text with audio (BBC radio), and possibly film, versions of the play, plus annotations, glossaries, and other relevant material. The content will be selected by Shakespearean scholars, following along the lines of the Beethoven disk, which was overseen by Robert Winter, Professor of Music at UCLA.

Voyager's Bob Stein stressed that the project is still at a theoretical stage, but we could see the first multimedia play – probably Macbeth – as early as next spring.

Meanwhile, DIY Shakespeare scholars may be interested to know that his works are now available on disk. A CD-ROM from CMC Research Inc. contains Shakespeare's 37 plays, five narrative poems and 154 sonnets – in both the Queen's English and American English versions. It comes with DiskPassage retrieval software and costs US\$99. Requires IBM XT with 640Kb RAM.

CMC Research Inc., 7150 Southwest Hampton, Suite C-120, Portland, OR 97223, USA. Tel: +1 (503) 639 3395.

The active document

Electronic publishing leader Interleaf recently announced the active document, which it claims is a major breakthrough in controlling and speeding the flow of information within an organization.

Active documents are "aware" of their contents and those of other files, and can evaluate information and act on it. They include a vast range of possibilities – memos that mail themselves, interactive training manuals that customize their next chapter according to how you did in a test at the end of the last chapter, database documents which update the source database if you make any changes to the extracted documents, interactive novels, documents which tailor themselves to the amount of time the reader has to read them, and so on.

The active document promises to automate many tedious tasks (sending memos, information gathering), react to different circumstances (create different contents for different dates, people, choices – even the time of day), and adapt to different users (presenting them with appropriate interfaces and sets of functions). The machine does all the work, freeing the harried information professional for other jobs – if there are any left!

Initially, says Interleaf, the active document is intended as a productivity tool for documentation creation. But it has wider implications. The active document could serve as an application or an expert system, as a control panel, or as an expert editor enforcing corporate, industry or government standards.

MAC ARCHIVING

Archis is a document management and archiving system from Belgian developer SoftCore Creative Technology. Running on an AppleTalk network, Archis combines software modules with scanners, video digitizers and a WORM drive for document storage.

SoftCore Creative Technology, Tel. +32 (2) 647 4000.

Random Random Random Random

RANDOM TYPE

Are you ready for random PostScript fonts for your Mac, specially programmed to change shapes? Every character looks different every time it appears. Available in three levels of weirdness: Beowulf 21, 22 (which the brochure describes as having "a mind of its own") and 23 ("hectic, which beautifully represents the hurry and stress of modern life"). Available from Eric Spiekermann's FontShop in Berlin. Tel. +49 (30) 24 11 29.

FIRST WINDOWS GRAMCHECKER

The first grammar and style checker for Microsoft Windows is Reference Software's Grammatik Windows. It retails at US\$99, with a network version, supporting five users, at US\$189. With sales of over 300,000 so far, Grammatik is a best-seller in both the DOS and Mac markets. Reference plans to release XENIX and SUN operating system editions in the fall. Foreign language versions are expected later this year.

Reference Software, Tel: +1 (415) 541 0222.

ATEX

Atex Publishing Systems attacks the

lower-end DTP market with new publishing systems: each new system provides information sharing between departments, as well as providing users with professional publishing applications. Writer Software incorporates a text-editor, reputed simplicity of use, and the power of the Atex front-end for a stand-alone or networked IBM PS/2. It includes an extensive library of editing commands, spelling checker, thesaurus and customizable headers. Page Makeup Software provides composition and makeup.

PHOTONIC PHONE

Just months after its Bell Labs produced the first digital optical processor (see EW#19), AT&T claims it will deliver a photonic phone switch based on the research within the next five years, rather than the 20 first estimated. The technology, known as free-space photonics (FSP), allows light pulses to be routed to their destination without conversion to electrical impulses, as with fiber optic lines today. In a totally FSP network, we're talking trillions rather than the millions of bits per second currently possible. A single network could carry hundreds of thousands of fax connections, video conference calls or thousands of high-definition TV channels.

12.9 MIPS FOR LESS THAN \$5000

SUN Microsystems newest SPARC-based workstation, the SLC, is fitted with 8 to 16 MB of RAM and a 17 inch 100 dpi monochrome monitor. The SLC's processing power is rated at a mouthwatering 12.9 MIPS. Targeted at the X-terminal market, Sun has priced it at a highly competitive US\$5000.

Sun Microsystems. Tel.: +1 (415) 960-1300

Is it real, or is it MIT?

MIT's Media Lab has brought the dream of watching *Monday Night Football* live on your living room floor a step closer with the announcement that they've successfully developed an electro-optical device capable of displaying computer-generated holograms in real time.

The lab's Spatial Imaging Group says the development is central to progress in fields such as medical imaging, computer-aided design and navigation, which demand easy, rapid and accurate perception of complex structures in depth.

At present, 3-D data for interactive, animated or real-time display is limited to 2-D rendering display on a VDU. Progress beyond this has been hampered by the limited information bandwidth available in current electronic, computing and communication systems.

A 10cm x10cm hologram with a viewing angle of 30 degrees contains about 25 Gigabytes of information. To update it at 60 frames/sec with 8-bit resolution would require a data transmission rate of 12 Terabits/sec – well beyond today's technology.

The Lab has reduced this to 1 Gb/sec by eliminating vertical parallax before computation, limiting the viewing angle to 15 degrees and reducing the picture resolution.

The calculations for the hologram generation were done on a Thinking Machines Connection Machine model 2, which has 16,000 microprocessors arranged in a massively parallel hypercube processing architecture.

Objects up to 30cm x 30cm x 30cm can be displayed with 64 lines of vertical resolution, almost flicker-free, in monochrome.

Interactive holographic display is "almost possible," though a practical display application will require advances of two orders of magnitude in computer signal processing technology. MIT says parallelism and optical computers offer such an advance in the near future.

● A young London inventor has avoided high-tech hardware and silly glasses in designing a 3-D TV called Deep Vision. James Ashbey's trick is to digitize a videotape and use a computer to add proprietary visual cues to each frame.

When slightly different versions are beamed to each eye on playback, the brain is tricked into "seeing" a 3-D image. The process is virtually instantaneous, so could be used for live transmission.

According to *BusinessWeek* magazine, "In a new version of *Ben Hur*, the hero's chariot practically leaps off the TV screen. And when Charlton Heston's Moses parts the Red Sea, it looks miles wide."



THOMAS W. BRAYNE

Information Age is already in museum

These near life-size figures by sculptor Stephen Hansen greet visitors to the innovative and highly interactive "Information Age" exhibition at the Smithsonian's National Museum of American History (Washington DC).

The largest and most complex interactive exhibition ever mounted by the Smithsonian, "Information Age" examines how information technology has changed society over the last 150 years.

"Information Age" includes more than 700 artifacts, 700 graphics, period settings, mannequins, as well as 78 computers and 40 interactive video stations. A computer network links together the interactive workstations, video, films and radio recordings in the exhibit hall.

"This exhibition is really about people and how the technological innovations of the past 150 years have changed their lives and become part of their culture," says David Allison, curator of the exhibition. "We try to make the point that we don't live in just a media age or a computer age – we live in the Information Age, which is a combination of many technologies."

The \$10mn, 14,000 square-foot exhibition will continue indefinitely. It's all been made possible by donations of cash and equipment from a number of prominent corporations – IBM, Unisys, Hewlett-Packard, Apple, and other big players.

Kapor backs free (electronic) speech

Lotus and ONTechnology founder Mitch Kapor has announced plans to raise a defense fund of "hundreds of thousands of dollars" to help those accused in what he sees as overzealous prosecution in some computer crime cases.

While he agrees that there are computer criminals who should have their asses busted, much recent law enforcement has abridged the free speech of innocent people who are often "grassroots technological pioneers."

Kapor was approached by lawyers to back a US-wide effort to defend those implicated in April's "Operation Sun Devil," the US Secret Service's two-year investigation of computer fraud.

"When we talk about hackers, by and large, we're talking about teenagers," Kapor told the UPI wire service. "It's not

clear that the average hacker represents any danger at all."

He said enforcement agencies were casting their net too wide and the tactics they've used are inappropriate to the situation at hand. Some young people have been arrested at gunpoint and had their computers seized by over-reacting agencies.

Kapor sees the issue in free speech and technological progress terms. Computer bulletin boards "are electronic media. If the government was coming in and seizing printing presses, you would hear the screams from coast to coast."

He said the issue was also important because young hackers, without commercial or government support, are producing "the most interesting and innovative things in telecommunications and computers...that will create these new media that will be very open, very centralized, very empowering. It's going to benefit us all."

Global language industries survey results

Ink International has delivered its year-long Language Industries Survey to the Commission of the European Community.

The survey is part of an ongoing initiative by the Commission to raise awareness of the advantages with regard to natural language processing of a united yet linguistically pluralist Europe.

Survey questionnaires were sent to more than 4,500 companies and organizations worldwide. Of the 600 respondents, most came from the US and the UK. "As is usual with computer-related activities," Ink notes, "English-speaking countries dominate."

Did INK get the response they wanted?

Survey coordinator Kick Sprangers: "We were desperately hoping the big companies would reply. But many didn't, for reasons of confidentiality. They'd get to a certain question and decide they didn't want to answer it after all. Interestingly enough, US respondents seemed much more open."

One of the discoveries of the '89 Survey is that only very small or very large companies are involved in the language industries.

"It's a risky business for investors," explains Sprangers. "For large companies, 25 researchers on any given project is peanuts; but mid-sized companies don't want to take the risk."

Ink's Emmanuel Rabier was quick to point out that while these results are for internal use of the Commission and involved organizations, they pave the way for future projects. Rabier: "The next step will be proselytizing what we have discovered and helping design specific recommendations to governments."

Rabier explains why the EC got involved in the first place: "The Commission, in particular the project leaders of DG XIII (Innovation and Communication), perceived that Europe did not have the strongest technological position compared to the US and Japan. The long-term (25 year) strategy is to build it up by focusing attention on the unique opportunity provided by a united Europe."

Sprangers and Rabier are eager to discuss some of the other projects the Commission has planned. Rabier: "We're currently compiling a directory of off-the-shelf, language-oriented, commercial products. The idea is if you are looking for a Chinese wordprocessor, you can find out who offers one."

"To compile this, we're sending out a questionnaire to companies in our database for specific information on products currently available. Hopefully, the directory will be ready by the end of the year."



CD-I JAPANESE LEARNING DISK

This CD-I Japanese learning disk, is a joint venture between New Media Productions and Vektor, Ltd. A work still in progress, the application was based on the Vektor interactive videodisk course completed last year. Vektor's creative director Mike Picciotto was a consultant on the New Media disk.

Geared toward business, the CD-I application uses pre-scripted video dramas based on real life experiences an executive faces on a trip to Japan. The user can choose how to view these dramas; either dialog only, or with sub-titles, (English or Japanese, or both). The disc is expected to be launched in late 1990.

New Media. Tel: +44 (071) 482 5258.

Another project is a study of the demand-side – on document processing bottlenecks within companies and organizations.

Sprangers: "We're looking at the document production process of 15 companies – how it's done, what the stages are, what's currently being done by hand, what can be improved. But no product recommendations, of course," Rabier quickly adds. "The role of the Commission is clear with respect to that."

A third project is a brochure to heighten awareness among end users, highlighting the gains possible with some of these new technologies.

Bernard Guille at the Commission's DG XIII puts it this way: "We are doing preparatory work for policy decisions on the level of the Council of Ministers. We

are anxious to foster communication and synergy among European researchers and help promote technical standards for language data in machine-readable form."

"The Commission would like to see the countries of Europe compile standardized public electronic wordlists and other linguistic data for use by private companies. Other important fields which should have standards are terminology and lexicography."

According to Guille, the Commission also has to sort out the complicated copyright situation with respect to translated materials and terminology in public databases.

Summing up, Emmanuel Rabier notes: "Information has become a product, and most of the world's information is in the form of human language. The countries that develop skills in language technology will have a distinct advantage doing business worldwide."

Language revolution in Eastern Europe

The recent far-reaching changes in Eastern Europe have brought about a language revolution, as the former Soviet satellites rush to abandon their long-time second language, Russian, before the next century.

East European governments will be hoping to appoint 100,000 new English teachers by the end of the century in secondary schools alone, the director general of the British Council told a committee of UK MPs in May. And if English teaching is extended to primary level, that figure could be doubled.

English now accounts for up to 80 per cent of demand for foreign languages in Eastern Europe. Most of the new teachers will be retrained Russian teachers. The British Council is looking for UK£6 million in extra funds to ensure that English and not German becomes the first foreign language of East European children.

A report in the Times Educational Supplement noted that Czechoslovakia has virtually abandoned Russian teaching overnight. Apart from a shortage of teachers, most English textbooks are in short supply, badly outdated and crushingly boring (full of complex words, bits about British trade union structures and the shortcomings of colonial rule).

The British Council said there was strong competition from Germany to establish their own language in the region.

● Apple plans to begin selling the Macintosh, complete with Cyrillic operating system, in the USSR later this year. Previously, restrictions on high-tech exports to Eastern Europe meant that Russians couldn't legally buy Macs with 68030 processors.

Even now that the restrictions have been lifted, Apple is hardly likely to take Moscow by storm because the Mac will retail at standard European prices (high compared to the US) and payment will have to be in hard currency.

Software will also be a problem for Russian Mac users. Aldus PageMaker, now available in the USSR in a PC version, will not be forthcoming for the Mac because Aldus doesn't know of any PostScript Cyrillic fonts and lacks confidence in Apple's East European strategy.

TRANSLATORS OF OZ

The myth of a resolutely monolingual Oz has just taken a knocking. Australia-based translators and interpreters now have their own journal for the first time ever, published by the Australian Institute of Interpreters and Translators.

Australian Institute of Interpreters and Translators. Tel: +61 (3) 877 4369.

TYPESETTING IN URDU AND FARSI

Nastalique Nizami is a new software package from Pakistan Data Management Services for typesetting the Indo-Iranian languages, Urdu and Farsi. It runs on a Macintosh with minimum 1Mb memory and requires a PostScript printer for output.

Pakistan Data Management Services, 87 D. A. C. H. S., Off Shaheed-e-Millat Road, Karachi, Pakistan.

HYPHENATE IN TONGAN

Bedford Computer (Londonderry, NH) has just announced a clutch of new foreign language hyphenators in Russian, Magyar (Hungarian), Tagalog, Tahitian, Samoan and Tongan.

Bedford Computer. Tel: +1 (603) 668 3400.

TARGET FRENCH

Target French is a new language tutor package from UK-based Target Languages Software for business people anticipating 1992. For the Macintosh, Target French consists of audio cassettes and a computer program. The latter gives you missions to accomplish which are typical (so they say) of those business travellers should encounter.

Prompt sheets can be printed on personal organizer paper for you to study in spare moments. You can

test your progress and leave off and re-start just when you like, thanks to a resume facility. Price: £159.50.

Target Languages Software, tel: +44 (425) 472 753.

GLOBALINK UPGRADE

Globalink has released upgrades of its PC-based language translator, plus a new English-to-German package. Version 2 of the translation software features new product architecture and translation algorithms, and a new, windows-like user interface, which allows in-translation switching from one microdictionary to another, with pop-up menus for file access and changing word-processing applications. Users can also browse through both single word and semantic unit dictionaries. Architecturally, all products have larger general dictionaries, yet require less hard-disk space. Improved algorithms now automatically handle inflection of semantic units, translation of interrogative sentences and a greater variety of verb forms. Globalink, Tel: +1 (703) 359 6270.

Russian tutor

Learning Russian to capitalize on this age of Perestroika? Now you can listen to the language of Tolstoy without setting foot outside your own home – provided you own a Macintosh – with version 2 of Russian Noun Tutor from the Hyperglot Software Company.

Hyperglot has added digitized sound (over 15 megabytes compressed to 5 megabytes on 9 diskettes), an improved user interface and a user-modifiability feature to this popular tutorial and drill package designed to impart to the uninitiated the mysterious ways of Russian case usage and noun declensions.

Russian Noun Tutor drills on over 370 noun forms with 186 sentences, all recorded by native speakers of Russian. In addition, there are instructional sections on gender, number, irregularities and case usage. An extensive reference section covers all noun declensions.

All exercise sentences are translated and there is an automatic error checking facility. The test mode produces sentences in random order, and any which you passed on are automatically re-selected. The program's hypertext capability means you can skip from the exercises to the reference screens and back again, without interrupting the test mode.

"Auto Hear" and "Hide Sentence" features allow the program to be used as a drill for the comprehension of spoken Russian, too. Suitable for first or second year Russian students, or indeed anyone who wants to review Russian noun declensions and case usage. Russian Noun Tutor costs US\$79.95, but is available to version 1 users for \$39.95. Runs on Mac

Plus, Mac SE or Mac II, with HyperCard version 1.2 or higher.

The Hyperglot Software Company, 505 Forest Hills Blvd., Knoxville, TN 37919, USA. Tel: +1 (615) 558 8270. Fax: +1 (615) 588 6569.

PC-KIMMO

PC-KIMMO is a new two-level processor for morphological analysis. Aimed at computational linguists, theoretical linguists, descriptive linguists and NLP developers, PC-KIMMO generates and recognizes words using Kimmo Koskeniemi's two-level model of word structure.

In the two-level model, a word is represented as the correspondence between its lexical form and its surface form. This correspondence is expressed by means of two-level rules.

PC-KIMMO can be programmed for use with any language by preparing two input files. The first is a set of rules for handling phonological and spelling alterations by mediating between the lexical and surface levels. The second is a lexicon that lists all morphemes in their lexical form and specifies constraints on their order.

PC-KIMMO will run on PCs, Macs and UNIX, and costs US\$23, exclusive of shipping costs. A 273-page book is included, which contains details of how to describe various natural language phonological processes using the two-level model.

International Academic Bookstore, Summer Institute of Linguists, 7500 W. Camp Wisdom Road, Dallas, TX 75236, USA. Tel: +1 (214) 709 2404.

GENERIC LEXicon de France

Just completed is the feasibility study stage of GENELEX, a major French language dictionary-building project. A consortium of five national partners will build a generic French dictionary for the language industries. The line-up of the consortium is impressive: leading language engineering company GSI-ERLI; major publisher Hachette; the young and bouncy IBM Natural Language Processing Department at their Paris scientific research center; SEMA-GROUP, the computer engineering services outfit; and LADL, a Paris university department dedicated to computational linguistics.

In the wake of similar projects already afoot for other languages, the idea is to standardize morphological and syntactic information in an overall computing architecture for lexical entries so that a vast, compatible format electronic dictionary could later serve a number of other language factory applications, without having to repeat from scratch the costly grind of building a lexibase each time.

Question: Will the GENELEX model be aligned on other "standards" being mooted around the world? Answer in 1993, when GENERIC LEXicon should have a data entry for its own name....in French?

New encyclopedia for linguists

Oxford, UK-based Pergamon Press is working on a multi-volume encyclopedia of language and linguistics, the largest work of its kind. Target date: 1992 or 1993.

The encyclopedia is expected to be 10 or 11 volumes and contain around 5mn words, according to project manager Michael Mabe. It will include over 2000 articles on linguistic theory, computational linguistics, world languages and other associated subjects.

Chairman of the editorial board is Ron Asher, Professor of Linguistics at Edinburgh University. He heads a team which is expected to include over 2000 different writers.

The encyclopedia will be co-published by Pergamon's sister company, Aberdeen University Press. The encyclopedia will fill a gap in the market which the lower level, four volume encyclopedia of linguistics from Oxford University Press, expected later this year, will leave unfilled. A CD-ROM version of the encyclopedia is being considered.

E-PRIME: BARKING UP A CHI-MAERA

Editor,

How I agree with Robert Anton Wilson about the beauties of E-Prime (EW#19). And how I only wish it were true as well! But I fear that in his eagerness to eschew the "is-ness" of the Aristotelian world-view he is, to change metaphors in midstream, barking up a chimera.

Take his example 6: *The car involved in the hit-and-run accident was a blue Ford*, which he glosses in E-Prime as: *In memory, I think I recall the car involved in the hit-and-run accident as a blue Ford*. Well and good. But suppose I had videoed the event and later replayed the video to an audience which just happened to include the president of Ford, who reluctantly confirmed the car as one of theirs: May I now go all Aristotelian and say it was a blue Ford?

Or suppose I chased the vehicle to its resting place and checked it over with the Ford manual in my hand...well, you get the picture. Does there ever come a point where I can stop pussyfooting and assert, "Dammit, it was, too, a blue Ford"? If there does, then Aristotle ultimately rules, and E-Prime turns out to be no more than a way of saying, "All the facts aren't in yet but we're working on it." Working on what? Why, on getting to the real "is-ness" of it all – the Aristotelian heart of things!

The point is not merely academic. Take *The earth is spherical*. How do we E-Prime that? *The earth appears to me to be spherical*? Spherical is the one thing it does not appear to be! How about, *By every rational test we may apply to discover the shape of the earth, except that of direct, parochial observation, the earth is spherical*. But is this anything more than a tedious laying-bare of assumptions that all rational people make as a matter of course – when they assert with Aristotelian conciseness: "The earth is round"?

In short, E-Prime is/appears to be a small but handy verbal tool for indicating that some apparent knowledge is tainted with doubt; but the long history of human endeavor is the story of chipping away that doubt and revealing the pristine "is-ness" of the universe.

Malcolm Macdonald
Offaly, Ireland

VQ GETS FUZZY TOO

Editor,

Thank you for your review of Magellan and Vq! (EW#18). You may be amused to know that, appearances to the contrary, Vq's editing functions were the offspring of its retrieval capability.

Our initial design goal with Vq was to create a truly efficient direct retrieval system; but when that was well along, we realized it's necessary to do something with what you've retrieved. Thus Vq's editor,

which is indeed a fine tool for program development.

Not mentioned in the review was that Vq runs under both OS/2 and Windows. For Windows, it can be configured to run in 256 Kb of memory.

Also, the reviewer mentioned Magellan's fuzzy search algorithms but didn't mention that Vq allows users to create their own algorithms to control just how "fuzzy" the search will be.

Please understand this is not a letter of complaint. I know all too well that it's hard to cover everything in a small space, and I think the essentials were covered.

Elizabeth Bryson
Golden Bow Systems
San Diego, CA, USA

EW Replies: We know all too well how important fuzzy searches are, Elizabeth. We all too often forget what we're looking for!

THE AMIGA: MAX HEADROOM CAN'T BE WRONG

Editor,

Despite the fact that, in the last 18 issues of LT/EW, the computer that I have been using for the past four years has been mentioned only three times – and only once in the context of more than a very brief reference en passant – I still find the magazine a very informative source on language applications.

However, I do feel it is time that more consideration was given to platforms other than the IBM or Mac which are equally well-suited – in some cases better suited – for wordworking and multimedia applications. In particular, I would like to see much more attention paid to "my" Amiga.

Let me take issue #18 as an example. What finally prompted me to write to you was that multimedia news story on page 6. The hard- and software for IBM and Mac described in this article is old hat in the Amiga sector; in fact, "live video" was demonstrated at the Amiga's multimedia launch back in July 1985 by none other than Andy Warhol, using one of the FRAMEGRABBER (now LIVE!) prototypes.

There are literally dozens of genlocks, framegrabbers and videodigitizers for the Amiga on the market, ranging from low-end "home-user" products (from around \$150) to broadcast standard high-end units in the \$2,500 category. These products need nowhere like the 20Mb you mentioned in connection with the M-Motion Video Adapter/A – most of them will work on a perfectly standard 512Kb Amiga; admittedly, though, extra memory and a harddrive do make some things a lot easier.

Without any additional hardware, but preferably with a couple of MB of expansion memory, the Amiga can display images in 640 by 512 (USA 400)

pixels with a maximum of 40% hues. "Realtime" live video using the Amiga was first presented on US TV in 1986; it was used for the Max Headroom series and various other shows on international TV.

In the multimedia field there are also five or six Amiga applications already on the market, or due shortly, which allow the Amiga user to produce interactive video or multimedia applications such as those described in the article on MediaMaker (EW#18). London-based Ariadne Interactive's AAAE-System is already being used by various departments of HM Government, among others.

To the best of my knowledge, the Amiga is the only computer to have a database program which uses the microfiche metaphor, the award-winning Microfiche Filer Plus. And CD-ROM will be coming to the Amiga later this year. Reliable sources report that numerous CD-programs are already in the works, or even finished, including educational applications.

Although ignored by the "established" software companies in the field, the Amiga has a lot to offer in the area of DTP. Hypertext software is available and networking is no problem.

Just to keep the record straight, I have no connection whatsoever with the Amiga other than that of a well-satisfied user and fan. So, as I hope I have been able to show you, "my" platform allows me to do things at home – at an affordable price – that IBM and Mac don't. Please think about giving more support to the Amiga in future issues, I would be grateful.

David Twigg-Flesner
Gronau, Germany.

EW Replies: Point taken. Nobody can deny that Amiga has been a key player in the video production market since its introduction, certainly more so than the Mac or PC. And now, with the introduction of the Amiga 3000 and the CDTV, Amiga has stolen a march on its competitors in the multimedia market. It's not entirely accurate that we have totally ignored the Amiga, however. See EW#19 (page six) for a news story on Amiga multimedia authoring tools, and this issue, for our news stories on the CDTV announcement.

Want to get something off your chest? Write to: The Editors, Electric Word, Emmalaan 21, 1075 AT Amsterdam, The Netherlands



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Newspeak

"There is a deep-seated banality and transparent helplessness inherent in all computerized equipment. The slavish, the slothful and the bland sit hunched and gormless over a plastic keyboard, clutching a push button mouse or an electronic pen and gazing balefully into a mesmeric screen of faith and heavy investment hoping to find a reason for living, or..."

Ralph Steadman, noted illustrator (Fear and Loathing in Las Vegas, etc.), speaking at the IPEX 93 launch breakfast.

"The phenotypic effect of a gene is usually thought of as the body that carries the gene. But why stop there? Surely anything that results from the gene's expression can be regarded as the phenotype. Even something as large and inanimate as a beaver's dam is a genetic effect, and contributes to the beaver gene's chances of reproduction. By the same token, could not a computer virus evolve some sort of extended phenotype? Suppose, for example, that a mutated virus caused the host computer system to behave in a way that prompted the user to indulge in some particularly vigorous file copying (perhaps it causes the system to crash a few times, which encourages the user to make more backup copies of infected files). Such a virus could spread further, and would do so because it, unlike other viruses, had evolved a mechanism for manipulating the world beyond the computer... The underlying point is that life seems to be a matter of information, and it is entirely possible that, with computers, we have created a new medium for that information to spread. If we have, there is no reason why genes in the computer realm could not turn out to have just as big a phenotypic impact on the world as those in the biological realm."

Ben Woolley, writing in the London newspaper The Guardian.

"Feeding the appetite for information and entertainment doesn't satisfy the hunger, it increases it."

Time Warner Inc., 1989 annual report.

"Consider working at home. Moving your work from the office to the home is like emigrating from Romania to Ethiopia in search of a better life. Or take flexitime. As the office joke goes, it's for professionals who now can work any 60 hours a week they like... Don't be fooled by the technofuturologists, whose predictions take work for granted. That's reason enough to be skeptical. They never foresaw a future that came to pass. They talked of moving sidewalks and single-family air-cars, not computers and recombinant DNA. Futurologists are always wrong because they are only extrapolators, limiting their vision to more of the same. But history is filled with discontinuities, with surprises such as Eastern Europe. Listen to the utopians instead. Since they believe that life could be different, what they say just might be true. What they say is that the future, if we have one, belongs to the zero-work movement... Let's hope so. Now our waking hours are divided between work and leisure – the latter being nonwork for the sake of work, a rest stop. Yet when we work, we produce without pleasure so as to consume without creating – containers drained and filled, drained and filled. Work devalues life by appropriating something so priceless it cannot be bought back no matter how high the GNP is."

Bob Black, unemployed lawyer and author of The Abolition of Work and Other Essays, writing in the Wall Street Journal.

"We may be getting more throughput but no more output."

Ronald E. Kutner, associate commissioner of the US Bureau of Labor Statistics, commenting on the effect of computers on the office.

"In 1990, despite the development of increasingly sophisticated and intrusive technology, politicians for the most part remain technically illiterate. MPs seem uninterested. Ministers are dependent on officials who are in turn at the mercy of the experts. Whitehall kowtows to hi-tech corporations offering their attractive wares, with no effective scrutiny by Parliament. Technocracy is beckoning... The best example of how technological developments can render legislation virtually meaningless is the 1985 Interception of Communications Act. The theory is that telephone taps are placed only after a warrant issued by a Cabinet minister. But neither ministers, nor Lord Justice Lloyd, the commissioner appointed under the Act, have any way of knowing what is going on. They are unlikely to be told,

and they have no way of finding out. Under the new Official Secrets Act, potential whistle-blowers are prevented even from telling MPs if a line has been tapped illegally. The new System X installed by British Telecom operates through digital signals which means that lines can be tapped without leaving any physical presence and without any physical interference. Individual lines, including office switchboard extensions, can be tapped remotely from exchanges. Automatic call tracing provided by System X, logging calls and checking meters – ostensibly to ensure that customers get the correct bills – could be used retrospectively against private individuals."

Richard Norton-Taylor, writing in the London Guardian.

"For Reuters, real time means less than three seconds, so that anything giving news within five goes under the umbrella of 'Historical Information.'"

Information World Review, reporting on Reuters Historical Division.

"Perhaps the most provocative application for new media is storytelling. Traditional thinking on interactive storytelling is that you get to choose the ending: i.e., happy or sad (he wins her, he loses her, et cetera). As both a fiction writer and reader, I think this notion is inappropriate and probably dumb. If you write a piece of fiction about new romance that ends badly, you rarely encounter readers who say, This is how it really should have ended. What they ask, given the opportunity, is, Why did he leave her? Why did she let him go? This leads to an obvious conclusion in the brave new world of interactive fiction, which is not plot driven. Change the parameters: she had a happy childhood, or she came from a dysfunctional family, and see just how that alters the love story. In the interactive piece of fiction I'm writing now, the viewer's choices are character driven. Even though I'm working with software rather than text, I still want to bound my story. The closest metaphor that comes to mind is kinetic sculpture: you can push on it all you want, and it can do all sorts of things, but in the end the creator still controls the limits of the work."

Newsweek senior writer Michael Rogers, writing in Smart magazine.

"A great product is deep, indulgent, complete and elegant. Former Macintosh evangelist **Guy Kawasaki**, from his book The Macintosh Way.

"One immediate impact of heuristic technology on education would be a tremendous increase in productivity. Two decades of research show that even rather ordinary computer-assisted instruction (CAI) produces about 30% more learning in about 40% less time and at 30% less cost than conventional classroom instruction. The widespread adoption of existing, proven instructional technology could at least double the cost-effectiveness of teaching, saving the US up to \$100 billion annually... Indeed, if the power of applied educational technology had advanced at the same pace over the past four decades as that of computer technology, a high school diploma – which still takes 12 or 13 years at a cost of about \$50,000 – could be produced in less than seven minutes at the cost of five cents!"

Lewis J. Perelman, senior research fellow at the Hudson Institute think tank in Alexandria, VA, writing in Human Capital.

"The use of computers in education is the most important single advance in pedagogy since the invention of grandmothers. Grandmothers are the oldest information-retrieval system in the world."

Tom Stonier

"I said, 'Look, this is no joking matter. My state desperately needs this guy.'"

Chief Justice Richard Neely of West Virginia's Supreme Court, who wants convicted computer hacker Robert T. Morris, Jr. (of Internet fame) to develop a faster system to process child support payments as part of his community service requirement. Morris was sentenced to perform 400 hours of community service.



Sue Atkins: The art of dictionary (co)building

A dedicated lexicographer since the uncomputerized 60s, Sue Atkins has edited the market-leading English-French Collins-Robert, helped to set up the ground-breaking Collins and Birmingham University International Language Database (COBUILD) project – which united lexicography and technology as never before – then became lexicographical advisor to Oxford University Press (OUP) just as the Oxford English Dictionary (OED) was turning electronic.

by Jane Szita

"I'm very fortunate to be working with computer scientists and linguists, just at the right time." Sue Atkins radiates enthusiasm for her various projects. As well as her key post with OUP, she is a member of the UK's SALT (Speech and Language Technology) steering committee, and secretary of EURALEX (the European Association for Lexicography which, despite its name, is a worldwide body).

She travels widely, lecturing, attending conferences and working with leading theoretical linguists and computer scientists. This kind of activity is rare in lexicography – a profession better-known for desk-bound, harmless drudgery than for high profiles. Sue Atkins is acutely aware of this fact.

"Everywhere I go I meet very few

other lexicographers," she laments. Lexicographers are the poor relations of natural language processing (NLP) – many NLP projects, even those explicitly concerned with dictionary building, overlook them altogether.

Sue Atkins is anxious to change all this. "I want to establish lexicography as a profession in the same way that accountancy or architecture is," she says. The idea is that lexicographers should have their own institute and award their own professional qualifications. She believes this would raise the status, pay and career opportunities for lexicographers, as well as reduce the yearly exodus of demoralized young blood from the profession.

THE ACCIDENTAL LEXICographer Sue Atkins found her vocation by accident. After a degree in French at her

native Edinburgh, followed by a masters in theoretical linguistics, she taught English in Finland for a year before returning to work for the British Council in London. Eventually, she started an employment agency; when she sold it three years later she left her own name on the books. A year after, fate intervened and she was contacted – through the agency – by publishing house Collins, then recruiting lexicographers for its Collins-Robert English-French dictionary.

In those days, Collins was new to the dictionary market and lexicographers' aids were limited to shoeboxes and filecards, though the Collins-Robert was one of the first dictionaries to be computer typeset. Nor was theory much advanced from the days of the gentleman lexicographer. "I used to ring them up and ask, 'Do I put the transitive and intransitive verbs together?'" Atkins remembers. "And they'd say, 'Just do what you think fit!'" Her commonsense and methodical approach, plus her obvious flair for general principles, resulted in her becoming the chief English editor on the project.

Atkins started on the fledgling Collins-Robert in 1966; she laughs as she tells how it wasn't finished until 1978.

COBUILD: ATHEORETICAL Following the success of the Collins-Robert, Collins placed Atkins on the COBUILD project in 1980. Touted as a »

"I see myself as the cloth cap and wellington boots member of the team!"

"All the NLP projects I've seen without a lexicographer would have done a hell of a lot better with one!"

«breakthrough in dictionary-building and English teaching, COBUILD used an 8mn word corpus as the basis for studying patterns of use.

Working with her brother and head of the project, Birmingham University's John Sinclair, Atkins did much work on COBUILD's early stages, but left after three years. She had reservations about COBUILD, based on the size of the corpus and methodology – or lack of it – involved.

"An 8mn word corpus is *not* a definitive body of text," she explains. "It's easy to see how a corpus of this size can be skewed by just one text. One of the books was Sir John Hackett's *Third World War*, and a vast number of the occurrences of the word 'advance' came from that one book. If you'd taken it out, 'advance' might have dropped hundreds of places in the frequency list."

Furthermore, COBUILD had no founding theory. "In fact, it was *atheoretical*." The intention was simply to note developments in language without any sort of theory – an intention which Atkins is highly skeptical about. "Just calling a word a noun shows some kind of theory." And lack of theory meant few ground rules for the lexicographers, making their work more difficult.

OED ON CD-ROM

Atkins is now pioneering the Oxford National Corpus (aka the British National Corpus), a 100mn word monster corpus of British English (see EW#19), to be funded in part by the UK DTI (Department of Trade and Industry).

"The idea is to put it as much as possible into the public domain," says Sue Atkins, "and to build a set of lexical tools that will go to people who take the corpus – for concordancing, frequency-testing, collocations, tagging, and so on."

"I'd like to avoid any copyright hassle," she adds. "At the moment I'm involved in talks with the DTI to see whether it's possible to get the clause in publishing contracts on intellectual property rights adapted, so that the electronic version of a text may be held in a national institute such as the British Library, allowing it to be used for research purposes. The only way to solve the copyright problem is at the top – you have to change the system."

The mark-up language in the text creates an entirely new world of information: you'll be able to search the full database for – let's say – the entry of Dutch words into the language in the 18th century. And this will take a matter of seconds, rather than the years needed to do it manually.

Meanwhile, the Concise OED has been built on a database designed by Compulix. "We are SGML tagging the Compulix version, so it's compatible

with our new OED. Now that the Text Encoding Initiative is producing new standards for encoding text, all our text will be in SGML format."

CLOTH CAP & WELLINGTON BOOTS

Away from the dreaming spires of Oxford, Atkins is working on a prototype lexicographers' workstation with research colleague Charles Fillmore (of Berkeley, CA), whose germinal work in case grammar revolutionized the linguistic scene, and Digital Equipment Corporation's Systems Research Center at Palo Alto, CA.

"I see myself as the cloth cap and wellington boots member of the team!" she laughs. "The other two (the linguist

and computer scientist) are sophisticated technologists."

Having started her career before there were any computer tools to be had, Sue Atkins is in the perfect position to evaluate its impact. "The computer has totally transformed lexical analysis," she announces. "I couldn't possibly work without one any more!"

"I think people entering lexicography now have got a marvellous career opportunity," she adds, "because at the heart of NLP is lexicography. In teaching computers to understand language, what you're doing is building really subtle dictionary entries. All the NLP projects I've seen without a lexicographer would have done a hell of a lot better with one!"

Paul Brainerd revisited

Three years ago, a magazine called *Language Technology* and a program called *PageMaker* saw the light of day at approximately the same time. Issue number one of the former featured a profile on Paul Brainerd ("Mr. DTP"), who as CEO of the Seattle-based Aldus Corp was the mastermind behind *PageMaker*. After a name change, *Language Technology* went on to become the least boring computer magazine in the world, while Brainerd went on to become head of a \$100 million dollar company.

We had a chance to catch up with Brainerd recently, and he was eager to talk about the future of the industry he created, desktop publishing, as well as networking and the PostScript-TrueType battle.

By Colin Brace

"Typesetting capabilities on PCs are now equal to that of most mini-based systems. We're getting very close to the standards of traditional commercial typesetters. We still haven't gone quite as far as the Berthold system in terms of things like hung punctuation, but in terms of quality of composition, the differences are getting to be very, very small.

"Another area of technical development is clearly in the network and workgroup publication area. PCs have become thoroughly accepted in business, but it's very seldom that one person does the work. It's almost always a group activity, particularly in publishing.

"Typically, there's a writer, a graphic artist or designer, a layout person – it's a group process. And you have to keep track of all the elements in a publication. Who has done what, and whether something has been through the proofreading cycle. This has not been well done on

most PC systems up to now.

"But we're finally getting the operating system software like OS/2 and PM, as well as networking software like Novell Netware and LAN Manager, that will give us the capability for very robust workgroup publishing projects. Aldus has customers in some countries with 100 to 150 users on a network producing publications with the PC.

"At Aldus, we probably have 500 Macs. We've had to go through a lot of network configurations. We now have numerous AppleShare volumes, an Ethernet backbone, various bridges, plus PCs. When you move beyond that workgroup size, then you do need a more industrial strength network software like Netware 386 or LAN Manager.

FAST LINKS

"If you've seen *PageMaker* 4.0, you've seen we now have a link facility. This link can be over a network – even over a telecommunications line. A given text or

graphic could reside in other locations. At Aldus, our network locations now include Seattle headquarters, Dallas, where we have a development site, San Diego (Silicon Beach), and sales offices in San Francisco, New York City and Chicago.

"And we have high-speed links to our offices in Edinburgh, Hamburg, Stockholm, and Paris. So, literally from my computer in my office in Seattle, I can have realtime interaction with our general manager in Paris by means of a X.25 packet-switching link – all possible because the cost of these links has come down by an order of magnitude.

"It's these kinds of things which are really changing the dynamics of communication as we know it. They make possible new kinds of services and new ways of doing business which weren't possible before.

"How will this effect the publishing business? I would expect some new printing capabilities, particularly in regard to printing technical documentation on demand. Your technical publications would be stored in the computer, and if you need 25 copies, these are printed and bound in one operation. Your customer would have them in a matter of minutes. And it's current, up-to-date information.

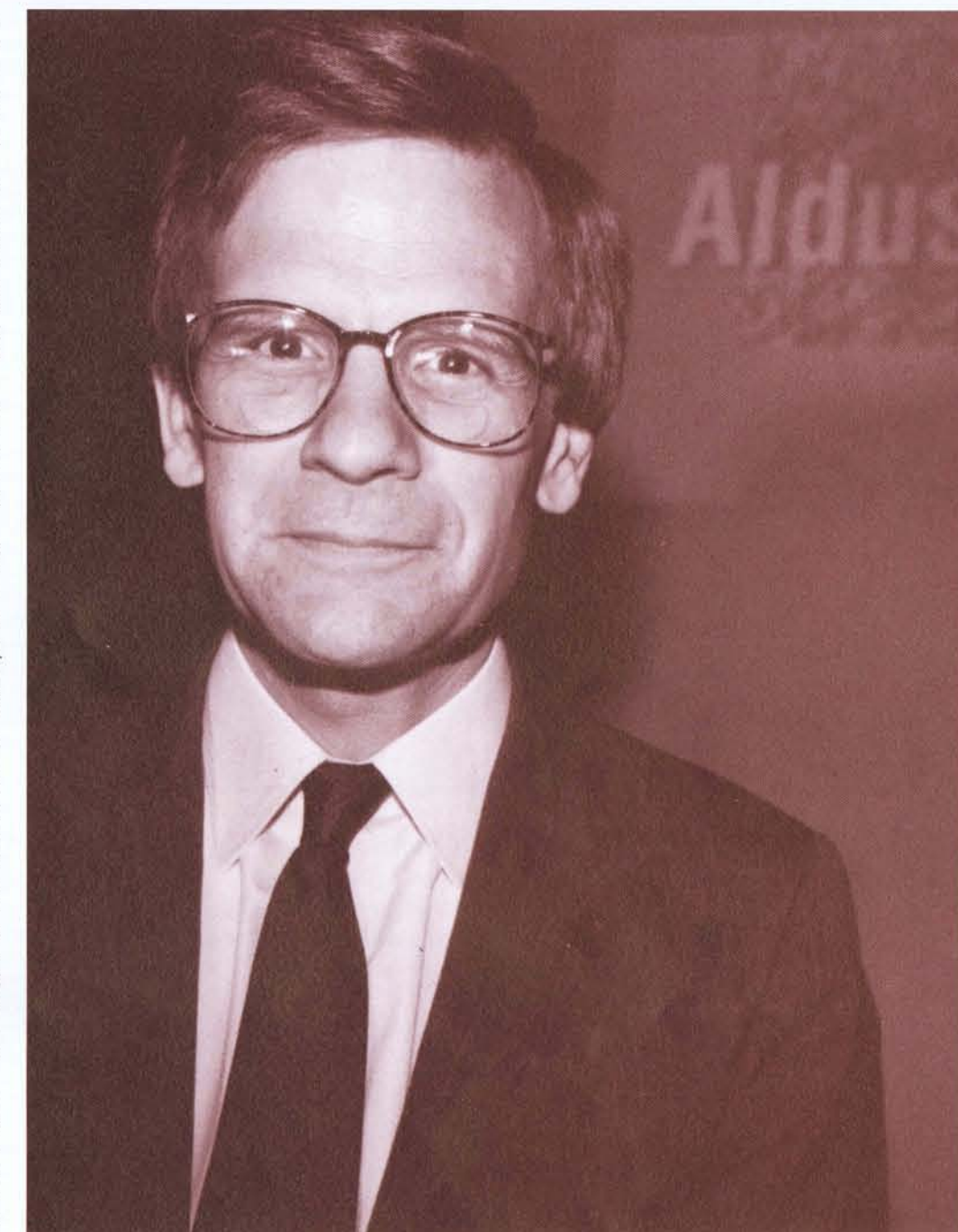
"Some companies don't want paper copies of manuals all over the place. Take aerospace, for example. One of their biggest concerns is maintenance people using an old version of a manual. In fact, they number every manual that goes into an airline maintenance area and have to account for getting each one back, because the liability is so high if the wrong procedure is used. They use paper now; but they're increasingly looking to technology like CD-ROMs as an alternate means of distribution.

"New forms of media – such as overhead projection – will become more and more common. This is imperative because the amount of new information we're generating with all these new electronic means is overwhelming everyone. When I go home after being away for two weeks, there'll be a stack of trade publications this high and maybe 300 e-mail messages, and I won't be able to get through it all.

"We have to come up with ways of bringing form and order to this barrage of information. The computer is going to be part of that. Not just text and graphics but sound and animation and video if properly applied will give people the ability to comprehend information more quickly than they can today with just print medium."

POST POSTSCRIPT

"Microsoft and Apple's challenge to Adobe's PostScript – well, our customers sure aren't happy, to put it mildly. They've



DYANA VAN CAM

made a major investment in PostScript, and many of them are concerned with developments that would lessen PostScript's position as a standard.

"Nonetheless, it is a done deal. Clearly competition is changing Adobe – we're seeing that in our relation with them. They're becoming a lot more open and cooperative now. They're working harder at their business and that's positive. The competition will undoubtedly make more fonts available, and perhaps at a better price, than would otherwise be the case.

"Technically, it's too early to tell which solution will be better. It depends on the implementation of TrueType. Obviously PostScript has proven itself on the market, and it's getting better. With the latest

range of what they call Emerald controllers – high-cost but fast, RISC-based printer controllers – there are supposed performance gains of three to seven times.

"Outline fonts work at the system software level, so theoretically there is no difference to the applications. But in reality, because our applications use type in such a full-mannered fashion, we have to work with TrueType vendors such as IBM, Apple and Microsoft, to make sure that it does work transparently.

"For example, character width can cause a lot of confusion. With Times, they've rationalized their font width values so that every character will be the same width. But Adobe offers four or five hundred fonts. Not all of those are going

«to have the same names in TrueType, because of trademark restrictions. Nor will they necessarily all have the same character width values either.

"Think about what impact that will have when you've created your document with Apple's fonts and your service bureau is using Adobe's fonts. Suddenly, neither the names nor the character widths match. Line lengths will change. What used to be a tightly cut headline which

just barely fit might now run long and wrap because the Adobe font has a slightly different character width."

"These kinds of problems concern me. We're trying to make this simpler, not more difficult for our customers."

By forgetting to use en-dashes, EW's software editor Colin Brace continues to transgress the laws of typography and plague EW's designers.



Mike Ryan: Book-setting trendsetter

Mike Ryan isn't a trained programmer or typesetter, yet he has produced an electronic typesetting program that outputs text as books in less time than it took Caxton to mix his ink. Jane Dorner and Hunter Steele met him at his Edinburgh headquarters.

Ryan's system, Telos, is dedicated not to business reports but book production. Early releases of Telos were PC-based, but a Unix version, available later this summer, will make the advantages of Telos available to a wide variety of other computer users. Also in the pipeline is a simplified, and suitably priced, author version of Telos. This will enable self-publishers to produce camera-ready copy at home, on any Postscript laser printer.

So how, without any specialized training, did Mike Ryan come to produce this intelligent piece of software that looks set to revolutionize publishing practice? "I was trained as a physicist," he says. "Then I worked in the oil business. We had a requirement for technical documents, and I developed a very simple typesetting system on a VAX for output to a laser printer. It was primitive, but fulfilled a need."

"I decided there must be a general market, and I spent the next six years developing the product. I bought myself a typesetter and did traditional typesetting for publishers for three years, attuning myself to the problems. I'd also dabbled in programming at college, and spent a further three years converting what I had learned from typesetting into the algorithms that form the basis of Telos logic. Then in March 1987 the first version of Telos was launched."

WAR AND PEACE – INSTANTLY

The product seems to live up to its name – Greek for *ultimate*. Telos could paginate *War and Peace*, incorporating new typographic preferences, in just a few minutes: putting in wordbreak

hyphens, justifying the pages, setting up running heads, page numbers and footnotes. And if you want a fatter or a thinner book, Telos will rapidly compute a fresh solution, with different pointsize, measure, etc. These capabilities enable publishers to produce books at a fraction of traditional setting costs, and many times as fast.

The program comes in two tiers: an inexpensive and user-friendly text editor, and a very powerful typesetting system. It is not, like many desktop publishing packages, a glorified light table which allows you to arrange a page without scissors and paste. Compared with the competition, Telos is perhaps unbeatable for books of continuous text – fiction, biography, academia, etc. In addition, for the skilled typesetter, advanced typographical features are also available within the program. This meant that Telos was recently chosen by Century Hutchinson to produce their latest *Hutchinson's Encyclopaedia*.

Mike Ryan is aiming at the high end of book publishing. "That is why we are going for a powerful Unix version next and not moving down-market. We believe our price is competitive, given the kind of product Telos is. It isn't just the software, it's us too! We spend a great deal of time with new customers, installing the system, training operators and answering queries. We are now working on Version 3, and each new release incorporates more features that customers have asked for."

Publishers already using Telos in Britain and the USA, apart from Century Hutchinson, include Canongate, David and Charles, the Greenwood Press, and several divisions of Macmillan. "We tendered for Hansard too," Ryan says wryly, "but Ferranti got the job." Why? "Maybe because there is still some prejudice against PC-driven typesetting. Typesetters are reluctant to throw away their old equipment, but the situation will change."

POPULAR WITH AUTHORS

Whatever Hansard thought, many authors regard Telos as the best book software available, for its ability to avoid duplicating keystrokes and present the author's text, electronically stored, so that minimum work is required to produce camera-ready copy. Its greatest asset is the *control* it offers.

The program's AI capabilities let you specify your own "pagination parameters," which decide what limitations on the ideal you will accept. According to the penalty values you assign, Telos weighs up the alternatives, rejects the least acceptable, and produces the best possible compromise with the others.

All you need decide initially is which bits of text are different. Insert a style marker, say "[a]," for "main text," then "[i]" for "italics," and so on. The style values can be defined in seconds, and if small capitals suddenly appeal more than italics, a redefinition of "[i]" will effect the change throughout.

Once you are producing final, perfectly spellchecked text on disk, it isn't much further to pagination, then bromides; then? Authors might soon produce their own books, with the publisher dealing less with production, more with finance, marketing and distribution. The producer (the Telos-equipped author) is then much more in the driving seat than the vulnerable pencil-pusher of yesteryear.

Anyone – author, secretary, company chairman – can get good results with Telos. Still, Mike Ryan points out, "It's a bit like driving a racing-car: the best results are achieved by skilled typesetters." And he's convinced that Telos will have an impact on the number of titles a publisher can produce. "The Unix version is a complete redesign for the multi-user environment. It will give the user even greater freedom."

Jane Dorner is the editor of the Scientific and Technical Journal of the Society of Authors, and has just completed a research project for the British Library – see the feature story in this issue.

*Hunter Steele is a novelist and Renaissance man. His latest book is *The Lords of Montplaisir* (Macmillan London).*

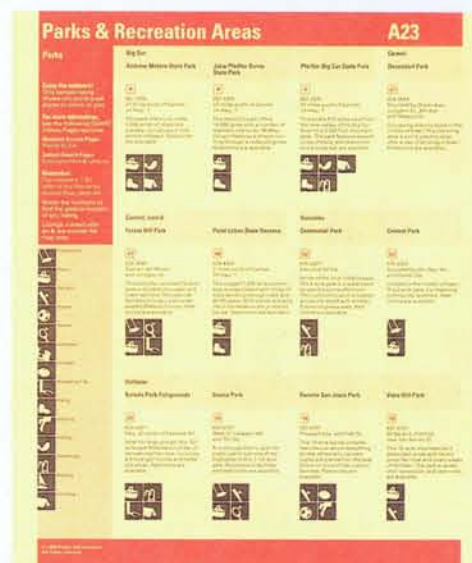


DYANA VAN CAMPEN

by Jonathan Beard

ACCESS GUIDE TO RICHARD SAUL WURMAN

For 25 years, RSW has used his reserves of ignorance to help America understand itself better. As Jonathan Beard found out when he met the author, architect, cartographer, creative director of a design agency on each coast of the US and chairman of this year's epochal TED2 conference, there's plenty more where that came from...



"Most consultants have some specific bit of knowledge to sell," says Richard Saul Wurman, "but I sell my ignorance. That gives me a huge advantage over the others, because I won't run out of it."

Maybe he won't, but to date, Wurman has had a pretty good stab at exhausting this undervalued commodity in the pursuit of a single agenda: "Over the last 25 years, I have seen everything through one filter: my inability to understand things easily, and my desire to make them understandable."

It would be an understatement to call the author of more books than many people have read, designer of a successful series of travel guides, consultant to several major American corporations, architect and cartographer-turned guru of the information age, a multi-talented man.

These talents are the cause and effect of a rich and convoluted career. He studied under Louis Kahn (who remains "first, second and third" in Wurman's list of design heroes) at the University of Pennsylvania, joining the distinguished architect's practice after graduating in 1959. He has written two major books on Kahn's work.

Wurman went on to become a fellow of the American Institute of Architects, a member of the Alliance Graphique Internationale and VP of the American Institute of Graphic Arts. He has also been a professor and dean at an architectural school. Along the way, he managed to pick up a wife and four children.

Today, Wurman is creative director and owner of a half share in the ACCESS Press in New York and The Understanding Business (TUB) in San Francisco (having recently sold the other half of the TUB to Rupert Murdoch's News Corp.).

Wurman's businesses, like his books, are firmly rooted in his philosophy of ignorance. When he moved to Los Angeles in 1981, he used his non-comprehension of its labyrinthine layout as the design brief for a new guide to the megalopolis, the first of eight ACCESS travel guides to cities.

The largest project that Wurman and TUB have ever taken on was the redesign of California's Yellow Pages phonebooks. It is typical of a Wurman project: "We took a product that no one wanted to touch — because after all, the Yellow Pages were usable already — and made the phone companies millions of dollars every year. So what if they were hard to use?"

Wurman and a 60-strong team of graphic designers, researchers and writers spent three years revamping the directory, adding dozens of new features to make it easier to use. In 1987, Pacific Bell published 44 million copies of the new SMART Yellow Pages — 31 billion pages of information that reached virtually every person in the state.

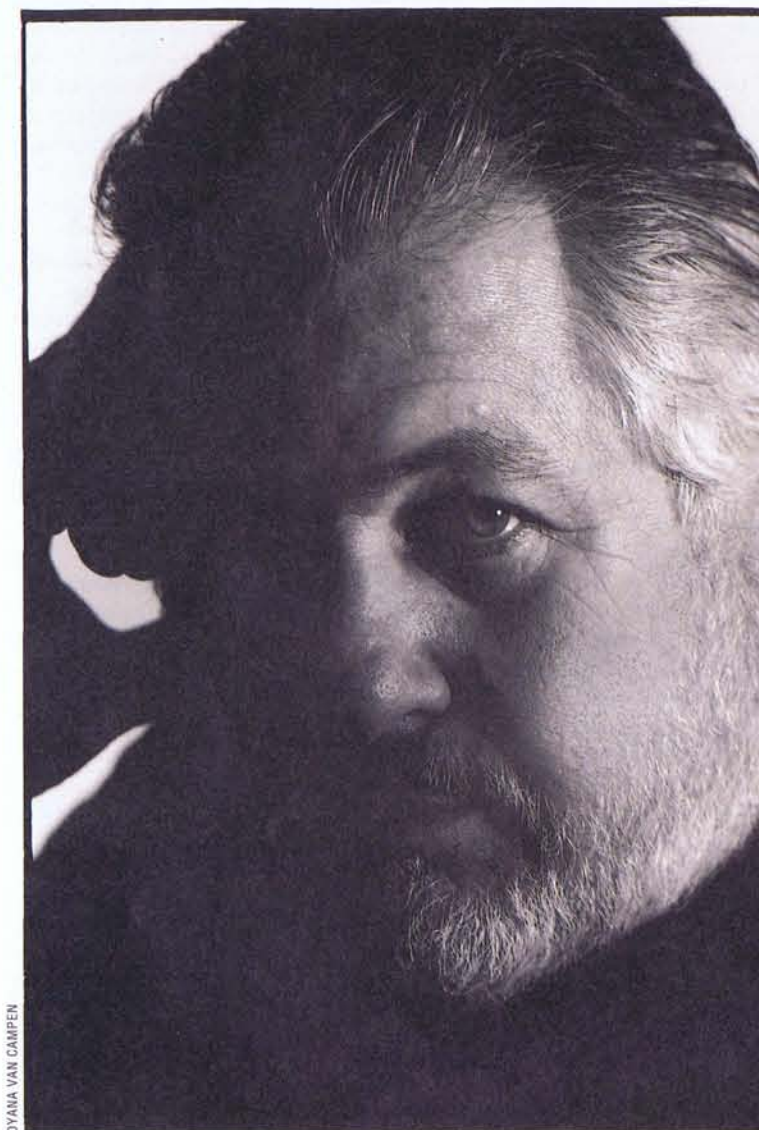
"It was a tremendous success," Wurman says. "They made tens of millions of dollars of additional advertising revenue, because people liked the new directories and used them more. The advertisers knew it, so the phone company was able to charge more for ads."

Again, most of the changes that Wurman made stemmed from his basic principle of finding things hard to understand. "If you have something wrong with your feet," he says, "in the ordinary Yellow Pages, you would have to know that PODIATRISTS are foot doctors, and how to spell that. Yes, there's an index, but it's terrible, hidden in the back, printed in small type, and may not include 'feet.'"

In the SMART Yellow Pages, there is an index organized by general topics and extensively cross-referenced. In the "Health Care and Personal Services" section, an entry under "feet" sends readers to PODIATRISTS. And the page numbers throughout the book are large, an absolute requirement for Wurman in any reference work.

TUB, which turned production of the SMART Yellow Pages over to Pacific Bell once its 3-year contract expired, added many other useful features as well, including seating charts for every concert hall and stadium, diagrams of the local airports, a guide, by services, to parks and recreation areas, maps of the towns and regions covered in the book, and even a yearly calendar of community events. Thus the one reference book found in almost every home, hotel room and gas station functions as an atlas, guidebook and almanac in addition to helping people find the numbers they need for shopping. "The whole idea behind the SMART Yellow Pages is to make the book — and the readers — smarter at finding things," says Wurman. "The Yellow Pages is now a better product. It performs better."

The remaking of the Yellow Pages is just the first step in an ambitious goal that Wurman has set for himself: to completely remake a dozen ubiquitous information sources, all of them freely available right now in forms that most people regard as satisfactory. The products include TV Guide, the airline schedule guide, the weather map, classified ads in your daily paper, and a road atlas to America's highways.



DIANA VAN CAMPEN

"The essence of leaps of understanding relates to connections... Understanding is a path, not a point. It's a path of connections between thought and thought; patterns over patterns. It is relationships... You can only understand something relative to something you already understand... Understanding is not about simplification and minimalization, it's about organization and clarification."

RSW, from his "Hats" in *Design Quarterly* 145.

Published a few months ago by Prentice-Hall, *US Atlas* exemplifies Wurman's thinking. First of all, there is no shortage of road atlases: any bookstore stocks at least a couple, and the best-known, Rand McNally's, has sold by the million for decades. Many Americans, including this writer, have used it happily for years. Wurman took a careful look at it, and ripped it to shreds.

"First of all, we all know that we drive alphabetically," he says sarcastically. "We're driving in Alaska, and the next state we come to is Alabama." Of course, in real life, Alaska is separated from the rest of the United States by Canada.

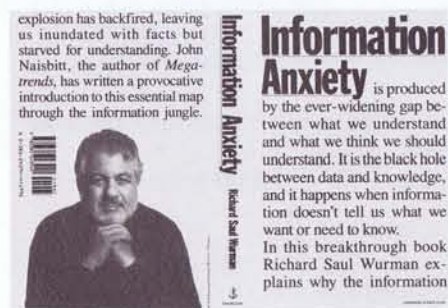
Open the first page of *US Atlas*, and there is a grid map of the whole country, broken down into 250-mile squares (the distance most people drive in one day). You find the square you need, look at the (large) page number and turn to that section. The areas that you are most likely to drive to when you come to the edge of that square will appear just before and just after that square.

It includes, as do all other highway guides, regional and city maps — but with a difference. In other atlases, the scale varies from map to map: to fit a sprawling city like Los Angeles on one page, it is scaled very differently from compact Manhattan. In *US Atlas*, all the maps follow the same scales. The large maps are arranged with reference squares 25 miles wide ("about the scale you need to know whether you want to drive through or around the city"), while the regional maps' squares are 5 miles across, and the city maps have squares one-mile across ("about how far people walk").

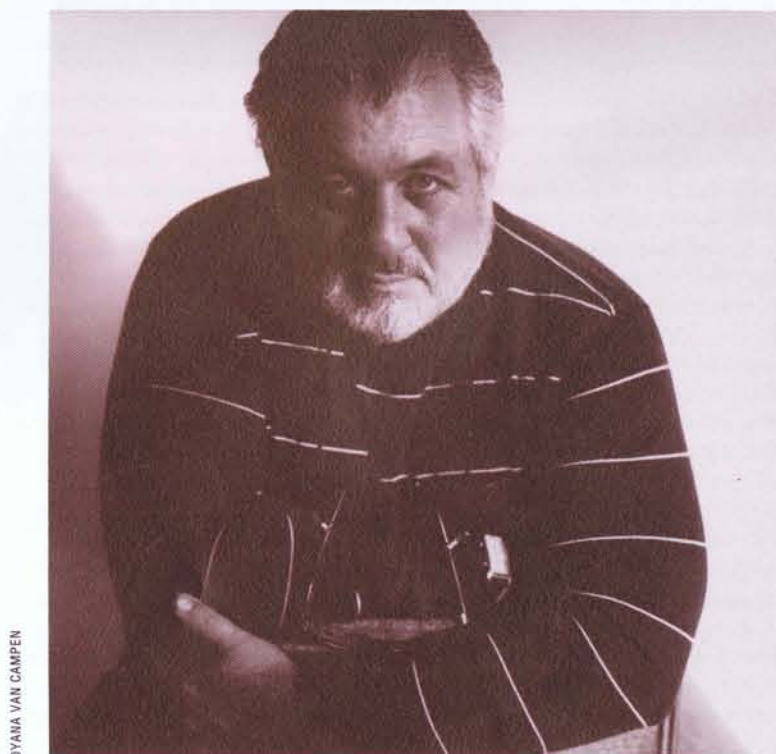


Some of the dumbing of America comes from a very well-meaning source: the people who are interested in the simplification of information. I don't think information should be simplified, it should be clarified. Eventually what we need is a learning system, not an education system – one based on allowing each person to create their own itinerary.

RSW on schools and the dumbing of America.



DYANA VAN CAMPEN



Out too went the tiny letters indicating parks, monuments, colleges and other attractions. *US Atlas* banishes such information to the margins as the conversational marginalia that Wurman loves to put in his books, guidebooks and conferences. Rather than cryptic "Wasatch St. Park, noted waterf."-style comments, Wurman's atlas will have a paragraph at the side (where it does not bother you if you are merely trying to find the right road) that might read: "Wasatch State Park is promoted for its waterfall, which isn't all that impressive. Lewis and Clark may have passed through here in 1807, but the ranger admits that no one is sure. There is a very good fried chicken place on Rte. 87 just before Centerville, however."

These chatty asides, Wurman says, are firstly to give enough information to really describe a park or attraction, and secondly to give the person sitting next to the driver, who is probably spending a lot of time with the map, something entertaining to read. "These comments should be fun to read, readers should feel a person behind it."

Another ACCESS guide – to the US stock market – "is the most successful subscription premium the Wall Street Journal ever had," he says, with pride.

In addition to his long-term project to rationalize, popularize and personalize America's standard reference works, Wurman also writes "real" books. In 1989, he brought out *Information Anxiety* (reviewed in EW #17 and published in the UK this summer, along with Italian, German and Spanish editions), the first of a trilogy dealing with his "single agenda" – how to understand.

The book deals with "the ever-widening gap between what we understand and what we think we should understand...The black hole between data and knowledge."

It is classic Wurman from cover to cover. Printed in three colors throughout (black, gray and red), crammed with graphics, charts, cartoons and lists, almost every page has a quotation graphic adding something to the argument in the actual text of the book. The effect has been called "low-tech hypertext," and Wurman's ideas on information access and retrieval, or learning and remembering, reflect certain elements of hypermedia and connectionist theory, though he says: "I'm not an intellectual – I leave all that stuff to you guys, I'm simply putting into practice what I believe."

The theme of *Information Anxiety* is that there's an "understanding problem" in society. Overwhelmed by the vast amount of data available to us, we're under pressure to digest information and turn it into useful knowledge, yet we're constantly assaulted by poorly presented information. *Information Anxiety* is a series of prescriptions for overcoming information overload and reorganizing your life and work to facilitate the

transformation of information into knowledge.

Does the "understanding problem" identified by Wurman exist? Anyone who's been confused by newspaper graphs, VCR instructions, or the assembly of self-assembly shelves will answer unequivocally in the affirmative. Would it be fair to lay some of the blame for this at the feet of wordworkers?

Wurman: "We can store more things and transmit more things, so who's to blame? The fundamental blame is that there should have been an Understanding Business 50 years ago, but there was no perceived problem then. People perceive that there's a problem now, but they don't really know what it is yet, or they think overload is the problem rather than that information isn't understandable."

The next volume of the trilogy, *Instruction Anxiety*, is due early next year. In it, Wurman deals with the documentation – the giving and receiving – of instructions: what makes for good instructions, why instructions are bad, what we use them for.

"How do we talk to each other? How do you order dinner? How do you direct someone to a place? How do you put together a bicycle...build a building...make something work? How do you use your TV, VCR, fax machine, automobile? Are there any commonalities in those instructions? What do they contain and how do you figure out what kind of instruction giver you are?"

"What I discovered and talk about in the book is that there is not a best way of giving instructions...different people can receive instructions in different ways, and what you would like to do is have at least three different and parallel courses in how to use something, with the real empowerment and ease to move as you see fit, for what you want to know."

The third book will be called *Learning is Remembering what you're Interested in*. The best way to learn, and to exchange information with others, Wurman says, is through the finest known mode of communication: the conversation.

More than reading, more than writing, and more than designing maps and charts, Wurman loves conversing. As he works on his books, he is making a serious study of the art and science of the conversation. "I want to find out how to make use of the lesson of what works in a good conversation, so we can make print better, so we can make interactive communication better, make conferences better. A conversation involves continuous feedback and friendliness. I think we can even take some of those lessons and apply them to software documentation and screen design."

When new interface techniques such as speech and natural language processing enable us to have a two-way dialog with a computer, will it make us better conversationalists in general?

"We're still not there yet, and although we may get there eventually, it's not imminent. There's still the joint agreement in a conversation that, at the end of it, you're gonna understand each other. I think that will be a harder joint agreement to have with an inanimate object."

"The 'Nintendo generation' of young people will almost totally overcome anxiety about the man-machine interface – in fact, they'll be extraordinarily adept at man-machine interfaces. I hope we don't lose the art of conversation. The fact that people still want to go to conferences is a sign that they'd still rather talk than teleconference."

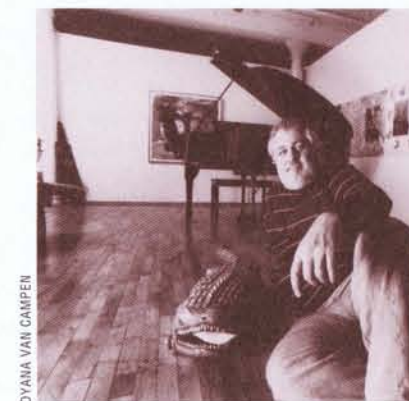
His desire to have, and foster, conversations is his second major obsession, right up there with his desire to understand. Not only are these two leitmotifs central to every one of his books, they are at work in his conferences, too.

Six years ago Wurman organized TED – Technology, Entertainment, Design. This past February, TED2 brought 500 paying guests to Monterey, California for four days of "a glimpse of the future," a chance to hear how technology, entertainment and design have converged, explained by those on the leading edge of this wave.

Computer veteran Stewart Alsop wrote afterwards that TED2 will be considered as important as the original Homebrew Computer Club meetings (the first time people got together to talk about computers, spawning Apple Computer Corp.), the first Comdex (which marked the fact that computers had become an industry), the first Applefest (the first single computer show), and the Hackers Conference (which baptized hackers as a creative breed in their own right).

By acting as a "compelling and fascinating" intersection between computers and creativity, TED2, Wurman said, will mark the "beginning of a new time in the evolution of the personal computer – the moment when PCs finally became good enough for art."

The list of speakers for TED2 included many computer "names" familiar to EW readers, like Apple's John Sculley and Alan Kay, MIT's Nick Negroponte, Jaron



DYANA VAN CAMPEN

"Cultural literacy has to do with facts that are like leaves on a tree. All of these different facts are connected through branches down to the trunk which is the access to all knowledge. It is the learning about how to learn, how to make connections, and how to find and organize things that form the roots of the tree and support it."

RSW on learning.



"Virtual Reality" Lanier and Ted Nelson. There was also an array of designers such as Nigel Holmes of *Time*, musicians like Herbie Hancock, and, of course Wurman himself.

Wurman means no disrespect to the star attractions when he says that "the most important part of the conference was the time *between* the talks, when this high quality audience talked to each other. Everyone at the conference went away with a list of everyone's name, address and phone number, and the best thing that can happen from TED2 will be that these conversations, started by bringing so many creative people together, continue in the future."

The great success of (the ten times oversubscribed) TED2 proved to Wurman that "times have changed – the guests automatically understood the confluence of technology, entertainment and design." That was not the case six years ago, when TED1, with basically the same promotion and poster "was a terrific conference but not a financial success." Now that the idea has been established, "I think it will last for ten years, maybe more."

The next TED will be in Montreux, Switzerland. Wurman was over in Europe last month "touching bases and seeing how well the ideas are received here," and already has had work commissioned in Scandinavia as a result of his lectures. Did he find Europe nearer to TED1 or TED2 in TED-awareness?

"I think things move very fast, and if something seems like a good idea it can spread real quickly." Having spent 25 years helping the New World understand itself better, might the conference presage the arrival of ACCESS/TUB in Europe to soothe its multilingual information anxiety?

It's not inconceivable, says Wurman, especially given Murdoch's strong ties to London. As for multilingualism, "certain aspects of what I do leap language barriers, so to me the problem is just a new opportunity." Wurman's forthcoming airline guide to North America, Europe and North Africa, he hopes, will be usable by people who don't speak English.

Although technology means computers, and Wurman used computers – 36 Mac IIs to produce *US Atlas* – he is far from being a computer nut. One cannot imagine him gushing "I just stuck in a new board with 8 megs of RAM – you've got to see how fast it loads Windows now!" Wurman neither sits in front of one all day, nor is he particularly interested in them beyond what they can do for him. Instead, he prefers to talk and write, longhand, on narrow slips of paper that his secretary then deciphers and takes care of.

Nor does he read computer magazines. He subscribes, they pile up on his desk in San Francisco, and he glances through them once a month, then tosses them. His favorite magazine is *Business Week*, which he loves "because you can read through it in half an hour, tear out what you want to keep and then dispose of the rest."

Wurman has likened the unravelling of the structure of information to the discovery of perspective in the Quattrocento, in terms of its potential to expand the imaginable.

"Discovery of perspective allowed us to do things we hadn't conceived of before, much as the tools that are available to you through the PC allow you to think of things you couldn't think of before. We're able to think of things, describe things and portray them in a way we couldn't before. I think the next ten years will see a great leap, and then things will plateau for a while."

If there is an information revolution underway, it's tempting to see Wurman, with his strident *infoangelism* and huge output of books on the subject, as its Lenin – sort of an Information Revolutionary. "I'm simple-minded, I'm not a revolutionary," he replies with aw-shucks self-effacement.

But surely making information accessible must have a potentially huge political impact?

"I'm working on a book at the moment called '92 Access, in which we're going to take the ten most important issues of the US 1992 election and make them absolutely understandable – not take a position on what I think of them – just what the issues are."

"Nobody has ever really done that, and I think to make public information public in that way could have an extraordinary impact, together with the fact that I now have enough of a network that it can be syndicated with ease to probably 50 million people. We'll see in a few years what power it can have."

Jonathan Beard is a New York-based free lance journalist. Additional reporting by Jules Marshall.



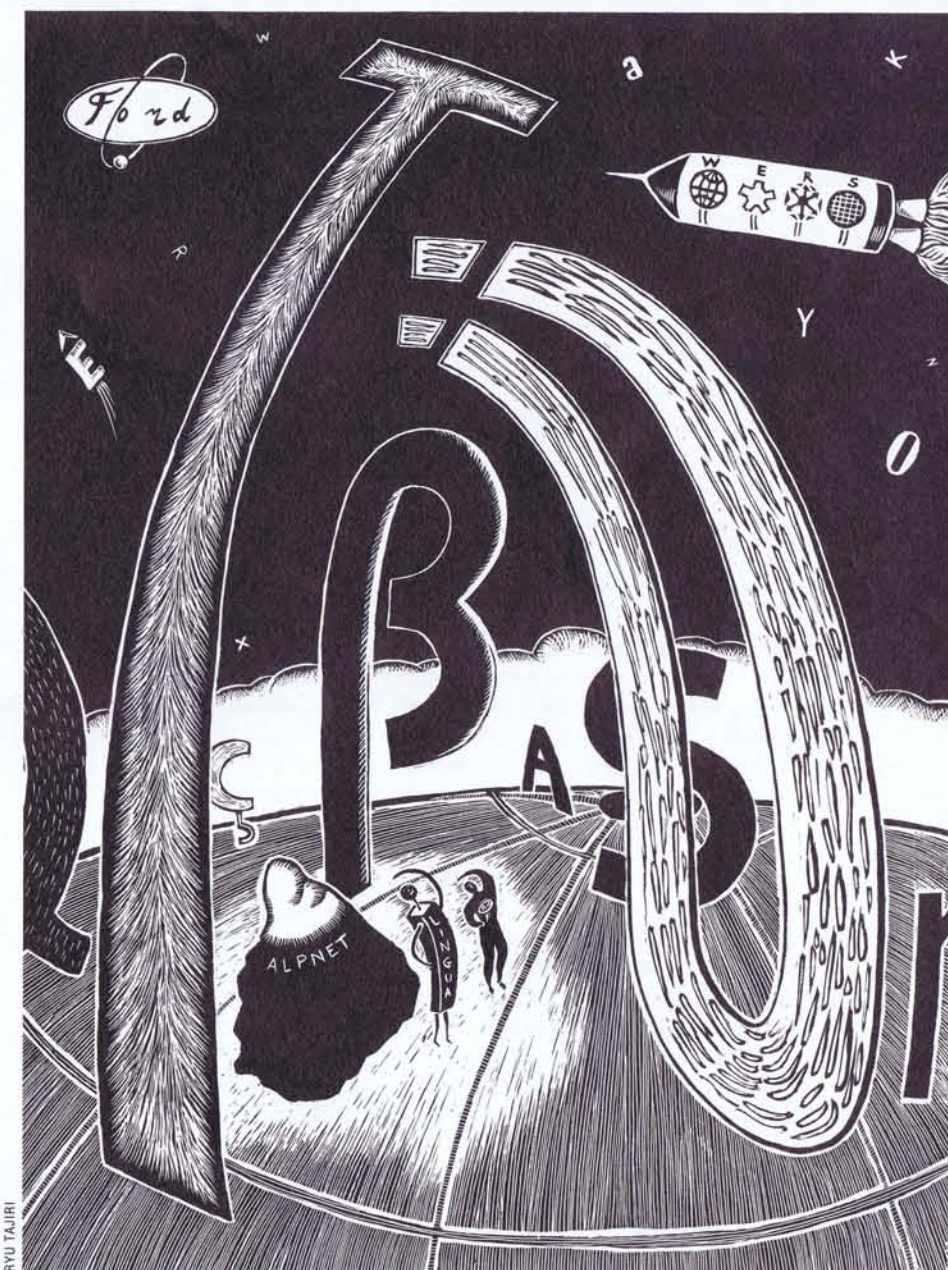
DYANA VAN CAMPEN

The Voyager Company has released *The Best of TED2* on two Laserdiscs (US\$150), chronicling the historic conference and the experts who converged on Monterey in February. Includes all formal speeches, state-of-the-art demonstrations and documentary footage of the informal conversations and between-session events. Also on three VHS videotapes (US\$125).

The Voyager Company, 1351 Pacific Coast Highway, Santa Monica, CAL 90401, USA.
Tel: +1 (213) 451-1383

HELP!

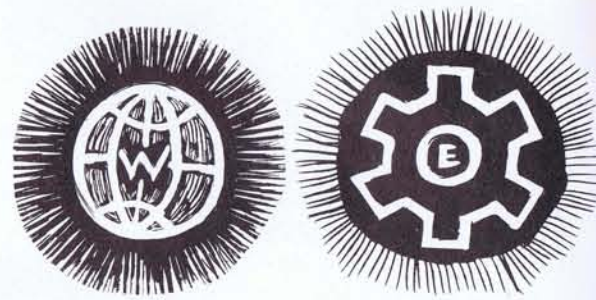
by Colin Brace



RYU TSURU

When the Ford Motor Company consolidated its worldwide product design and engineering information into one huge online system (WERS), it created the world's largest private database.

In order to get everyone to use it without losing precious production time, Ford created an online help system and interactive training modules for WERS. It then faced the problem of how to translate its 14,000 help screens into four European languages.



Competing in the global automobile market requires constant innovation, as US auto giants have learned the hard way. Perhaps the company that learned this lesson best is Ford.

Since the beginning of the Japanese invasion in the early 1980s, Ford has fought back with popular new models (like the Ford Taurus), aerodynamic styling (the so-called jelly bean look which has since swept the industry), strategic alliances (its Probe sports sedan is a Ford-designed body sitting on a Mazda-built chassis and engine), making product quality "job number 1" as its advertising proclaims — and becoming a truly global corporation with international design, production and sourcing (its new US Escort model was engineered and developed by Mazda).

Central to the company's global strategy has been the development and implementation of the World Engineering Releasing System (WERS), its massive online information system. And massive is the word. WERS is currently used by 20,000 Ford employees in engineering and production, spread across more than 200 sites in 20 countries, speaking seven different languages. Ford estimates that the number of WERS users should grow to 80,000 within the next five years. System traffic is currently over 400,000 transactions a day.

Ford's main research and development centers are located in Dearborn, Michigan, Ford's corporate headquarters, and its European centers of Dunton (Essex, UK) and Merkenich (Cologne, FRG). This is where new technologies are merged with market trends to develop fresh models of Ford's cars and trucks for manufacturing.

LIFE-BLOOD

The process of "engineering releasing" is the life-blood of the carmaker. It forms the basis for all activities related to design, release, manufacturing, supply, and assembly of Ford's automotive products. It involves the maintenance, dispersal, and exchange of an enormous amount of engineering data, mostly product and material specifications. Engineering releasing is the crucial underpinning of the complex manufacturing process of a Ford car or truck.

To handle this burden in the 1960s and 1970s, Ford had installed IBM mainframe-based systems at various company locations. But in 1982, Ford management decided that to

compete globally, the company needed one central system to support all of its worldwide activities. So it established a 25-member steering committee, drawn from various plants. Their brief: develop the specifications for a worldwide online system for the releasing and control of engineering information, and implement it as WERS.

Why did Ford feel a worldwide system was so important? Did the company want to build the same car everywhere? Not necessarily. Ford recognized that one of the main obstacles to the design and manufacture of a truly worldwide product was the fact that several different engineering systems were in use simultaneously. Until they were replaced by one system sharing common-code, the engineering centers would be able to communicate only with the manufacturing systems which were compatible with their own systems.

Implementation and enhancement of the WERS online help support system and training materials became the fulltime job of Geoff Cookson, head of the Corporate Training Group of WERS, itself a part of Product & Manufacturing Systems Integration at Ford.

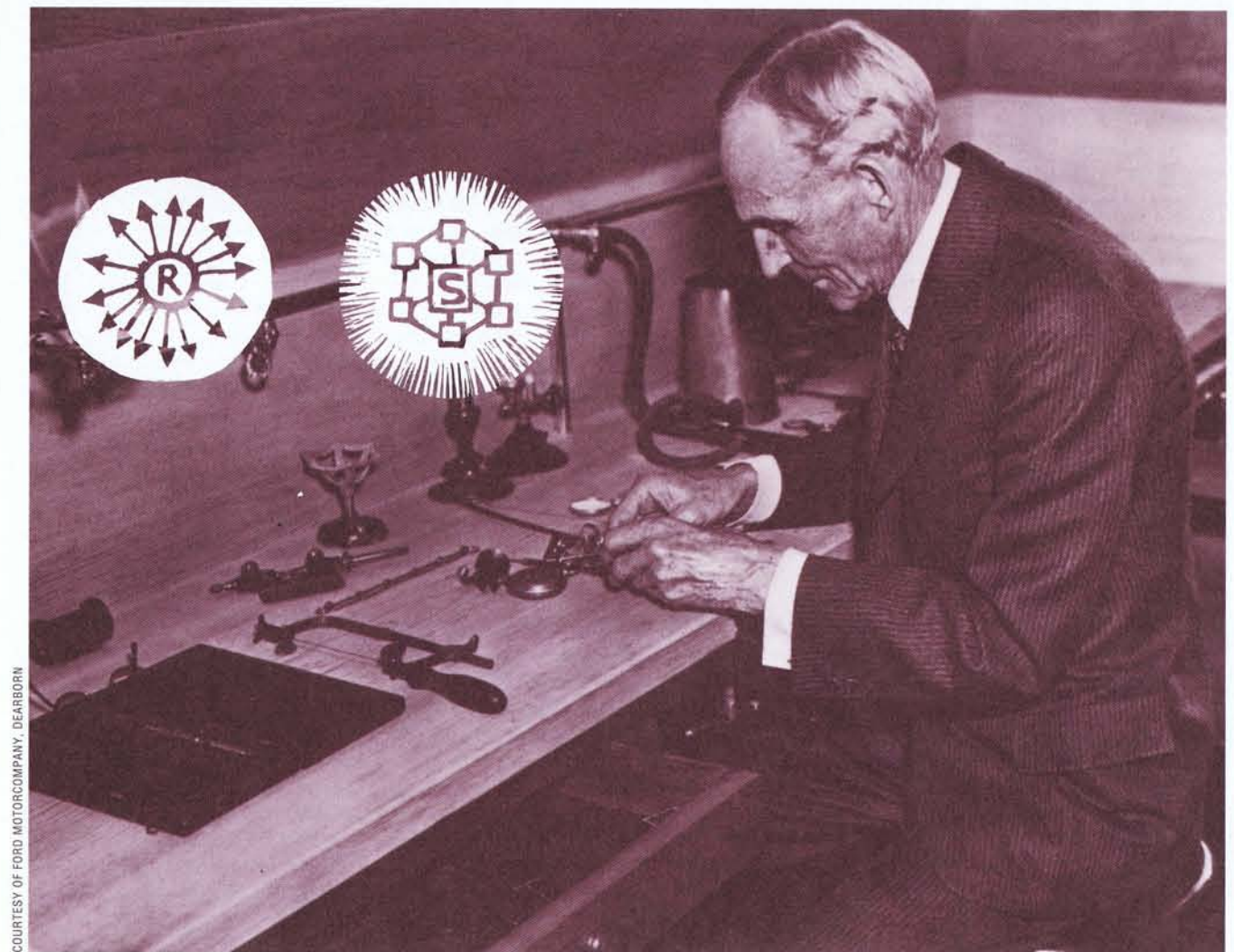
"Some of the six regional systems, like System III in Europe, were highly efficient," says Cookson, explaining why Ford started from scratch with WERS. "But none were suitable for conversion because none were designed with a worldwide capacity or complexity in mind."

EXCLUSIVE CHANNEL

Once specifications were drawn up and approved, Ford implemented WERS in two major phases. First, North America and the Automotive Components Group were hooked up to WERS in April of 1988. Ford's European Operations followed in January 1989. The central WERS database resides on a mainframe in Dearborn. Communication with the rest of the world is via satellite links, and local telephone lines where necessary.

"WERS," says Geoff Cookson, "is now the exclusive channel of communication between the two Engineering Design Centers (Dearborn and Dunton/Merkenich) and all 'downstream' operations: manufacturing, assembly, and supply services."

Cookson is quick to point out that WERS is "definitely not



COURTESY OF FORD MOTOR COMPANY, DEARBORN

a passive reference system." The 400,000 daily transactions the system now handles include data input and update, and the communication worldwide of product specifications and bills of material from engineering to manufacturing. WERS also sports massive data retrieval and reporting facilities with numerous comprehensive and complex cross-referencing features.

Who are the actual users of WERS at Ford? Cookson produces an exhausting list of functionaries at Ford, with titles like Engineering Design and Release, Material Control Purchasing, Accounting, Program Management, Development and Test Engineering, Plant Quality Control and Weight Analysis. Dominating the list, though, are legions of engineers.

CULTURE SHOCK

Prior to WERS, none of the online systems at Ford had online help. And

whatever training materials available were hardcopy only — manuals and workbooks — and not particularly comprehensive at that. An essential part of WERS, on the other hand, is a massive online help system and a series of 65 interactive training modules. Why did Ford feel substantial user support tools were required for WERS?

As Cookson puts it, Ford was concerned with "the culture shock" users would experience with such a new system. "WERS was replacing several systems in a relatively short timeframe, so it was critical that the transition from old to new went smoothly," he explains. "Business had to go on as usual. No automotive manufacturer wants to lose a minute of production time, as that equates to a serious loss of revenue."

Describing the help system, Geoff Cookson boasts: "WERS has perhaps the most extensive and comprehensive online help support system ever created

for any system. It contains a total of about 75,000 context-sensitive screens of data at various levels within the system. 14,000 screens are in English; the remainder are in French, German, Spanish, and Dutch."

WERS Help offers assistance ranging from general overview of the system at main menu level and descriptions of each of the 30 WERS sub-systems, to field-level help via PF (function) keys in all open fields on WERS's 500 or so functional screens. The Help system also contains a glossary of 1,800 acronyms, abbreviations, and Ford and WERS-specific definitions. These can be retrieved via keyword searches.

Like the Help system, the interactive training modules produced by Cookson's Corporate Training Group at Ford are also intended to help get users up and running with this hydra-headed system. To produce the 55 modules, which simulate the operation of the real

Alpnet And TSS: A Brief History

Alpnet, formerly Automated Language Processing Systems (ALPS), is a familiar name to language industry observers. The company was founded in 1980 by Eldon Lydle and other members of a Brigham Young University group researching interactive MT. With ALPS, they hoped to bring to market some of their linguistic software smarts.

Ten years later, despite the early associations and lingering connotations of ALPS with academic MT research, their Translation Support System (TSS) has evolved into a resolutely "non-automatic" interactive aid for translators, a "very smart" editor fronting a series of linked linguistic databases.

Original ALPS customers for TSS included Xerox, Hewlett-Packard and IBM, but the company came to the conclusion that it was not worth the effort to sell and support the system. In 1988, in a dramatic change of course, ALPS bought five leading translation companies: Interlingua in London, Interdoc (Paris), W.D. Haehl (Stuttgart) and MultiScript and La Langagerie (both in Montreal).



system, Ford chose Phoenix authoring software from Goal Systems, Ohio USA (not to be confused with Phenix, from Site) which runs on both mainframes and PCs. Depending on their function, Ford allocates anywhere from eight to 80 hours training per employee using these materials.

ONSCREEN TRANSLATION

The information in the WERS database and the system's functional screens are in English, since it's the official international language of Ford. But a working knowledge of English is a prerequisite only for supervisors and managers within the company. So Ford wanted WERS Help and the training materials translated so that users could be trained to use the system in their own language.

Ford decided to translate the WERS materials into four European languages in 1987, and broke the project down into two separate parts. The first was a translation of the interactive training materials. The second was translation of the massive online help system.

Responsibility for supervising the translation of training materials fell to Ford's Manufacturing Training Group, who turned to management training firm Arthur Andersen for assistance. Together they approached London-based translation and documentation company Interlingua to do the actual translations. At the time, it was still an independent company. It was later bought by Alpnet.

"Interlingua was chosen for the job as being best in the field," says Geoff

Alpnet, as it's now called, is a publicly-owned company with 22 offices worldwide and an annual turnover of US\$23 million.

Currently, the official line from Alpnet is that new licences for TSS are not being actively sought, but the software is being maintained and enhanced for current users, including Alpnet's own affiliated offices.

TSS offers translators state-of-the-art facilities, including automatic term lookup. It can be configured in a split-screen mode with source/target texts displayed simultaneously. Let loose on text in advance of translation, TSS will "sieve" it for repetitions and generate terminology glossaries.

The TSS system is really geared for big projects, where glossaries and phrase dictionaries can be generated from the source text. In addition, special interfaces are available for automatically transferring Interleaf and Ventura tags from source to target text.

TSS is currently implemented for a number of hardware platforms, including DOS, OS/2, Xenix, Unix V, VMS, AOS, and VMS/CMS. Various source/target versions are available, including French, German, Portuguese, Spanish Italian, Japanese, Korean, and Chinese, but not necessarily on all hardware systems. ■

Cookson. "They really had no competition with their experience in handling big projects." So in July of 1987, Interlingua was asked to tender a bid on the translation of the training materials.

Interlingua's Group Operations Director Ray King, who manages Interlingua's big projects, relates: "It was potentially a massive project, so I took part in the preliminary negotiations. In October of 1987, we got the go-ahead in three languages: French, Dutch, and Spanish." German was added shortly thereafter when the German-based company originally selected by Ford Germany for the translation could not handle the project using Phoenix.

When they began translating, the Interlingua team soon came up against a number of unexpected problems. Interlingua's Corporate Operations Manager Alison St. Clair Baker: "When Arthur Andersen initially approached us for a quote, the firm had a hardcopy printout of the texts to be translated. But it soon became evident that we would be working onscreen, using Phoenix, the authoring software that the designers of the instructional materials in Dearborn had used."

WORKAROUNDS

"The text and coding of the interactive materials were closely intermingled in Phoenix," Cookson explains. "It wasn't possible to process them outside the system." Because of this, the Interlingua translators had to learn how to use the Phoenix software before proceeding to translate.

And Ray King encountered another problem: "Early on, I inquired whether the IBM mainframe system they were using supported high ASCII (accented) characters. I was told it did. But when we started the project, it appeared that the mainframe didn't support accented characters. We had to devise workarounds for each language."

St. Clair Baker, an Oxford modern languages graduate, was senior project manager for the first phase of the WERS translation project. For St. Clair Baker, the project began with the selection of the translators. "We used UK-based translators from our translator database with whom we had worked on software localization before."

King and St. Clair Baker estimated four to six translators would be needed per language – a total of 24 translators. Taking into consideration the substantial variables involved in translating with unfamiliar software such as Phoenix, Interlingua altered its contract with Arthur Andersen from a price per thousand words to an hourly rate.

Once selected, the translators were trained to use the unfamiliar Phoenix software. Alison St. Clair Baker: "Training took anywhere from a few days to a few weeks, depending on the individuals. Once they had gotten up to speed with Phoenix, they could continue working at home on PCs, uploading files to the company bulletin board via modem."

SEMINARS

Probably the biggest headache – notorious among software localizers every-

where – was the onscreen physical constraints of the Phoenix software. Words in the target language just didn't fit the spaces in the onscreen display boxes occupied by their original English counterparts. After much debate, Interlingua was told that rather than modifying the boxes to fit the text, the text would have to be made to fit the boxes. This meant extra effort and imagination on the part of translators to come up with shorter variants and alternative spellings.

Review seminars were held regularly at Ford plants in the target countries: Germany, France, Spain, and Belgium. Here, committees of Ford employees reviewed all the materials as they were translated. First under scrutiny were the terminology lists compiled by Interlingua based on keywords they plucked off the screens. Next, the teams reviewed the training modules as they arrived in batches.

"There was a lot of back and forth with terminology," remembers Alison St. Clair Baker. "Members of a review team would validate a given translation, then have second thoughts when they actually saw it flash across the screen. The problem was that very few of Ford's European employees had actually seen the WERS system, yet they were obliged to approve terminology ahead of time."

TSS AND THE HELP SYSTEM

The second project – the translation of the help system – ran from May 1988 to March 1989, and was organized slightly differently. While the training materials were being translated in Europe, Geoff Cookson had been negotiating for the translation of the help system in the US.

The Salt Lake City-based worldwide translation network Alpnet was ultimately awarded the contract. But, in an ironical twist, Interlingua had meanwhile become a subsidiary of Alpnet. Control of the second project, then, passed to Alpnet headquarters in Salt Lake City.

That Interlingua became part of the Alpnet network turned out to be fortuitous for all involved. Ford's Corporate Training Group in Dearborn, which was contracting the project, had recourse to Alpnet in Salt Lake City on a corporate level, while Interlingua continued to supervise the day-to-day translation activities from London.

The Help System project took advantage of Alpnet's facilities in a number of significant ways. Rather than

using UK-based freelancers as before, the in-house translators of Alpnet subsidiaries in Stuttgart, Madrid, Paris, and an affiliate in Amsterdam were put to work. They had at their disposal Alpnet's sophisticated Translation Support System (TSS) software, which is particularly well-suited to such large, complex projects (see sidebar).

In Salt Lake City, Alpnet's WERS project manager, Eugene Seeley, became the link between Ford and the translation teams supervised by Interlingua. He performed the valuable task of converting the help files via a specially programmed interface between the TSS format the translators were using and the IBM mainframe wordprocessing software package, Mass 11, that the help files were written in.

For this phase of the project, Tess Osborne took over the coordinating role of Interlingua's Alison St. Clair Baker.

Osborne explains the relationship which evolved between Interlingua, Alpnet and Ford: "At the insistence of the WERS Corporate Training Group, Alpnet controlled the project as a whole. But we managed the translation teams because of our experience in coordinating large projects."

Like St. Clair Baker, Osborne was responsible for managing the daily traffic between client and translators. She too expended considerable energy simply seeing that translators were receiving the same information, that they were meeting their deadlines, and that the translations were reviewed on time by Ford's European Divisions. She characterizes her role as "troubleshooting."

A big relief, too, for the team was the use of the TSS software. "We were fortunate to have a 10,000 word lexicon at the start of the Help project," explains Osborne. "It was developed by Alpnet in close cooperation with the Corporate Training Group in Dearborn."

Another responsibility was updating already translated materials – what Interlingua calls "retranslation." In Salt Lake City, Alpnet engineers developed a software tool to flag new information in the WERS system that needed to be updated. This was – and still is – passed on to Tess Osborne in London.

Osborne adds that WERS materials still trickle in sporadically. "Having got it all down pat, updates are simple to handle using the Repetitions Processing facility in our TSS software," she says confidently.

ONLINE AND HAPPY

As end users in France, Germany, Spain and Belgium got a taste of WERS, they started begging for more training materials. The Interlingua team found themselves in the curious position of knowing more about the system than the Ford people themselves in those countries. Alison St. Clair Baker remembers Ford people saying: "We don't even understand the original English system." So Interlingua wound up giving seminars to end-users in several countries to familiarize them with the system.

All in all, Ray King estimates Interlingua put in about 50 hours apiece in each of the 65 Phoenix training modules and more than 3000 hours into the 15,000 help screens translated for each of the four languages. This over a period of about 18 months.

The Interlingua team agrees that it would have saved everyone a fair bit of trouble if more translators had been sent to Dearborn for hands-on experience with the system to see in advance exactly what the materials they were translating dealt with. St. Clair Baker: "We finally remedied that by flying translators over to Dearborn to get hands-on experience with WERS." For companies venturing along the same path?

"For a start," says St. Clair Baker with a laugh, "we wouldn't recommend Phoenix. It's a difficult environment for translators to work in: no wordwrap, no insert mode, no accented characters – and it's hard to post-edit in."

At Ford, Geoff Cookson is not yet able to report on the overall impact of the system on the company. "It's really too early to make a meaningful judgment. We are due to complete a WERS user survey this August, and only then will we have a better idea of its reception."

Likewise, he's reluctant to talk about the benefits of the WERS system to Ford in economic terms, saying, "It's nearly impossible to estimate." But whatever the initial cost-and-return, WERS is an invaluable addition to Ford's strategy for global rationalization of its information systems.

Colin Brace is Electric Word's software review editor.

St. Clair Baker remembers

Ford people saying: "We don't even understand the original English system."

So Interlingua wound up giving seminars to end-users.



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HENRI LUCAS

THE DEATH OF PRINT

by David Henry Goodstein

Electronic media is about to wreak an astonishing transformation on the printing industry, according to David Henry Goodstein. For the days of print are numbered – though this won't necessarily mean the end of paper.

Tahiti, 31 December 1998. It was 7:00am. Fred Smythe woke as the first rays of tropical sun poked into his suite at the Papeete Hilton. He had decided yesterday to extend his vacation for another month, based on his brief chat with the foreman of his printing plant back in London. What had appeared then to be a serious problem in the interface between the robotic paper-handling train, the automatic press plate feed, inking, quality control management and billing system, turned out to be nothing more than an erratic glitch in the Surrey North broadcast videopower grid.

Things were slow around the plant these days, what with the new ink jet color presses taking images transmitted directly from the advertising managers' computers at their clients' shops. Of course, the occasional customer still used a freelance ad agency for their annual report or print adverts, but they all had compatible systems now as well. You could see them parading down the high streets in Kensington and Knightsbridge with their little Crosfield Micro-Designer consoles in tiny Walkman-sized cases, which they made sure were prominently strapped to visible and preferably attractive parts of their bodies.

However, the print works ran perfectly well with just the services of Jake, his loyal foreman, Marilyn, his faithful administrator, and Billy, the printing press maintenance engineer who popped by to visit once a month.

But still, he wouldn't stay here in Paradise for ever. He must remember to have Marilyn reserve a room for him in Birmingham for IPEX 2000, the graphic arts/consumer electronics exhibition which would cover 110 square miles and have giant computer displays for the 2,000-plus software demonstrations scheduled to be given 20 hours a day at 20 minute intervals inside the old converted football stadium.

The murmur of surf and song of birds drifted through his window as Fred put the pen down and dozed back off to sleep.

THE STORM, PRECEDED BY MUCH THUNDER

As the 1990s get underway, printing and graphic arts professionals should be prepared to hear more and more talk about the impending death of print. In fact, trends are already in motion which, as they progress, will cause *process transfer*, the shifting of information delivery from one medium, such as offset printing, to another, such as CD-ROM.

Most industry professionals are inured to such pronouncements today, having heard this impending bad news for over a decade. "ALL ENCYCLOPEDIAS IN GALAXY TO FIT ON THUMBNAILED-SIZED CHIPLET COSTING £2.65 BY 1990," screamed a decade-long parade of trade press. As

time passed and business clearly carried on as usual, everyone got to laughing about it. Many have now forgotten that the threat was real.

In fact, there is a history of technology-based red herrings in the graphic arts industry which pre-dates today's menacing pronouncements about the impact of CD-ROMs. In the 60s, Sears Roebuck and Company, America's largest retailer, announced a program to eliminate their massive catalog. This is still one of the biggest and most expensive 4-color printing jobs in the USA.

This state of grace would be achieved by providing a microfiche reader free to each of their customer households in America. The company would deliver the catalog on fiche and save millions. However, there was unexpected and strong resistance in trials. It turned out that no-one wanted a microfilm reader – it took up too much floor or desk space, and delivered an experience inferior to home shopping with the printed book.

CALS – UNSTOPPABLE

But if initial failure meant new ideas would never succeed, we wouldn't have airplanes or electronic color scanners today. Like the parents of that boy who cried wolf (and ended up as a hot lunch), we need to be careful not to assume from early failures that the status quo will continue forever. As Leon Hart of DuPont's Graphic Arts marketing organization recently observed, "It's not a question of what's going to happen, it's a question of *how much* happens *how soon*."

In that regard, the future is now ominously near. In fact, active displacement of print is well underway in many applications, some of which are still considered mainstays of printing trade work. The Apollo Computer subsidiary of Hewlett-Packard has for several years shipped its graphic workstation products with technical documentation on magnetic disk. The cost of printed versions of these manuals was \$23 per copy. Since the company ships in excess of 50,000 computers per year, this represents well over \$1,000,000 of work now lost to the printing services sector per year.

Other industries are following in quick succession. The technical manuals for the Boeing 757 are available on disk in a demonstration package. But the actual documentation for support of the new MacDonald-Douglas MD-9 airliners will be shipped to airline operators in paperless form.

Still to come is the biggest change, as organizations scramble to meet the US Department of Defense's CALS mandate (see EW#12). CALS, short for Computer-aided Acquisition and Logistics Support, requires the DoD's 50,000 suppliers of manufactured products to deliver all technical information from user manuals to parts lists in electronic form. The CALS standard has recently been adopted by Boeing and General



REFRIGERATOR, COURTESY OF MUSEUM OF THE CITY OF NEW YORK

Motors as well, meaning that, by 1995, over 200,000 companies will be directed to deliver their technical information in electronic rather than paper form.

CALS standards and strategies are already adopted in Sweden and likely to be adopted by Defense Ministries throughout Europe within the next 24 months. The automotive and aerospace manufacturers are certain to follow suit.

DISPLACEMENT

A number of viable solutions for information delivery exist which by-pass traditional printing processes. These include on-line database access, e-mail, print on demand, electronic data interchange, CD-ROM, facsimile and transmission of data files. All are presently being used in at least some applications.

So are certain classes of printing work especially vulnerable to alternative technologies. In the chart above right are the results of a preliminary analysis, indicating the most vulnerable types of printed work, and the alternative techniques or media which will replace them.

POTENTIAL DISPLACEMENTS OF PRINT

PRINT APPLICATION	DISPLACEMENT LEVEL	TIME FRAME	DISPLACEMENT MEDIA
Office documents, internal	50%	1995	EMM
Office documents, external	20%	1998	EMM, PoD, FAX/IC
Technical manuals	65%	2000	CD-ROM, OLA, PoD, MD
Parts catalogs	75%	2005	CD-ROM, OLA
Preprinted business forms	90%	1996	PoD, OLA, EDI
Textbooks	35%	2002	PoD, OLA
Direct mail	25%	1999	PoD
Newspapers	10%	2010	PoD, CLA

EMM = Electronic Mail and Messaging CD-ROM = Compact Disk-Read Only Memory PoD = Print on Demand FAX/IC = Facsimile or file transmission to intelligent office copiers MD = Magnetic Disk OLA = On line access EDI = Electronic Data Interchange

Source: InterConsult Inc. Research

The most significant factors in the trend towards the death of print are: electronic mail and messaging in corporations; "customized" book publishing; the revitalized videotext industry; privatized and deregulated telephone companies; the global consumer electronics industry, which is coming closer to a merger with personal computing every day; and new developments in office copiers which will create, within the next decade, an infrastructure for on-demand hardcopy unimaginable today.

E-MAIL BLAZES A TRAIL

Leading the attack on print is the increased acceptance of e-mail and messaging in the corporate and government environment. By 1995, up to half of all routine office communications may become electronic. The projection for 1995 seems exaggerated until one realizes that the number of computer displays in the USA is now greater than the number of knowledge worker-class professionals in the work force.

Statistics from Digital Equipment Corporation, leading supplier of fully

Newspapers in both Europe and the USA have already begun trials of electronic home delivery of customized, advertising-based news products.

In this case paper remains, but only the amount needed for the job. In a client's office, a new software package was recently purchased which allowed the output of checks through the Apple Laserwriter, ending their reliance on

The APFS network application will link 35 locations to a database of electronic forms in PostScript format. Users will be able to obtain more copies of a particular form by ordering the master to be downloaded overnight. This can then be output to a laser printer or typesetter, and photocopied or offset. Millions of dollars per month will be saved, and the forms will always be fresh. Centralized printing, shipping and warehousing will be eliminated.

be a reality, almost totally replacing the pre-printed form.

McGraw-Hill recently announced its Books of the Future project. This combines electronic databases of textbook words and images with high-speed electronic printers able to produce a hard-cover bound book without an operator. A set of courseware in economics can now include several chapters from Samuelson's classic text, a few chapters of Galbraith's latest book, clippings from last month's *Wall Street Journal*, and the professor's own notes and articles.

The cost to the student is lower, since they pay only for what they use, rather than buying several books for each course. An elaborate system for counting and paying authors' royalties in this electronic environment is already in place. The loss, of course, is to the textbook printing companies.

Meanwhile, the recent commercial success of the persistent French Minitel experiment has revived the credibility of Videotext in commercial publishing sectors, especially in Europe. Newspaper publishers there, as well as in the USA and Japan, are looking carefully at a project called SELFAC, or SElective FACsimile, an approach to advertising-based home delivery of news and feature information.

In this system, pages of news summaries and ads would be composed electronically and transmitted to home receivers. These receivers are like a cross between MiniTel and an Apple Macintosh. They could be purchased by consumers, or provided free—as was the case with MiniTel's startup. Electronic pages with editorial content (selected on the basis of reader interest profiles), and advertisement content (based on demographic profiles), will be downloaded during the night, and output to hard copy on laser or inkjet printers built into the receiver sets.

SELFAC is described at the moment as a companion product, competing with the morning television kind of headline news rather than eliminating the daily printed product. But it seems sure to have some impact on the sales of newspapers, however far ahead in the future that may be. Certainly electronic distribution is going to be viable whether as an augmentation to paper-based products or as their replacement. Newspapers in both Europe and the USA

One of the obstacles to print's displacement has been the cost and capacity of telecommunications networks, problems well-known to the many trade shops who have tested transmission of high-quality color images on 56 Kbit lines. The common wisdom is that it gets there faster on magnetic tape in the cargo hold of a 747 than by telecom.

But the creation of new, unregulated phone companies following the breakup of AT&T, followed more recently by the privatization of telecommunications conglomerates from British Telecom to Japan's NTT, has created a pack of wealthy, powerful companies who must find ways to fill the growing capacity of their fibre optics and ISDN networks.

This makes them natural allies of the displacement of print, since transmission of graphics requires more bandwidth than any other known form of line usage. To help create new products that use phone links rather than paper, almost all telecommunications companies have established Media Laboratories based on the MIT model, several of which have more staff and larger budgets than the MIT group itself.

The consumer electronics industry is also on the move, seeing the electronic distribution of information as a key to the success of their long-range strategies with high-definition television and home computing. High-definition television, combined with powerful image processing built into CCD cameras, will take on more and more of the capabilities of PCs in the next decade.

It's surely no coincidence that the 43-member Desktop Publishing Consortium, organized under the auspices of Japan's MITI, is led by Sony Corporation. Sony has also emerged as one of Japan's top suppliers of Unix-based graphic workstations. Combining these computing capabilities with television could produce an ideal receiver for SELFAC-style services at consumer electronics prices. The TV set of 1998 will probably come with a switch on the side saying: "Broadcast, HDTV, PC Mode, MAC Mode, CD-ROM Input."

Quality hardcopy is already available in Japan, with printers based on Dainippon Printing's thermal transfer sublimation (the same as DuPont's 4Cast



Then there is the intelligent copier. From the outside, products like the Canon 9030 appear ordinary enough. However, they digitally scan documents input through their feeders and link to facsimile and RS-232 modem-based data file telecom. Others, like the Canon Color Laser Copier, can also merge scanned information with documents created on desktop publishing systems for output on the laser printer which is the recording end of the device.

THE FUTURE OF PAPER

In spite of these developments, paper will continue to have very desirable characteristics (convenience, portability, privacy, archival life, resistance to magnetic disruption, quality, cost per copy in sufficiently long run-lengths,

If anything, demand for paper seems certain to grow in the foreseeable future. But cut-sheet A4 or A3 paper of office grade, for use in electronic printers, will be most in demand. In the coming information ecology, convenience hard copy will be available anywhere, anytime, any quality-level – and it will be cheap.

Well-equipped desktop and corporate publishers can already get pages printed on demand in resolutions up to 1000 x 1000 from an appropriately configured H-P LaserJet. Market research shows that the majority of offices will, by the end of the 1990s, add full color output with graphic quality equivalent to today's 133 line screen printing. So trees will continue to fall in the forest.

There'll be plenty of paper on office desks and a basketful in the post each day. What will be radically changed will be the pattern of manufacturing and distributing information. Not that traditional techniques will necessarily disappear. For certain applications (such as the coffee-table book and the slick ad-based magazine), and almost all uses involving run-lengths in excess of 20,000, the cost/quality ratio of electronic printers is likely to remain unsuitable for the next 20 years.

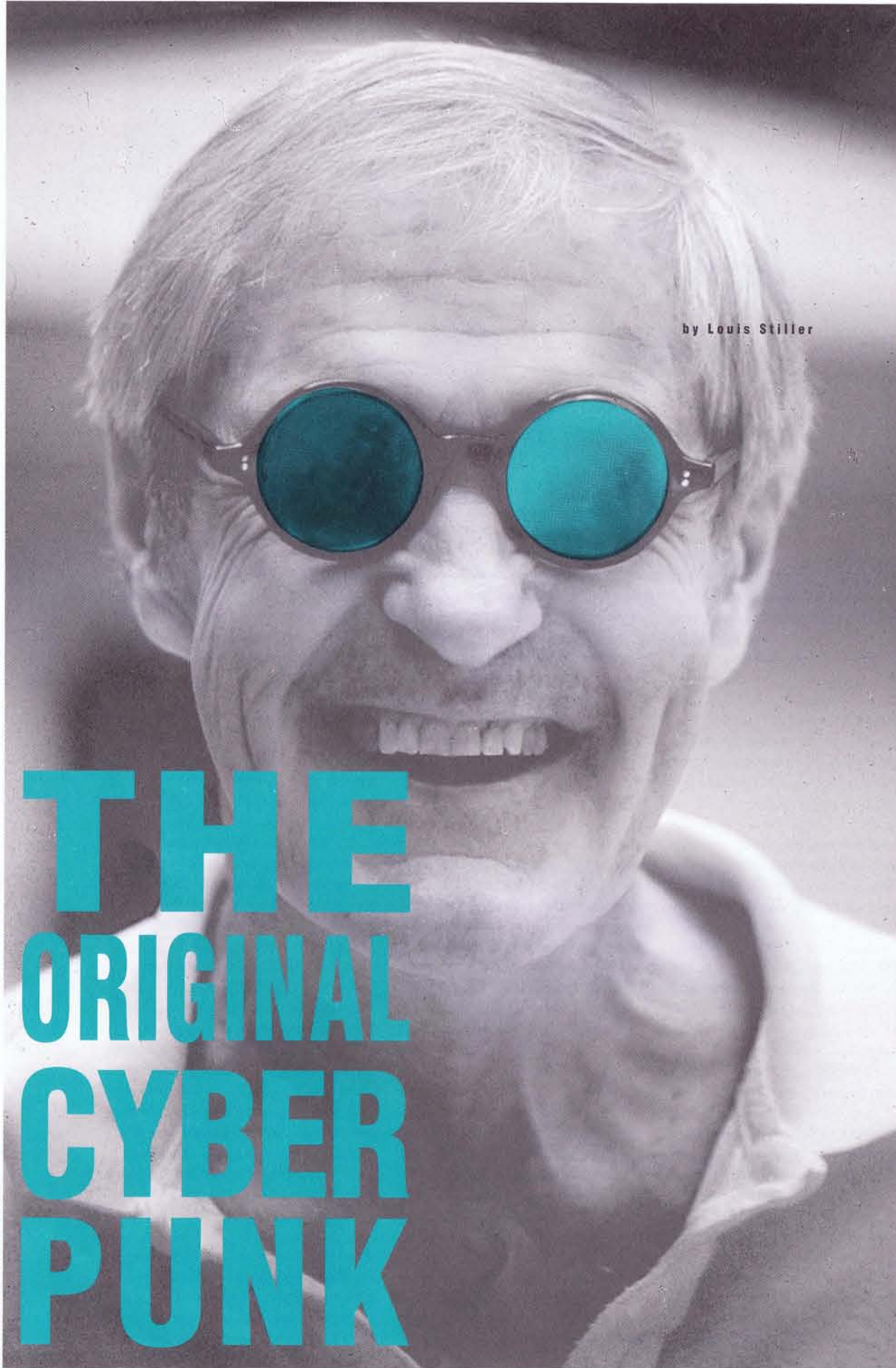
The volume of traditional printing and its revenues may also continue to grow at their present rates of 2-3% globally per annum. However, it could

be that most work on offset process presses in the year 2010 will be long-run 4-color work. That means those who wish to be survivors must make certain investments by the mid-1990's, and position themselves in sectors where competition will be intense for a certain limited amount of work. Like fish in a pond whose water level is shrinking, the large are likely to grow larger at the expense of the mid-sized.

The displacement of print is already underway. From the McGraw-Hill's customized textbook to the electronic filing of corporate financial results with the Securities and Exchange Commission, paper is becoming the back-up alternative to a preferred, all-electronic flow of information.

So electronic delivery will come, bringing with it a displacement of print, both in ink-on-paper and toner-on-paper varieties. But the problem (much as it was during the fracas about filmless prepress in the late 1970s) is to understand how much will happen how soon and what strategies are available to those whose businesses will be most severely impacted by it. The old, comforting assumptions, based on a "not in my lifetime" attitude, are not going to survive the count-down to the millennium.

David Henry Goodstein, the founder, president, and CEO of InterConsult Inc., consultants to Fortune 1000 companies, has been directly involved in electronic publishing for more than 12 years.



THE ORIGINAL CYBER PUNK

by Louis Stiller

Dr. Timothy Leary is converting his vision of a cyberdelic future, where people use thought appliances to free their own minds and change the world, into software reality.

According to Timothy Leary, the counterculture hasn't faded away, it's just changed shape and inhabitants.

Its new LSD is computers. The new underground is thousands of hackers. The new heroes are people like Robert Morris, who injected a virus into Internet that paralyzed an estimated 6,000 computers at high-powered institutions across the US. The new computer subculture even has its own Rolling Stone magazine – Mondo 2000 (formerly Reality Hackers, formerly High Frontiers), featuring a mix of software reviews, drug tales, music interviews, cyberdelia (contributor Leary's term) and new age philosophy.

Leary (69), recently described as "a social guru and renowned user of controlled substances," locates the center of this new cyberpunk counterculture in California's Silicon Valley. He keeps in daily contact with it via an electronic bulletin board called the WELL, operated by the descendants of the original Whole Earth Catalog (the latest version of which, by the way, is now available on CD-ROM).

Oh, and like all good subcultures, it also has its enemies. Leary: "It's like the Wild West out there, hackers and corporations insulting each other and fighting it out." According to Leary there is an information war going on for control of the world, just like the Dutch and the Spanish in the 16th century. "It's the same tension between those who want to control and those who want to be free."

PLUS ÇA CHANGE

Professor Timothy Leary is still best remembered for his psychedelic lessons in the "Psychodrama Room" at Harvard in 1960, a university lab "with mattresses on the floor, candlelight, Buddha posters and Hindu ragas on the stereo," as Jane and Michael Stern inform us in their book *Sixties People*. Leary was so smitten by his drug vision that after being fired in 1962 because of these controversial teaching methods, he began travelling around the US to tell people to "tune in, turn on, drop out." He even started a religion, the League for Spiritual Discovery. Its maxim was "You Have to Be Out of Your Mind to Pray."

But that was then and this is now. Ensnared in his Beverly Hills home, which is filled with photos of his past and a splendid collection of Keith Harings and Helmut Newtons, and dressed in a neat K-Mart sweater, Leary appears to have left controlled substances behind. Even uncontrolled substances: he hasn't touched alcohol in months, and he takes the whole day to smoke a single cigarette – by cutting off the burning end with a pair of scissors after every one or two puffs. And the last interview he gave was for a venture capitalist magazine.

Yes, times have changed. But under the hood, the same spirit, the same energy, the same ideas tick over with even more "Realities Per Minute," as Leary calls it, than ever before. LSD and religion are no longer Leary's chosen medium for changing

the world. Now it's personal computers. Or, as Leary calls them, *interpersonal* computers. His company is called Futique. And his first programs were psychic toolboxes – one called Mind Mirror (for understanding your own psyche), and another, Head Coach (a learning aid). See EW#2.

CLASSROOMS WITHOUT WALLS

These days, Leary's energy is channelled mainly into interactive educational programs. Leary's vision of a networked hypermedia "classroom without walls" is being used at Pennsylvania State University. Leary's goal is to help disadvantaged ghetto children. He loathes the classical school system, where pupils are taught nothing but reading, writing and arithmetic.

"Just the idea of forcing a child to sit down with a pencil is almost like cannibalism, like child-slavery. How can you do that to someone? Give me a break. Give me a computer. When an American ghetto kid has the historical information capability of MGM at her fingertips, things will really change. Our method will teach children how to package ideas and how to communicate in this new electronic world."

Leary is currently working on a program called Intercom, which is short for Inter Communication. It brings the anti-authority ideas of Ivan Illich and other Sixties New Educators to the computer. The program, which Leary proudly demonstrates on his DOS computer, works with scores and statistics to let the students evaluate their own progress. Students can even score on "cheating" and "honesty." Leary demonstrates an interactive lesson in slang.

"Do you know what crispy means?" the pretty girl on the computer asks. "I feel so crispy."

"Do you think you know the answer?" the program asks me. "Yes, no, maybe, or irrelevant."

I answer "No."

"Good," Leary comments, the genuine teacher. "Because if a student says, oh, I know everything, they're never going to learn."

"Crispy," Intercom informs me, is slang for "extremely hung-over."

Scores, Leary demonstrates, are to be found in another menu, where several statistics are displayed: seasonal scores, class averages, student averages – just like in a baseball game.

"Actually, they're measures of mentability," Leary says. "You're playing with your mind. Or rather, *inter*playing. It's throwing *and* reacting. You are shooting, and I am shooting. Instead of just reading and consuming information, the student *performs*."

Some of the programs are already being used in classrooms, mostly, without a teacher – and connected to fellow students. "There is no teacher, no Big Brother. Someone throws the pitch, and the student has to respond to the pitch."

The program even tries to encourage Leary's all-time favorite slogan "TFYQA," or Think For Yourself, Question Authority.

"It can throw curveballs – ask irrelevant questions. But it's up to you. You decide. But if you cheat, everybody will see. That's what happens with interactivity."

MENTAL MASTURBATION

Interactivity is a key word in Leary's ideas and concepts. The first interactive electronics, according to Leary, was our ability to switch off the television set – which, he claims, was not always possible in Russia. The second step was cable television, which let you switch channels and plug into a larger variety of information and entertainment providers. The third step was

VCR, which allowed you to watch when you wanted to, not when they wanted you to.

But it is still passive, notes Leary. "And they decide what we see."

The computer was the first device "to control the screen." The computer allowed for the first true interactivity — between the program and the user. Yet it still wasn't interpersonal.

Leary: "In fact, it was reactive, not interactive. It's your own mind reflecting. It's just a mirror; you're just talking to yourself all the time. There's no one on the other side. You sit in front of the computer and play with your own brain. It's like mental masturbation."

The electronic reality is a platonic reality. Plato said that we can only see shadows of the real things in our brain, mind and imagination. The material world therefore is shadow. The brain contains the real world, and the brain is an electronic device.

The first real steps in true interactivity were electronic bulletin boards, according to Leary, and the next big step is the Futique programs, designed specifically for interactive communication. "Einstein said: I cannot measure a star, because I am moving and at the same time the star is moving. The answer to that problem is not that we cannot do anything; the answer is: quick reaction. Oh, the star is moving. Direct feedback."

DATA GAS STATIONS

"The 20th century will be the century of the mind. When the machine came, we did not have to work anymore. It freed the body. The tele-computer will free the brain."

Within 20 years, Leary predicts, there will be a global information village. Our friends will live in countries all over the world and speak different languages. But all we'll have to do is to put on our datasuit and eyephones, jack into our networked computer — data-highways, in Leary's parlance — and travel through the virtual reality inside our brains, speaking in the graphic language of icons.

"With data-highways I can put my brain in Japan, in Amsterdam, anywhere I want. Who wants to stuff their body into a horrible, noisy, polluted airplane for 12 hours? The only reason you'll use the plane in the future is body pleasure."

Leary holds up artist renderings of the data-highways of the future, broad, spa-

cious multicolored canals with columns in between.

"These are the first maps of the electronic world. These are data highways we'll be building in the coming years. If I want to get to the MGM Library to see something, or want to get information from a Moscow medical database, I just take the data freeway. You zoom down here, you zoom down there, you can leave whenever you like. I wanted someone to draw these illustrations because we are creating a new world, and our task is to make clear signal points, byways and freeways. You can use a swastika, you can use a taxi sign, and if you need data, you go to the data gas station."

Leary compares computers and their artificial realities with the shadow-and-cave-ideas of Plato. "The electronic reality is a platonic reality. Plato said that we can only see shadows of the real things in our brain, mind and imagination. The material world therefore is shadow. The brain contains the real world, and the brain is an electronic device. History, actually is electronic."

Leary uses a new unit of measure, Reality Per Minute (RPM) to describe what is going to happen in this brain-world. "Thirty years ago, before I took recreational drugs, I had one telephone and a black and white television, and I read some books. Now, I have a fax, a copy-machine, two phones, a computer, and I exchange about 500 pages electronically a month. I figure my RPM has multiplied fifty times. In the next 10 years this will go up even more. Right now, I probably use one percent of my brains, fax and all. In 30 years this may be five percent. By the end of the century, the RPM will go up to 25%."

INTERACTIVE NOVELS

One of the tools to enlarge the RPM of the modern literate is the interactive novel.

Leary was involved in adapting the cyberpunk novel *Neuromancer* to the silicon screen. In the original "paper" book by William Gibson, world power is in the hands of multinational zaibatsu, battling for power much as mafia and yakuza gangs struggle for turf today. It is a world of organ transplants, biological computers and artificial intelligences.

Gibson's hero, Case, is a "deck cowboy," a freelance corporate thief-for-hire who projects his disembodied consciousness into the cyberspace matrix, penetrating corporate systems to steal data for his employers. It is a world that Ivan Boesky would understand: corporate espionage

and double-dealing has become so much the norm that Case's acts seem less illegal than profoundly ambiguous.

Neuromancer won three of science fiction's most prestigious awards — the Hugo, the Nebula and the Philip K. Dick Memorial Award — and continues to be a best-seller today. With the creative participation of Timothy Leary and a musical score by Devo, *Neuromancer* — the computer game (published by Interplay in 1988) — tries to bring a sophisticated futurist vision to electronic entertainment. The "reader" is allowed easy control of the characters. Evocative graphics suggest the underworld atmosphere and sleazy characters of Gibson's low-down fantasy setting. You wander this world conversing with a cast of peculiar characters, logging onto bulletin boards, and breaking into vast, multinational databases in order to find out who's killing all the hackers. *Neuromancer* approaches having true plot and characterization. Exploration and deduction, not hit points and puzzle solving, are the focus.

Leary: "In this information age, you choose how you want the hero to look, you choose the graphics, you define the character, you create the hero of the book. You may choose William Burroughs, who is very upper class, or you may choose some other type of hero."

According to users of *Neuromancer*, Interplay has not only folded it inventively into a computer game but has done it with a no-pulled-punches maturity that leaves the bite of Gibson's vision intact. Leary: "It's faster too. It may take you ten hours to read a book, but only an hour to play it. The RPM goes up, see!"

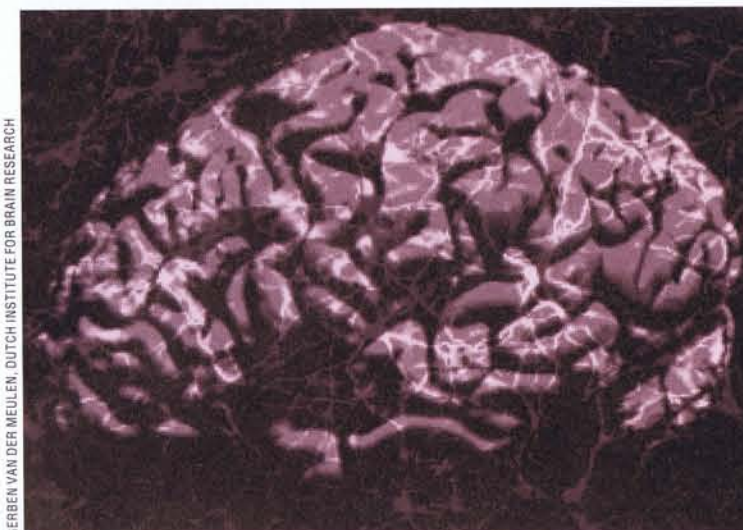
Leary is also planning to adapt his friend Burroughs' book *Western Lands* and a novel of the most famous unseen author in the world, Thomas Pynchon. He will apply the same process he used in *Neuromancer*: "Pictures, sound, selection and simulation. The difference between interactive movies and books will become increasingly smaller."

Leary states that the difference between reader and writer will also blur. "The reader has become a performer in the case of interactive fiction. To read a book is passive. The reader will re-create. As in a psychiatric process."

Timothy Leary is planning a lecture tour of Europe this summer.

Louis Stiller is an Amsterdam-based freelance journalist and a frequent contributor to Electric Word.

GERBEN VAN DER MEULEN, DUTCH INSTITUTE FOR BRAIN RESEARCH



HACKING THE BRAIN

by Nick Beard

After a false dawn, neural networks are winning back an increasingly large slice of the research cake. Nick Beard reports how natural language processing is benefiting.

Too much hype can wreck a subject. People become bored with hearing about it. As journalists try to outdo each other with hyperbole, ever greater – and less realistic – expectations are created. Occasionally the whole edifice crumbles, the original premise proves premature, and everyone feels a bit silly. The neural network research community is sensitive about this, as there has been a hype problem before – the perceptron affair – and it set back funding by more than a decade.

ELECTRIC FROGS

It started with frogs brains. In the 1940s, Warren McCulloch and Walter Pitts were trying to get to grips with neurophysiological mechanisms of perception and motor control. They simulated frog neuro-circuits, and discovered that simple webs of amplifiers were capable of crude “reasoning.”

The roots of thought, they thought, were to be found here, and in the heady days of Alan Turing and John von Neumann, computation seemed almost limitless in its powers. McCulloch and Pitts published a paper grandly titled “A Logical Calculus of the Ideas Imminent in Nervous Activity,” and the mechanisms of cognition seemed only a Boolean stone’s throw away.

Soon after, Frank Rosenblatt developed the perceptron, a simple network of artificial “neurons,” able to learn to classify patterns into groups. This excited people: an Oklahoma newspaper published a headline “FRANKENSTEIN MONSTER DESIGNED BY NAVY ROBOT THAT THINKS.”

Too bad things weren’t as good as they seemed. The underlying math of perceptrons, thoroughly investigated by MIT’s Marvin Minsky and Seymour Papert in their book *Perceptrons*, was found wanting. Minsky and Papert proved just what these things could not do. With only one layer of variable strength interconnections, perceptrons simply could not learn some important patterns – such as the exclusive-OR (XOR) problem.

Minsky and Papert didn’t stop there. They also wrote that they saw no reason to believe that these restrictions could be overcome by more complex networks. They were wrong, but their status in the AI community, and the apparent finality of their pronouncements (“Most of the writing [on neural nets]... is without scientific value”) meant that neurocomputing projects were largely junked.

SPIN-GLASS SPIN-OFFS

A number of crucial academic efforts a few years later changed all this. John Hopfield, a respected physicist, pointed out that multi-layer neural net theory was analogous to a well understood lump of physics – spin-glass physics. Neurocomputing then enjoyed a glory which was in part a reflection of Hopfield’s existing respectability in the physics community.

Soon after, the single-layer restriction was broken. Minsky and Papert’s judgement that multi-layered extensions to the perceptron paradigm would be sterile was proved wrong.

Two methods of training multi-layered nets were found, back propagation of errors and simulated annealing. These

breakthroughs and a heap of stimulating and provocative related material were published in McClelland and Rumelhart’s *Parallel Distributed Processing – Explorations in the Microstructure of Cognition*. It sold remarkably well, and the flurry of recent activity – and speculation – began. The bandwagon was back on the road, this timewith a better sense of direction.

In spite of fundamental theoretical breakthroughs, it has seemed recently that neural networks might again be at risk from excess hype. There was simply too much noise! One commentator has suggested that ironically, last year’s cold fusion fiasco saved the day. The claims that test-tube fusion had been developed caused esoteric metal shares to rise, and also distracted journals from neural nets for long enough to allow some real results to creep out of the labs. In the US, a number of neurocomputing companies are now reliably profitable.

With their respectability intact once again, multi-layered nets have been applied to a host of problems that were regarded as having largely defeated conventional rule-based or symbolic approaches. Neural networks have spawned a paradigm, called connectionism, or parallel distributed processing, the terms being used interchangeably. As a facet of artificial intelligence research, connectionism can be applied to distinct (though linked) goals; technological and psychological.

A GOOD NET RESPONSE

Both new technologies and new models for psychological investigations have benefitted from the resurgence in neurocomputing. Computational linguistics – language technology and psycholinguistics – serve as good illustrations. Although “out of sight, out of mind” might no longer be translated as “invisible, insane” there remain doubts that a symbolic approach to language processing is entirely suitable as either a cognitive or technological paradigm.

The story goes that Terry Winograd – doyen of syntax – never wrote volume two of *Language as a Cognitive Process* because his views on computational semantics kept changing. Instead he wrote *Understanding Computers and Cognition*, which involved taking Heidegger seriously – something few logicians ever do. There is no doubt that symbolic NLP systems have trouble with semantic processing – they are certainly unlikely to handle Heidegger!

Major problems are ambiguity, and the importance of world knowledge in interpretation. Look-up lexicons are surely not what our heads use, nor are they impressive at disambiguation.

Lexical ambiguity is so common that we barely notice it. The commonest 20 English nouns each have an average of over seven meanings, verbs over 12. “Take” is reputed to have 57 varieties of sense, and “run” 176! Thus disambiguation of sentences is computationally tough – and not just with weird and implausible phrases fabricated by linguists. There is also the problem of “structural ambiguity,” where sentences may have more than one possible phrase structure assignment. Consider “The boy ate the pasta with the spoon” and “The boy ate the

The wetware inspiration

Our nervous system has many different cells, but the main type is the nerve cell, or neuron. Neurons have a round, chubby body and a long projection or axon, which is the link to other neurons. What we generally refer to as nerves are largely bundles of axons, which may be up to a meter long in humans (the axons in the giraffe’s recurrent laryngeal nerve, which goes from the top of the neck down to the stomach and back again, can be ten meters long).

Data transmission is essentially an electro-chemical process: the flow of the signal down the axon is electrical, and at the end of the fibre, where it transfers the signal to another cell, is the chemically mediated synapse. This is where the transmitting cell releases a special chemical – a neurotransmitter – onto the next cell, and starts the process of conduction again. There are some 10^{11} neurons in our head, and each may have 1,000 – 10,000 connections, making a total of around 10^{14} synapses in our heads – massive parallelism!

Within neural computing systems, neurons are represented by nodes or units. These are simple highly interconnected units, each doing its own simple job. Mimicking physiology, each unit’s job is to receive a signal from many other units. These signals activate the node, and if the necessary threshold is reached, it “fires off” a signal to other units.

All the processing in a neural network is carried out by these units – there is no “executive” or “overseer” comparable to the central processing unit (CPU) of a conventional computer.

SECRET OF THE HIDDEN LAYER

It is useful to consider three types of unit: input, output, and hidden. Hidden units are those whose inputs and outputs are within the system. They are not “visible” to outside systems.

Without hidden layers, the network is restricted to being able to solve only simple problems. The hidden nodes form an internal representation of the problem within the network, and after a network has been trained, it is possible to “go in” and examine the state of the hidden nodes to see how the network has learned to do things. This is not always a meaningful exercise, as the representations the network develops are sometimes highly abstract, and not humanly comprehensible.

Layers of such units are arranged so that data is entered at the input layer, and the network delivers its result at the output layer. To train a network, each input layer node is fixed at an activation, which represents data input. It communicates this activation to each node on the next layer.

Receiving nodes process many inputs, each being transformed according to the transfer function. The results are added together

to produce the output, and the process is repeated throughout the network to generate an activation pattern on the output nodes.

Initially, the interconnection strengths of the various nodes are random, so the network output is random. The difference between the actual output and the desired output is used to change the connection strengths between nodes, and thus train the network. The rule used to calculate the required changes is called the learning algorithm.

FIRST TRAIN YOUR NETWORK

There are several types of network, each with particular strengths and weaknesses. They are distinguished by three features: the method of training, which is the process – or learning algorithm – by which the interconnections are adjusted in the light of experience; the mathematical formula with which the units process incoming signals, and the network architecture.

Neural networks are often simulated on a conventional serial machine. This is largely a matter of convenience. Direct hardware implementations or parallel computers are rarely available, and tweaking and testing network performance is easily done in software. Nevertheless, there could be advantages to direct silicon implementations as they become commercially available, such as speed and fault tolerance.

NOT ALL NETS ARE ALIKE

Rosenblatt’s networks of linear threshold devices, perceptrons, were able to learn, and created a (short-lived) sensation (see main article).

Of the new generation of neural nets, the Hopfield net can best be understood in terms of energy. It is highly interconnected, with each node sending and receiving signals from every other. It has shown some promise in solving difficult optimization problems. Hopfield showed that neural computing problems can be conceived in terms of energy levels, where the solution is at the system’s minimal energy level – its stable state.

The Boltzmann machine was another early successful multi-layer net operating along these lines. Using a process called simulated annealing, named after the metallurgical heating and cooling of metals to direct them into their lowest energy (and strongest) state, the net settles into a stable state – a solution. Tuning Boltzmann machines to converge is tricky and training times can be very long.

The Kohonen net is based on the structure of the human cerebral cortex, in particular its lateral – side-to-side – connections. Research continues, in an attempt to find an optimal general training algorithm for multi-layer nets. How much any such solution will eventually owe to the neurobiology remains to be seen. ■

pasta with the sauce.” There is reasonable consensus that such sentence processing involves simultaneous semantic and syntactic processing, which the symbolic approach finds less amenable. Try “President Bush Swore in his new cabinet” (see diagram right).

LOW LEVEL RULES

FOR HIGH LEVEL GRAMMAR

McClelland and Rumelhart have used neural net models to account for learning of past tenses of English verbs, which

contrasts with the rule-learning approach of researchers like Pinker. The “neuros” claim that the high level rules of grammar are explicable in terms of lower level processes, just as the neat hexagonal structure of a honeycomb is “caused” by busy bees. Their model was originally trained on ten high-frequency verbs, and then on some 400 less common verbs. The model correctly captures children’s performance on a wide variety of irregular verbs, making similar over-generalizations.

There have been some serious criticisms of this analysis. Pinker for example, suggests that it is inadequate to account for the range of phonetic transformations occurring in human languages.

Rueckl has developed a connectionist account of letter and word recognition, prompted by the psychological finding that people are better able to recognise words they have seen recently. The same finding applies to “pseudo words” – pronounceable non-words such as “blen.” His model features a number of layers, ▶



starting with a "retinotopic map," (a model of the area of brain cortex that directly maps the visual image focussed on the eye's retina) which feeds a second layer, an object-centred feature map. The third level is the object identity representation, where patterns of activity correspond to entire objects, which can be letters or words.

THE SENTENCE THE NET LEARNT

Some cognitive activities have a clear symbolic and sequential flavor, such as a student solving a physics problem. However, human sentence processing is probably not in this category. Numerous connectionist parsing systems have been constructed, many of them incorporating some symbolic processing either prior or during the network's efforts. Highly recursive definitions of grammaticality are not easily handled by neural networks.

**The "neuro" claim that
the high level rules of
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"caused" by busy bees**

PARSNIP is a back-propagation based system that is able to learn complex sentence constructions, including embedded sentences such as "The rat the cat chased died," though it could not manage doubly-embedded sentences. Neither, however, can most humans do so reliably!

Cottrell and Small developed a connectionist approach to word-sense disambiguation, which attempts to incorporate psycholinguistic and neurolinguistic constraints. Each word is linked to one or more senses, and each sense inhibits all the others in the sense-module. It is able to discriminate between the meanings of "threw" in "John threw up the ball," "Jim threw up dinner," "Joe threw a ball for charity," and "Jack threw the fight."

HEAVIER CONCEPTS

The wider significance of connectionist models has been discussed by many philosophers. Paul Churchland invokes connectionism in his analysis of the plasticity of human consciousness. He points out its contact with some of the major themes of European philosophy, such as the non-propositional nature of the bulk of human knowledge, and the primacy of being an endlessly active agent continu-

ously reviewing one's relationship with "the outside world."

Lakoff makes links between cognitive linguistics and connectionist architectures. Central to his model is cognitive topology – such as simple in, out, over, under – and the use people make of topological descriptions of the world in engaging in language use. Some experimental work has been done to link such topological models to vision using connectionism. For example, Regier built a system comprising a number of nets, devised to handle the prepositions "in," "over," "into," "out of" and "outside." The nets assign different shifting patterns of activation to each of these notions, according to the relationships between user controlled objects.

Attempting to set much of the work on neural nets in proper context is Smolensky. His *On the Proper Treatment of Connectionism* tried to encapsulate the pros and cons of the connectionist style, and to reconcile it with traditional symbolic AI. He concludes that the proper place for neural net-type models is at a level intermediate between brain physiology and symbol systems. In other words, connectionist models are not direct models of biology – not simulations of circuits we might find in our heads.

There are still strong criticisms of connectionist models of human psychology, however. Fodor and Pylyshyn argue that the paradigm is little more than a novel presentation of "associationism," and that the arguments used against one of associationism's chief villains – behaviourism – apply to connectionist models.

TECHNOCHAT: NEURAL NETS AND LANGUAGE TECHNOLOGY

Of course, a computational activity can be valuable without making any contribution to our understanding of the human soul. A problem with AI, especially applications such as language handling or pattern recognition, is that "expertise" needs to be encapsulated as explicit rules. This can be a slow and expensive process – the so-called knowledge acquisition bottleneck.

For a skill like language, the rules are inaccessible. Neural computing generally requires no rules, instead extracting "knowledge" from experience. Neural systems offer other advantages, such as a reasonable response to noisy or incomplete input, fault tolerance and an ability to exploit parallelism. A network running on a parallel system could tolerate

partial machine failure and still operate. This ability – called graceful degradation – is a characteristic human skill, rather like the gradual (though rarely graceful) reduction in performance as we drink alcohol.

Many language applications can be interpreted as variations on the theme of pattern recognition, and connectionist systems have found favour here. Nestor Inc. developed a system that accepts digitized handwriting, which after training, is able to interpret handwriting it has never seen before, in a variety of styles, making good guesses when confronted with confusing characters.

Kuniko Fukushima, at Japan's NHK Science and Technology Research Laboratories, also developed a handwriting system, based on the neocognitron, a multi-layer network simulating human visual processing.

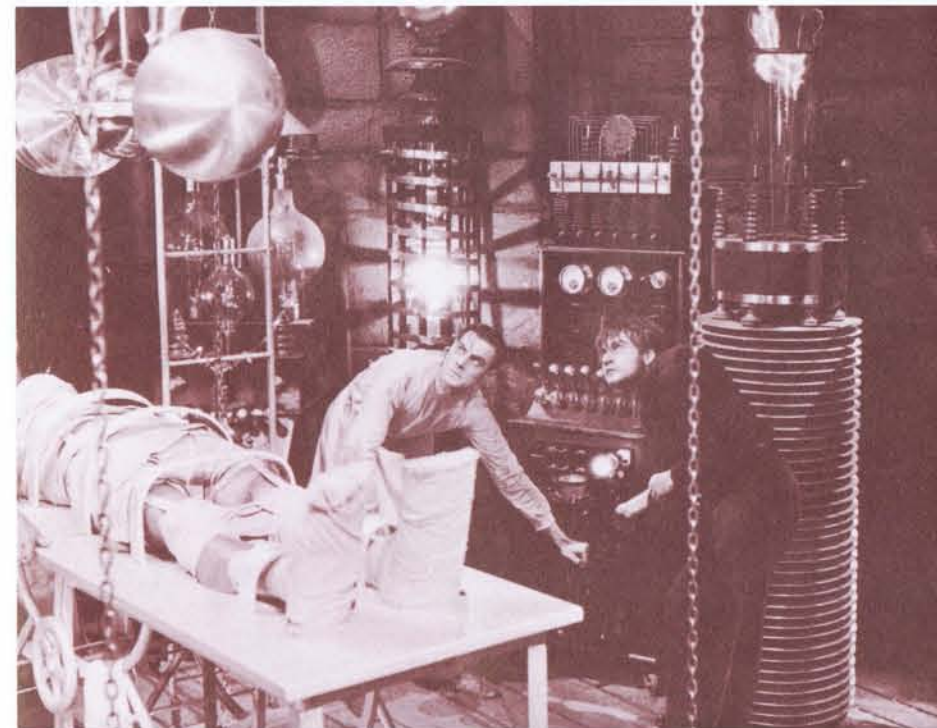
FROM BABBLE TO CHAT IN A NIGHT

Perhaps the most famous natural language processing neural net is NETalk, the text-to-speech converter created by Terry Sejnowski, professor of Biophysics at Johns Hopkins University, and Charles Rosenberg, a Princeton psychologist.

A child's conversation was transcribed by a linguist into its component phonemes. The network converted the coded text to phonemes, and a voice synthesizer, DECtalk, turned the phoneme codes into speech sounds. Initially, the system produced only a continuous stream of sound, because the inter-nodal connection weights were random. After training, the computer was able to infer rules about reading English text. From babbling like a baby, after one night of learning, it could speak like a six-year-old. Although text-to-speech conversion has been accomplished before, this approach is important because there is no need for pronunciation rules.

After NETalk had been trained, Sejnowski and Rosenberg examined the "receptive fields" of the hidden layers. This meant finding out what features of sound they responded to. Astonishingly, the hidden layers had learnt elements of English such as the differences between vowel sounds and consonants, and even different sub-groups in these classes.

Most of these systems are taught to respond in specific ways to classes of input data – supervised learning. Kohonen nets are capable of unsupervised learning. Tuevo Kohonen gave large amounts of speech data to one of his nets, and its



nodes automatically formed activation clusters around representations of the constituent phonemes. This work is being further developed into a phonetic typewriter (See EW #19 news).

SO WHAT, AND WHERE NEXT?

A prejudice against AI involves the view that if we can know that a machine is working according to simple rules that we can readily grasp, it is not intelligent. Nets avoid at least this problem, as often we don't know how they do what they do!

Neurocomputing is not the solution to all the problems of computational language processing, though it offers a fresh approach to some difficult problems. There is also cheer to be had from the rapid progress made in such a short space of time. There is still plenty to be done, though. Cottrell, whose work on disambiguation is described above, notes that his system does not consider prosody, nor contextual facts such as speaker's profession or location. This does not detract from his work – but it hints at the limits of what we can yet do. It is doubtful whether real progress will be made on problems like the semantic content of intonation, or the proper incorporation of large quantities of real-world knowledge, without some cooperative effort between the students of symbolism and the connectionists.

Many popular books on computing conclude with a speculative foray into the future, where a "truly intelligent machine assistant" (often with a voice like 2001's HAL) helps a researcher by undertaking vast trawls of on-line databases in response to inexact, spoken instructions; at the same time anticipating that because it's Tuesday you will want the lights down low and the heat up because it's funtime with the partner. The literature of AI is littered with such predictions, many of which have been revived by connectionism. Major research efforts are in progress in areas like analogue VLSI (Very Large Scale Integration chips), in an attempt to render neurocomputational capabilities in silicon. These efforts may bring some of the predictions closer, but developments in conventional machines are just as likely to do so by constructing viable, accessible, parallel operating systems simply to make raw computational power more widely available.

There seems little that is certain in the future of computing, though it is certainly the case that a niche for neurocomputing has emerged. The precise shape of that niche, and its position in the wider scheme of computing has yet to be clarified.

Dr. Nick Beard works for Coopers & Lybrand.

Parallel Distributed Processing
by JL McClelland and DE Rumelhart & PDP Research Group
(MIT Press, 1986)

The reference – essential. One of the major agents of the connectionist revival, this set remains a high quality, readable and stimulating survey of the field. It is difficult to find books or papers on the subject that do not refer to this work. A bargain.

Neurocomputing
by James Anderson and Edward Rosenfeld
(MIT Press, 1989)

The other essential reference, and now available in paperback. A collection of the key papers from the history of the connectionist perspective, though most continue to be relevant. Many of the papers are from highly esoteric journals, a reflection of the unfashionable status of nets before McClelland and Rumelhart's books arrived on the scene, and so are hard to track down otherwise.

Neural Computing – Theory and Practice
by Philip Wasserman
(Van Nostrand Reinhold, 1989)

The best practical guide to nets as technology. The background theory of each major paradigm is discussed in depth, and implementation issues also considered.

Neural Networks in Artificial Intelligence
by Matthew Zeidenberg
(Ellis Horwood 1990)

Excellent survey of the psychological and technological implications, including a wealth of well summarised research findings.

Foundations of Cognitive Science
by Michael Posner
(MIT Press, 1989).

A splendid survey of the entire discipline of cognitive science, by some *real* heavyweights.

Microcognition
by Andy Clark
(MIT Press, 1989)

The philosophical aspects – thoroughly enjoyable. Cheerful, readable and with humour; a thorough exposition of the impact of PDP on the philosophy of mind.

A Neurocomputational Perspective: The Nature of Mind and the Structure of Science
by Paul Churchland
(MIT Press, 1989)

Similar scope to Clark's book, though perhaps more concerned with ontological and epistemological matters.

Getting your head around neural nets...

Connections and Symbols

ed. *Pinker & Mehler*
(MIT Press, 1989)

The symbolists fight back! This survey of connectionism, focussing in particular on language models, is cogent and articulate, but no beginner's guide. Valuable not least because it helps to keep in mind the existence of dissenting voices among the connectionist enthusiasm.

Computer Models of Mind

by *Margaret Boden*
(Cambridge University Press, 1988)

The psychological aspects of classical AI and neural nets – excellent. Boden's books are always concise and readable.

Neural Connections, Mental Computations

by *Lynn Nadel et al.* (MIT Press, 1989)

An advanced volume that focusses primarily on the neuroscientific aspects – specialized, but excellent. Aimed at those with a direct interest in real wetware.

Minds, Brains and Science

by *John Searle*
(Pelican, 1989)

The sceptical aspects – short, cheap and readable. Searle introduces the Chinese Room and does his best to rubbish AI. Powerful and clear – but didn't Derrida say something about the tyranny of eloquence?

A Connectionist Approach to Word Sense Disambiguation

by *Garrison W Cottrell*
(Morgan Kaufmann 1989)

Highly specialised account of the impact of nets on an aspect of natural language processing.

SOFTWARE

These products were tested on an Elonex 386, running at 20Mhz.

Explorations in Parallel Distributed Processing

MIT Press. PC version: UK£21.95; Mac: £29.95.

A real bargain. Written by McClelland and Rumelhart (the latter being credited with the development of the back prop algorithm). The software accompanies their two volume book, *Parallel Distributed Processing*, and is easier to use alongside it. Both volumes of PDP, plus this software, cost less than almost any other package on the market, so anyone interested in neural nets should get the set!

Includes executable C++ source code. All

file formats are included, with instructions for porting to Unix. A text editor is required. The overall flavour is academic, although it can be used to solve real problems. I used it to build a net to read ECGs (full). Six networks are provided, each with example applications and they are effective, quality programs. For the cogniscenti, they are interactive competition and learning, the Boltzmann machine, the pattern associator, the auto-associator, a competitive learning system, and of course, a back prop net. The packages all use similar formats for I/O. Real, working nets, at minimum cost.

Neuroshell

US\$195, from *Ward Systems Group*, 228 W. Patrick Street, Frederick, Maryland 21701, USA. Tel: +1 (301) 662-7950
Hardware req: 256K RAM.

A simple to operate, menu-driven back prop system. Build useful networks without recourse to text editors, network diagrams – or any thought of neurons. Clear manual, ready-configured tutorial networks, and an emphasis on producing useful nets quickly and simply.

Advanced menus allow adjustment of network factors, such as the number of hidden nodes. Details of file formats are provided to allow net definition and training files to be produced externally. A dBASE version is available. A fast and effective program, making nets available without learning definition systems or transfer functions.

Neural Works Professional II

Recognition Research, +44 (61) 449 8628.
Hardware: PC: 512K RAM (640 recommended) DOS 3.X. CGA, EGA, VGA or Herc. Hard disc. Supports up to 8MBytes of LIM3.2 or upwards plus co-processors, mouse. Plus: Mac, Sun and Ncube. £1,650, plus £250 annual maintenance. For Sun, £2,850, plus £527 maintenance.

Highly sophisticated suite of networks, in a powerful development environment. Superb documentation, with a thorough introduction to neural networks as well as to the software. The package includes Adaptive Resonance Theory (ART) nets, Kohonen, Hopfield, Adaline and back prop nets, probabilistic neural nets (PNNs), Boltzmann machines (lots of them) and many variants on the back prop system, including the very fast and recently developed functional link network.

A general Lotus compatible I/O file format is supported, and a specific spreadsheet interface is provided. Neural Works can be used to produce stand-alone commercial

products, transformed into C source code with The Neural Ware Designer Pack. This takes networks from Professional II, and transforms them into C source code. Neural Works puts nets in business, and is highly recommended.

Brainmaker

£165, from *FAR Communications*; +44 (533) 796166. Hardware: PC, 256K, DOS 3.X. Optional: mouse, co-processor.

An effective back prop system, entirely mouse and menu driven and easy to use. The network is fully user-definable, and different types of node can be specified, to operate with different linear and non-linear transfer functions.

Good facilities for input data processing, with symbolic input supported, allowing fruit to be described as "red," "small," and "round" rather than with colour, size and shape codes. Pictorial input is also supported. Input data can also be described by fuzzy sets. Input can be autoscaled.

A thorough and well written manual, which contains advice on pushing a network from conception to completion. "Making a trained net is a seven step process. 1. Decide what you want your net to do....7. Run your network to make more money, impress your friends and please your spouse." The explanation of neural nets is good, and the detailed mathematics are tastefully hidden in an appendix.

Example nets include a "stock market predictor," and a version of NETalk. A powerful system that is viable for anyone with a serious interest in nets.

Addresses:

The MIT Press, 55 Hayward Street, Cambridge, MA 02142, USA. Tel: +1 (617) 253-5642.

Van Nostrand Reinhold, Molly Millrs Lane, Wokingham, Berks, RG11 2PY. Tel: +44 (734) 789456.

Ellis Horwood, Market Cross House, Cooper Street, Chichester, W. Sussex, PO19 1EB. Tel: +44 (243) 789942.

CUP, The Edinburgh Building, Shaftesbury Road, Cambridge CB2 2RU. Tel: +44 (223) 312393.

Pelican, Bath Road, Harmondsworth, Middx, UB7 0DA. Tel: +44 (81) 759 1984.

Morgan Kaufman, FAR Communications; +44 (533) 796166.

Recognition Research, 140 Church Lane, Marple, Stockport SK6 7LA, UK. +44 (61) 449 8628.

Ward Systems Group, 228 W. Patrick Street, Frederick, Maryland 21701, USA.

Tel: +1 (301) 662-7950



DETAIL OF A PAINTING BY CARPACCIO

WRITERS RIGHT NOW

by Jane Dorner

Jane Dorner previews a unique survey of writers' involvement with information technology, to be published by the British Library later this year. And just for EW, she asked publishers what they thought too.

A couple of years ago, I demonstrated to a small independent publisher that he could typeset his books at a third of the cost, but nine times faster, using authors' disks instead of rekeying. Fine. But his writers were doing all the extra work that this involved and weren't getting a penny of the savings.

For a time, my ability to see how unhappy the authors were with this situation was clouded by champagne editorial meetings, expensive seats at the opera and lobster cocktails. On one unforgettable occasion, I stood nearby while a photograph was taken of the publisher presenting the "book" I had been editing to the Prime Minister, Margaret Thatcher.

The book was a dummy — blank pages wrapped in a smart cover. I have the picture now: the book, to my certain knowledge, still does not exist. The publisher liked the frills but not the bills.

DISASTER STORIES

When my own bill did not get paid, I started to look about me. What I saw was not encouraging. On the face of it, computers were clearly a wonderful tool, as the revolution in newspaper production had already proved.

But few book publishers shared that vision. There didn't appear to be a pooled body of knowledge on how technology could benefit writers and publishers alike. New roles had not been defined: authors did not know what was expected of them, and publishers were ill-equipped to deal with the texts pouring in on a bewildering variety of disks. Everyone I talked to seemed to have a disaster story to tell.

Ten months ago I set out to find out what writers think, with a survey entitled *Authors and New Technology: New Challenges in Publishing*. Do they see the computer as a threat? Are they anxious that the already deteriorating relationship between authors and publishers could be worsened by the problems posed by new technology?

The survey was funded by the British National Bibliography Research Fund (BNB), for publication later this year by the British Library. My colleagues were Middlesex Polytechnic's Mike Riddle, Senior Lecturer in Linguistics, and Anna Kyrianiou, Senior Lecturer in Business Management.

The questionnaire required lengthy research and piloting. Our final version was an eight-page document which went out in the Christmas mailing of the Society of Authors, the Writers' Guild and the Institute of Scientific and Technical Communicators — all British writers' unions. One month later, we had all the replies — a very healthy 20 percent response which included a large number of best-selling "names."

Fiction writers, journalists, screen-writers, dramatists, academics, poets and technical authors all ticked our question boxes — novelists being very much in the vanguard. The result: statistics on writers' use of computer tools and their attitudes

to a number of associated issues.

Our questions fell into six main areas. These were: writing and wordprocessing; writers, publishers and disks; legal and financial issues; structuring, research, rewriting and editing; involvement in production; and new publishing media.

TECHNOPHOBIC TRAP

We designed the writing and wordprocessing section to "trap" authors who did not like technology and had no intention of ever using a wordprocessor. Ten percent were emphatic; they didn't need one. Many gave an explanation of the "can't teach an old dog new tricks" variety.

Others showed a very positive response to technology. "If my house burnt down, the first thing I'd replace would be my PC, printer and wordprocessing software" was a typical remark.

About half our writers earn their living simply by writing, so one might not expect a high level of involvement in technology. After all, the minimum outlay for the total kit is about UK£500 — considerably more than for a good pen. In fact, three out of four British writers use wordprocessors. The most popular is LocoScript. Next comes WordPerfect, followed by WordStar and Word. And although the dedicated Amstrad with LocoScript heads this list, more writers use PCs or Macintoshes, which of course means a heavier capital outlay.

The second section of our questionnaire was designed to reveal how authors present finished copy to their publishers. The overwhelming majority answered "only as typescript" (a misnomer requiring redefinition, though I, for one, won't welcome "compuscript" with any eagerness).

Three-quarters of our sample could make disks available to publishers in order to save re-keying the text. Disks make proof-reading easier for the writer and speed up production, so it is easy to see why writers favor them. Theoretically, disks also provide advantages to publishers because they save typesetting costs, but we found that *less than one-quarter* of book publishers were actually interested in receiving disks.

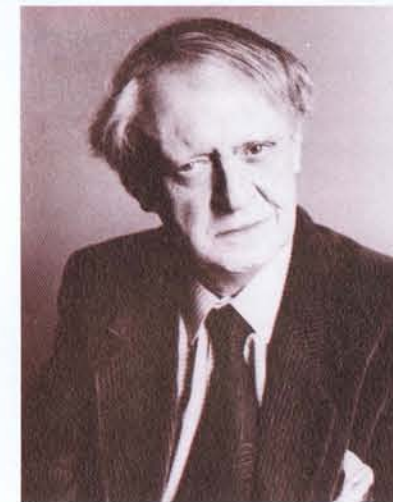
This is a low figure, but actually *higher* than we were expecting. It shows that publishers, having weathered the early days of incompatibility and other problems, are now beginning to take an interest again.

When faced with the question, "Who benefits most from the use of wordprocessed disks for typesetting, writers or publishers?" almost none of our writers thought that writers benefit more. Seven-eighths believe authors should receive a financial incentive for using disks, and the same proportion declared that no such incentive had been offered to them.

A few pointed out that no publisher has ever paid for ink or quill pens, so why for disks. The world, however, has changed. Once upon a time, "gentlemen publishers" used to

Wordprocessor Virgin

Anthony Burgess, leading British novelist and author of the techno nightmare *Clockwork Orange*, on his first experiences with electronic wordworking.



The IBM home computer was bought on my behalf in Washington DC, and it has been lying there for the last five years, pristine, untouched. It has at last found its way to Lugano, where I spend some of my time, and, after a long struggle with the Swiss customs, it has been released from its captivity in an air freight shed.

The IBM company in Chiasso agreed, after many sneers at the antiquity of the instrument, to install it in my house, and there it now sits. It cost a lot of money to buy, and it has cost a lot of money to transport, be suitably entangled, and be plugged into the wall. It

nurse talented authors through their early books: some gave actual support, others published an early work because instinct told them something better was brewing. Rare is the publisher who does that now. Every book has to prove itself to the accountant. A disk is a value-added supplement to the MS. Why shouldn't authors sell its use to pay for some of the higher costs wordprocessing introduces into authorship?

ELECTRIC ETHICS

Our next set of questions covered legal and financial issues. Use of disks is just one issue, though most of our respondents thought it the *only* one. Our questionnaire asked *twice* whether authors are prepared to let publishers have their disks. At first, 85% of those who had disks to offer answered positively. Then they turned the page.

Over the page were some questions asking whether respondents had any legal agreements about using disks (rare) and whether any financial incentive had

been offered (rarer still). Possible anxiety over intellectual property rights was also mentioned. After reading this page, writers gave a different answer: this time only 46% thought they would part with disks. This suggests that the issues surrounding the use of disks are improperly understood and that they need further discussion in magazines such as this one.

The report offers model contract clauses designed to clarify authors' rights in the matter of machine-readable text and to indicate measures for controlling the exploitation of it. Existing publishing contracts don't adequately deal with electronic publishing. Michael Henry, an expert in media and intellectual property law, gave me useful advice in discussing these issues and drafting the clauses.

Such contracts, in any case, apply only to books. Another mine-field is what happens to articles, or extracts from books, appearing in electronic magazines, newspaper databases, e-mail,

announces its antiquity (five years is a long time in the computer business) by growling like a caged and toothless lion. Now I have to face the expenditure of more money on a series of lessons on how to use the thing.

So far I have merely typed on its visual display unit or VDU or screen the first line of T. S. Eliot's *The Waste Land*: "April is the cruellest month, breeding —" Immediately, in letters of fire, the instrument announced that there was an error of syntax. I tried to rub this out as being not merely incorrect but extremely rude and, under the rebuke, typed "Lilacs out of the dead land." Here too was an error of syntax.

I was permitted to type as much of Eliot's poem as I wished, but it would be interlineated indefinitely with that schoolmasterly rap on the knuckles, a false accusation to which a corrective reply was not permitted to be made. These machines are getting above themselves.

Perhaps there are IBMs which blow up on being fed with a line of poetry, later models which will accommodate only business prose: "Hi, Jack. All us at head office are proud of the way you managed the sales campaign. Keep it up, sweetheart." This is the sort of model you are expected to follow, according to the WordPerfect manual.

WordPerfect is the name that covers innumerable floppy disks. These are genuinely floppy and have to be inserted like a cold flap-jack into the uneager mouth of the hardware. Being floppy they probably announce their antiquity. The disks I have for my Apple Macintosh are tough and unbendable. "Floppy" has perhaps become a mere piece of etymology.

MAC REVISITED

I returned to this Apple Macintosh after nearly a year of neglect. It has gathered dust and complained about it. The disks would go into both the machine and the subsidiary disk drive, but would not come out again. They are coming out now; indeed they are refusing to go in, or, if they are accepted, they are briefly examined and then ►

or shared disks. How are they "used?" Where does research end and plagiarism begin? This is not a new question, but one more easily fudged by the easy availability of someone else's words on your screen and the frequency of "computer errors" which so easily detach references from text.

Under the current agreements with database licensees, the borrowing of electronic text depends on the honesty of the user. We would like to see some equivalent of the Public Lending Right so that authors can be recompensed for the extraction of their ideas from electronic "libraries."

Philip Bassett, of Dialog Information Services, believes it would be impractical, and undesirable, to track the identity and route of each user. Dialog, which deals with hundreds of thousands of database searches every week, has a ten page closely printed document explaining the terms and conditions of use of each of its databases. It's a daunting read: small wonder if some of the ►

vomited out with a sharp rasp. The little stylized human face on the VDU frowns and says no.

But finally I have managed to insert, and enforce the retention of, a number of disks which permit me to write the kind of thing I am writing now. But, when I have finished two thousand words or so and wish to print what I have tapped, the machine demurs. It has been programmed in French and says things like "Disque saturé. Recommencez." Does that mean I have to write the damned thing all over again? I fight with the instrument to make it change its mind. Sometimes it flashes a signal admitting its mistake and permitting me to get to the *imprimer* stage. But one can never be sure that this will happen.

Unlike the IBM, this Mac has a *souris* or mouse. The mouse has probably become dusty in my absence, or the table itself could do with a wipe with industrial alcohol, for it will not obey my controlling hand. The winking cursor dithers or stays still; the little arrow or *flèche* will point in the right direction but do no more. I'm becoming disenchanted with computerized writing, even though I can't blame the Mac for being dirty. The dirt's all mine.

I should imagine that many professional writers are becoming disenchanted even with their undusty word processors and are more than willing to get back to the Olivetti or Olympia. The VDU is making it too easy to write badly. There is a lack of blacksmith muscle in the tapping of the console. If you make an error it's too easy to correct it.

Using a typewriter, foreseeing the flaky mess of Tippex or the ugliness of XXXXXing a mistake out, there is a tendency to frame a sentence in one's head before committing it to the tapping fingers. In other words, you hear a phrase in your ears before converting it to ocular graphemes.

What the word processor is doing is to kill the auditory; all writing becomes a matter for the eye. A badly framed sentence can get on to the screen because you know how easy it is to expunge. Having got it onto the screen, you are prepared to think it is not,

small print is "forgotten." Theoretically, writers are protected against copies being made of their property – in fact, as it is impractical to enforce this, such protection is meaningless.

NICE SMARTS, SHAME ABOUT THE PRICE

The questionnaire's next section looked at structuring, research, rewriting and editing, setting down the wide range of wordworking ware now available, and asking the writers which they used. We divided the software into three categories: five percent said they frequently used pre-writing or research aids; writing or organizational devices (other than the wordprocessing software) polled nine percent; and post-writing or editing tools only four percent.

Half the writers questioned want to use more electronic writing aids but find the cost prohibitive. And they tend to be unaware of the full range of possibilities. Many respondents were surprised to be confronted by an unfamiliar

after all, so bad. Your literary standards conform to those of the head office and "You did a swell job in Des Moines, Chuck baby".

TYPEWRITER DIEHARD

I have just been re-reading Ed Gibbons *Decline and Fall of the Roman Empire*, a massive work and all written in pen and ink. There is a deliberateness in the prose which corresponds, I think, to the primitive technology used in creating it. The ink must have been thick and very black, the quill well-sharpened. Each phrase must have been thoroughly thought out and submitted to the judgement of the inner ear before being squeaked onto acid-free paper. I cannot imagine it being produced on a word processor. That primitive technology is still with me when I try to compose music. Undoubtedly there must be machines around now that will get a full orchestral score onto the VDU, but, since Ed and Chuck and head office are not involved, I cannot think that their ingenuities are very far advanced. Music is still a pen and ink business, and all the better for it. There is a correspondence between sounds and calligraphy. Look at the autograph score of Holst's *Planets* and you will see that the auditory sweep of the Mercury scherzo is matched by the confident pen-and-ink bracketing of the quavers and the curve of the legato lines.

But, for prose, the typewriter will do well enough. One returns to it with a kind of shame, or else the antiquarian enthusiasm of those who love vintage cars. But the loud clack on the keys sound like physical work and a page written is a page printed. I shall not be surprised if, now that I have finished this discardable disquisition, the machine decides literally to discard it. Disk saturated. Start again. Oh no.

Note: this is precisely what has happened. I have been told that the *disque is saturé* and that I must *recommencer*. This I have done, but on a typewriter. Is the real object of modern technology to waste human time? ■

iar battery of computer possibilities. Terms such as outliners, hypertext, macros, e-mail, bulletin boards, even databases, were not widely known.

"Where can I find out more?" asked many respondents, eyes newly opened by our questionnaire. As one writer put it, "I was quite happy with my wordprocessor until I read this!"

We were on more familiar ground with style checkers, grammar checkers, readability programs and other smarts which are now becoming integral to the better wordprocessing packages. These aroused considerable criticism, and even a certain amount of hostility.

Christopher Priest, a leading young British novelist who also runs a small computer business, wrote: "Style-checkers can't distinguish between James Joyce and a recipe book; spelling checkers convert *color* to *colour*, but also *coloration* to *colouration* and meanwhile forget all about *discolored*."

My own view is that when we have all finished laughing at some of the idiocies

of linguistic software, we can set about improving their quality. The next century is bound to see more sophisticated editing software, its mechanical flavor tempered by access to good reference material on CD-ROM.

In the meantime, we may find that the breed of meticulous and intelligent editors has died out altogether through lack of proper training. Then publishers will look to see what software can do, for, even now, software can tailor any text to an appropriate house style. Writers could find themselves being partially edited by machine – whether they like it or not.

NEW MEDIA

What involvement do authors have in current production processes? Ten percent of our sample had done some electronic mark-up (adding typesetting codes to their disks), while 15% were involved in producing camera-ready pages. These are low figures, but higher than we were expecting, considering

The Least Boring Computer Magazine

And nine more reasons to subscribe to *Electric Word*, the cult read of info technologists and knowledge workers around the world.

1. Electric Word is about information technology and wordcrunching – only.

No CAD/CAM, no spreadsheets, no color graphics. Just think of us as your personal knowbot, reviewing everything from everywhere to bring you the greatest luxury possible in our information-overloaded world: precisely what you need to know about the most exciting thing we do with computers today, crunching knowledge. Less is definitely more.

2. We deliver news found nowhere else.

Our contacts and unique perspective allows us to dig out news found nowhere else. Example: we were the first to break the story about IBM's sophisticated Critique proofreading/grammar checker project. Example: We were the first to report on the first cheap multimedia authoring tool, MediaMaker. Example: We were the first to document the Soviet Union's language technology programs.

3. We are your early warning system.

Since we have a holistic view of wordcrunching, covering *all* the technologies involved in creating, processing, storing, accessing and publishing information, *Electric Word* provides the context necessary to spot the trends. And if you don't spot the trends, well, as Stewart Brand has put it: "Once a new technology has rolled over you, if you are not part of the steamroller, you're part of the road."

"The least boring computer magazine in the world."

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"Electric Word is the only computer magazine I would pick out of a stack to take with me on a trip – and actually read."

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"Truly fine!"

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Richard Saul Wurman
Author, *Information Anxiety*

"A must."

Computers and Writing Newsletter

4. We can help add value to whatever you're doing.

You may already be reading a specialist publication about one of the technologies we cover. Fine – but if you aren't getting the big picture, you're probably missing out on ways to add value to your products. Imagine you are involved with online documentation. Wouldn't it also be helpful to know about the latest developments in voice annotation, or electronic proofreading, or hypertext? This kind of cross-pollination is available only in *Electric Word*.

5. Electric Word is the least boring computing magazine in the world.

When was the last time somebody called a computer mag "thrilling?" That's because computer mags are more like parts catalogs than eyewitnesses to the info tech revolution that is rewiring not only our desktops, but our minds. The excitement of garage startups and insanely great ideas is alive in the pages of *Electric Word*.

6. Electric Word is global.

Everybody talks about the global village, but do you notice that none of the other computer mags seem to live in it? We do. For a very good reason: in today's world, what you don't know is going to hurt you. Think about Detroit and Japanese cars. That's why we edit in Amsterdam, have correspondents from Silicon Valley to Tokyo, and take multilingual issues seriously – because good ideas are available (and needed) everywhere.

7. Electric Word can introduce you to a community that you never even knew you were part of.

Electric Word is the nexus that connects an incredibly diverse group of individuals and companies who share one crucial attribute – they handle natural language and information – and one critical need: to figure out how to do it better.

8. Electric Word is less like a camera magazine and more like a film magazine (to borrow Michael Swaine's analogy).

Most computer magazines talk about hardware and software, the camera – you know, the endless comparison tests detail-

ing every last fact about laser printer paper trays. We, on the other hand, write about the film and the filmmaker – about the *value* and *meaning* of new products, not just the features.

9. We adhere to the ultimate heresy for a computer magazine: we care more about people than computers.

What other computer magazines seems to forget is that computers are made to help people. We, on the other hand, take people as our starting point. People like Alan Kay, who invented the graphic interface as we know it. Like Janice Woods, who is working on a program to help ghetto kids read. Like Nicholas Negroponte, the person behind the Media Lab, MIT's center for advanced information technology.

10. We're not available on newsstands.

Like a lot of good things in life, *Electric Word* is not easy to find. Now that you've found it, seize the opportunity. You can't make a mistake, because if for any reason you find that *Electric Word* isn't everything we've said it is, then we will give you a refund on all undelivered copies.



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The subjects covered by *Electric Word* are some of the most exciting – and most crucial – in computing:

electronic books
OCR
speech recognition
speech synthesis
document image processing
machine translation
grammar checkers
on-demand documentation
hypertext
natural language understanding
terminology databases
desktop publishing
electronic publishing
the on-line industry
optical storage (CD-ROM)

almost half the writers we questioned are novelists.

This part of the questionnaire indicates a possible area of exploitation. Only three percent of those who added electronic mark-up (typing in typesetting codes) were paid extra, and just five percent of those who prepared pages were given a fee. These are hugely time-consuming jobs, and not traditionally the provenance of writers.

In fact, when I started the questionnaire I expected to discover widespread exploitation of authors by publishers. And I am happy to say that in the course of the project my initial bias disappeared. However, many writers do smart under a sense of injustice. This has a long history. In 1895, George Bernard Shaw said, "All that is necessary in the production of a book is an author and a bookseller, without any intermediate parasite." It could be, after all, that technology is bringing the author closer to that ideal.

Ann Kritzing runs a short run press in London. She says: "I decided to set up a production company for self-publishers as it became more and more evident that specialist titles without mass market appeal required an alternative solution – which high tech could provide. Many of our self-publishers have covered their costs; and some have sold subsidiary rights and/or made more than the 7%-10 % royalty they would have received from a publisher."

But what about writers' interest in new publishing media? Is the computer a tool for a new kind of creativity in writing – as it is in music and graphics? Authors are cautiously interested, but no more than they ever were. Hypertext, after all, can be found in literature from Tristram Shandy to the disciples of Borges. It is too early to say what effect new publishing media will have on writing styles. It may be the growth area of the 90s. We asked readers to say whether they had or would like to write for the following media (percentage take-up given in brackets): hypertext (three); interactive video-disk (five); on-screen instruction (eight) and electronic journals (four).

PUBLISHERS' PERSPECTIVES

Publishers have their reasons for avoiding disks from writers. Czeslaw Jan Grycz, publisher at the University of California Press, told me a typical story: "I once opened a manila envelope from

an author, who had sent me 350 American dollar-sized floppy diskettes which – he proudly asserted – was electronic media. Surely I could use these disks (none of which were labeled) to produce his book less expensively!

"Rarely, in fact, did I ever receive identical media from more than two or three out of the several hundred authors who were willing to supply magnetic media manuscripts."

As the world becomes more computer literate, such curiosities should – hopefully – diminish, encouraging wider acceptance of disks. And publishers are gradually becoming more experimental in their use of technology. David Palm, production manager of Thorsons/Collins, waxes enthusiastic about the Text Management System that has come to Britain from JB Lippincott (the medical publisher) of Philadelphia.

"We think it will make book production more efficient," Palm explained. "By far the greatest expense is in authors' corrections. With our new system, we can get the text 100% agreed before committing it to type. That will save a great deal of money. In addition, we can produce different editions for the British or US market."

Academic publishers are pioneers in the use of direct setting methods. There's a good reason for this: the technology allows books to be published that wouldn't previously have paid their way. John Wiley & Sons, after six years of experiments, has just set up a task force to support authors through the problems. This includes a set of guidelines for authors.

Cliff Morgan, production manager at Wiley, suggests that many of the problems besetting publishing houses adopting new technology are organizational ones. "The people who normally deal with authors before the production process aren't the ones best equipped to give authors specific text-origination advice," he says.

THE WAY FORWARD

One novelist complained that publishers are living in the stone age as far as technology is concerned. If that's so, then writers – with a number of exceptions, admittedly – have reached the bronze age: ahead of publishers, yes, but only just. As one writer observed, "Both authors and publishers could benefit more, but publishers are too conservative and authors too unaware."

A lack of informedness affects writ-

ers' acquaintance with current software and issues affecting the introduction of new technology. In particular, the survey suggests how inadequately financial and legal considerations regarding the use of authors' disks have been discussed. Hopefully, our report can be the beginning of a shared fund of knowledge which will keep wordworkers really informed.

Our report makes a number of recommendations for dealing with the new issues that technology is introducing. What we need is a transatlantic association of writers and publishers working together to apply technology for the benefit of both. We need writing tools designed for writers, not for business; we need to share knowledge, to establish international standards, and to agree to minimum terms on legal and financial issues. Then – without the frustrations of chaotic variety in the media themselves and the volatility of the market place – we can welcome the age of the electric word. So far, we have barely made a beginning.

Jane Dorner welcomes correspondence on the subject of writers and information technology, and can be contacted at 9 Collingwood Avenue, London N10 3EH, England, Tel: +44 (81) 883 2602.

Feature this

The new round of Mac page makeup programs promise to do everything for you but give you a backrub. But will they really change the way you work?

By James Felici

Like father like son. When desktop publishing was just a young pup, it was full of hell and ready for revolution. But it's grown up fast, and guess what? It's about to join Dad's firm and start acting like a responsible adult. What once boasted to be a technology for "the rest of us" has become something else: a tool for professionals, doing the things that professionals have demanded from it since day one.

The new generation of Macintosh page programs tell the tale in their size, their complexity, their range of features, and in their marketing as well. The clarion call that "Now anybody can make professional looking pages in just minutes!" has been replaced by "We are the tool of choice for the professional graphic artist and publisher." Quark XPress 3.0, Aldus PageMaker 4.0, and Letraset's DesignStudio (the heir apparent to ReadySetGo) all have features lists that reach into the next county, and what they do and how they do it all say that the desktop market has gone pro.

Consider these facts that I just invented:

- It will now take you longer to learn

the new features in your updated program than it did to learn the program in the first place.

- An up-to-date Macintosh publishing system now costs as much or more than one of the old "dinosaur" systems DTP'ers boasted about replacing just a few years back.

- The "do it yourself" of desktop publishing is now what managers are hearing when their newly trained DTP'ers storm out of the office for a better paying job down the street.

These facts are all more or less true, and in the dynamics of all this market motion and commotion, there's both a pull and a push. The pull is the demands of the professional publishing community who are, after all, the ones who make the gorgeous-looking promotional pieces that program manufacturers wave in front of prospective buyers. If developers fall behind in the evolution of their products, their competitors will have better-looking brochures than them and they'll be out of the game altogether. These are also the prestige clients who legitimize products and buy more than a few in addition.

The push comes from wordprocessing programs. It's clear that page compo-

sition programs are not productivity tools for the modern office – they're too complicated, they require too much graphic arts expertise, and they make documents that are far better-looking than the modern office needs in 99 cases out of a hundred. With word processors adding desktop publishing features as fast as they can, there's nowhere for the page programs to go but to run up market.

These page programs are not aimed at the good-enough document, and they invite casual users to fiddle with their pages far beyond the point of diminishing return. Kerning the wits out of the display type in the weekly inventory report is in nobody's best interest. In short, while Aldus, Letraset, and Quark would love to sell their products into the huge community of "wordworkers," their real market will be graphic artists and professional publications workers. Managers' number one priority for wordworkers is volume, and wordprocessors will continue to be their tool of choice.

Another push comes from the teeming netherworld of what might be called entry-level desktop publishing programs, big with the church bulletin and in-house newsletter crowd – appropriate technologies for those who don't have the need (or perhaps the time, will power, or expertise) to create the very best. When Aldus recently bought Silicon Beach Software, it became the owner of Personal Press, an entry-level page makeup program that has the salutary effect of taking off the pressure to create a PageMaker Junior. Programs like PFS Per- >>

The desktop revolution is in the past. These programs are big, powerful, expertise-hungry, and expensive, and the cost of the equipment to run them efficiently is getting out of the reach of anyone but professional publishers.

What's Hot....

Here's an assortment of pleasant surprises, bright ideas, and time-saving features in this year's models of the leading Macintosh page composition programs.

DESIGN STUDIO

- Text and object glossaries that, like wordprocessor glossaries, save settings and frame contents for quick future use.
- Annexes—add-on program modules for adding new capabilities to the program, including tracking control and custom kern-table building.
- Automatic molding of text blocks from a range of predesigned shapes, including circles, triangles, and rhomboids.
- Precise control over positioning of registration marks for spot-color-separated work.

XPRESS

- Get Picture dialog box shows you a preview of each image available, eliminating guesswork.
- Type spec dialog box lets you type in the name of the font you want, eliminating scrolling through a long list of font names. You may only have to type the first letter of the font name to get the one you want—t for Times, for instance. If you've got Times and Tiffany in your system, you'll have to type tim, but it's still a time saver.
- Character-by-character leading control—the only program of the three that enables you to set negative leading values for a character without disrupting the leading of the rest of the line.
- Lets you specify real picas (which have 72.291 points to the inch) instead of the revisionist Apple/Adobe-PostScript picas (rounded off to exactly 72 points to the inch), making XPress the only DTP program that can claim true typographic compatibility with traditional typesetting systems.

PAGEMAKER

- Customizable vertical rulers for easy grid alignment—you can specify tick marks in any increments you want. Why have a vertical rule showing picas when the vertical grid of your page is based on text leading of 13 points?
- A text editing window that acts like a real word-processor—continuous scrolling text, fast response, words in readable size and typeface (which you, in fact, specify yourself), and tags indicating all styles in use.
- Standalone table editor for working with typesetting-style tabs, with automatic alignment of runovers, alignment of multi-line tab entries, straddle tabs, and more.
- A spellchecker that enables you to add words to the dictionary and add ranked hyphenation points at the same time.

sonal Publisher and PublishIt also fall into this same low-end, no-sweat category.

ONLY ONE WILL CHANGE THE WAY YOU WORK

In the three new higher-end Mac products, it's apparent that DesignStudio and XPress are gunning for PageMaker, while PageMaker—with the lion's share of the Mac page-makeup market—is gunning for a product that doesn't even exist yet: Ventura Publisher for the Mac.

Typographically, XPress and DesignStudio have now more or less matched PageMaker's sophistication in the control they offer over hyphenation and justification. They've also gone PageMaker one better by offering the ability to build and edit custom kerning tables from within the program. All three now offer tracking control, and while all three implementations have their weak points, they're much better than nothing at all.

All three programs also offer more color controls than most users will take advantage of, with all three handling spot color with facility and XPress remaining the only one to separate color halftones. All three also offer image controls for gray-scale halftones.

In text processing, it was PageMaker who had to play catch-up, and now, along with its competition, offers competent search and replace functions, with PageMaker and Design Studio adding the ability to search for wildcard characters. All three now allow you to work off the page, on a Pasteboard, a feature originated by PageMaker. And in a welcome better-late-than-never development, Design Studio and PageMaker now allow you to use em, en, and thin spaces.

But while DesignStudio and XPress are tilting with PageMaker over what they can do on the page, PageMaker has broken off in a new direction—toward document control. This is one area where Ventura Publisher on the PC has had a clear advantage. Part of Ventura's power and flexibility has been that it doesn't actually import text and graphics into the documents it creates. Instead, the program creates a compact script for assembling the document—what's in it and where all the parts go—and Ventura reassembles the document from all its constituent parts every time you open the document or print it.

The advantage of this approach is that all of those parts remain live and editable even though they have been included in a Ventura document. By comparison, all previous Mac page programs actually incorporated imported files into the new composite document, taking them out of circulation, as it were. If one of the constituent files had to be edited or amended, you had the choice of doing the corrections within the page makeup

program (which usually isn't possible with graphics) or editing the original file and reimporting it into the page-made-up document.

For workgroups, this made Ventura a clear favorite. Several authors and artists could continue work on their own pieces while the page-maker-upper could work with less-than-final versions of text and graphics. Updates and last-minute changes could be accomplished by editors and artists, not by the page-maker-upper, and you didn't risk having two versions of your data, one in the original file and another in your made-up pages.

PageMaker now offers this same capability, while continuing to offer the option of using the old method of text import, which is most useful for curtailing the marked penchant of editors and authors to make last minute corrections that imperil layouts, deadlines, and office friendships. Of all the new features in all three programs, this is the only one that actually promises to change how you work, because it takes a step toward the Shangri-La of electronic publishing: the integrated networked workgroup. Now all we need is a competent network that's easier to install and use than a nuclear power plant and we'll be making some real progress.

In a final Venturaism, PageMaker has added the ability to link separate documents together in sequence (the chapters of a book, for example) and then folio them logically and automatically assemble tables of contents (based on style sheet tags) and indexes (based on a list of key words).

AND THE CHAMP IS...

Apart from these important document-oriented features, though, the three programs are more or less interchangeable in what they can do on a page with text and graphics—that is, they can make pages that look pretty much the same, although PageMaker can't rotate graphics at all, and can only rotate text in 90° increments, which can be limiting when you're trying to make something really hard to read. In fact, XPress and Design Studio share some similar features that are so similarly implemented that you start to suspect industrial espionage.

There are, of course, single features that for some people will dictate a choice of one program over the other, but the most likely criterion for choice is what it's like to actually work with the program. And this isn't something that you can pick up from demonstrations or brochures. Or from magazine articles, for that matter.

For me, the main distinguishing factor among the three is how they treat the individual elements that go onto a page, because this defines the way you work in assembling pages. In DesignStudio and

XPress, you manually create either graphic or text frames—the bounded containers for defining the shapes and qualities of text blocks and pictures—and then import the appropriate contents into them. In these programs, you draw your guides—which act like the grid lines on a blank layout dummy—to sketch out the dimensions of the objects on your page, and then you trace those guides to create frames and import the contents into them.

In PageMaker, though, you draw the guides and import the text or graphics—the framing step is omitted. Text follows the guides, and you scale and crop graphics (frame them, as it were) after they're on the page. Personally, I find this an easier way to work. It reduces the number of tools you need and consequently the number of trips you need to the toolbox. And the page remains just the page, not a quilt of frames with different identities.

PageMaker still strikes me as the best-designed tool of the three. It doesn't have the most complete list of features and capabilities, but it's thoughtfully put together and it works reliably and as an integrated whole. DesignStudio shares much of the elegance of PageMaker's design as a tool, but it's use of the frame metaphor is for me needlessly computerish. It's easy to see why the product evolved the way it did and why some people prefer to work with this container concept. But I'd rather work with real objects themselves—a chunk of text for instance—rather than a metaphorical object and its real contents. Conceptualizing page elements this way may make technological sense, but it distracts from what's actually going on on the page.

While both Design Studio and PageMaker are very visually-oriented, XPress seems to be designed for those who distrust their eyes altogether. The rulers are so coarse as to be almost unusable—three-point increments are the finest you get, even in magnified views. XPress believes that you should position things by specifying locations numerically in dialog boxes. While this is undeniably accurate, it's an engineer's way of working, not a graphic artist's.

And the accuracy XPress offers is often overkill. You can kern in units of 1/1000 of an em—beyond what your eye can detect. And in a point size big enough to see, such a minute adjustment wouldn't be worth making. The 1/100 of an em kerning units offered by Design Studio and PageMaker are already more than fine enough. Likewise XPress lets you size type in 1/1000 of a point-size increments and specify 1/1000 of a point leading adjustments, which is far finer than the best phototypesetter can even resolve.

These things serve only to clutter the program. But from a strictly laundry-list perspective, Quark definitely has the largest feature set.

PRO TOOLS... FOR PROS

All three of these programs are distinctly finishing tools, best used at the page assembly end of the production process. Certainly they all have the tools to enable an individual to accomplish all phases of the publishing process, but their emphasis on high-end, professional features belies their often proclaimed intention to be publishing's answer to the Swiss Army Knife. And as such, none of these products really affect the way people work and the jobs that have to be done—they fit right into the traditional scheme of things—but this isn't entirely surprising.

The manufacturers are selling into a very traditional market—publishing—where procedures and processes haven't fundamentally changed since the time of Gutenberg. How a product can be revolutionary while selling to the status quo is perhaps the great koan of electronic media. Empowerment of the individual may occur on the local level (a poet or political aspirant may get words printed that would otherwise go unread, for instance) but like any other industrial tool, the desktop publishing program more typically empowers a worker to do more in less time, usually to the greater glory of management.

In the greater profile of industrial production then, page makeup programs are taking their places as tools in the traditional sense. After much heady talk about unleashing the creativity of the individual, the companies that make and market these programs find themselves—for sound business reasons—selling into the traditional working system: the publishing assembly line. The creative tools go to the people traditionally responsible for creative activities.

And this is inevitable, because the tools can provide automation, but they can't provide expertise. And in an activity like publishing, where many kinds of expertise are needed for a successful project, telescoping the editorial, artistic, and production processes into one program, operated by one person, is just not practical.

The empowerment, then, has not come at an individual level, but an organizational level. It gives workgroups control over the means of production by bringing out-of-house services inhouse. DTP has also given people more control over their own production processes, although production costs are not the greatest expense by far of a publishing project.

So the talk of the desktop revolution is in the past. These programs are big, powerful, expertise-hungry, and expensive, and the cost of the equipment to run them efficiently is getting out of the reach of anyone but professional publishers. If fringe political groups want to publish their tracts for the masses, said tracts may

...And What's Not

A rogue's gallery of miscues, goofs, gaffes, and sundry shortcomings of the latest Macintosh page composition programs.

DESIGNSTUDIO

- Automatic fraction-building utility that makes fractions so ugly that you'll wish you had a hole to bury them in.
- No optimum values for word and letter spacing in hyphenation and justification settings, only minimum and maximum settings.
- A baseline-shift utility where adjusting the leading one character throws the entire line's leading out of whack.

XPRESS

- The worst on-screen rulers in the biz—tick marks only every three points, even at the 200% view.
- Doesn't recognize an em dash as a legitimate point to break a line of text, wreaking havoc on the pages of the em-dash-dependent like myself.
- Menu madness: point size in one dialog box and leading in another, and the assumption throughout that when you type a number in a dialog box you always mean points and never picas.

PAGEMAKER

- No vertical justification.
- Still clings to its eccentric proportional leading scheme instead of the industry-standard, traditional baseline-to-baseline measurement, making it impossible to divine actual base-to-base measurements without the use of a calculator.
- Only allows you to have one document open at a time.
- Rotation of text in 90° increments only, and no rotation of graphics.

have to go unknerved. But desktop publishing has made an important realization: This stuff is not easy. So for now, it's business as usual in only a slightly unusual way.

James Felici is the former Technical Editor and Managing Editor of Publish magazine and was on the start-up team of Macworld magazine. He now lives and writes in a town called Fontès in southern France, just a stone's throw from Beziers. He claims this is a coincidence.

All three programs cost US\$795.

Aldus Corp., 411 1st Ave. So., Seattle WA 98704. Tel. +1 (206) 622-5500.

Quark Inc., 300 So. Jackson St., Denver CO 80209 USA. +1 (303) 934-0784.

Letraset Corp., 40 Eisenhower Drive, Paramus NJ 07653. Tel. +1 (201) 845-6100.

What you say is what you get

Speech recognition has been around so long in our consciousness (due to movies like 2001 and Blade Runner) that we tend to forget that we haven't really seen any actual products. And certainly not at the desktop level.

But the techno-prophets assure us that over the next couple of years speech recognition will indeed finally emerge from the labs and profoundly affect how we interact with machines.

Here are two early examples, one for your PC, one for your Mac. They're no HAL. But on the other hand, they won't try to jettison you into space, either.

FOR THE PC: VOICEMASTER

People who live in the future aren't dumb. Whether they're on a star trek or space odyssey, they know there's only one good way to interface with a computer: by talking to it.

And if you've spent much time in the company of a deaf-mute, present day PC, you know they're right. Compared to voices, keyboards are clumsy things, slow and counter-intuitive. Worse than that, they're dangerous: as computers metastasize throughout the workplace, the incidence of RSI (Repetitive Strain Injury) — a nasty debilitating constellation of arm-muscle maladies associated with intensive keyboard work — is skyrocketing. The impending dookie-storm of disability claims makes it quite possible the technopowers that be will wake up and bring us our voice-activated future by the year 2001.

In the meantime, Covox Inc.'s Voice Master Key, an add-in card for IBM compatibles, is here to whet your appetite. The card wires a miked headset into your system — slip the contraption onto your head, call up Voice Master Key's memory-resident editing program, and type in any old command you want to teach it. Then say the magic word three times into the microphone, and voilà — your computer comprends, and will execute the command any time you repeat the word.

You can load as many as 256 of these voice-driven macros into the Voice Master at one time, which makes this interface as powerful and versatile, in its own way, as the mouse. It's not quite powerful enough to completely replace your keyboard, however. For one thing, Voice Master won't necessarily get along with your favorite software — it's been tested with many popular titles, but hopeless complications kept it from driving either my wordprocessor, XyWrite III Plus, or my

RAM-resident information manager, Tornado. For another, its finicky (though apparently state-of-the-art) voice recognition software demands wearily precise pronunciation.

With the editing program, you can loosen Voice Master's standards a little, but getting too loose presents problems of its own: in one experiment I taught Voice Master to call up a list of files on hearing the word "directories," then found I was also able to get the list by suggesting Voice Master bite my Johnson.

In other words, unless you're a serious keybo-phobe, take Voice Master's pretensions to being a "productivity enhancer" with a pinch of salt. What it really is is a toy, and one of the funnest I've come across as a grownup.

Bonus software — an onscreen oscilloscope, a digital sampler that plays back through the headset's earphone — mixes education and fascination, and multiplies Voice Master's potential "usefulness." My latest project: sampling a gallery of the voices of friends and loved ones for easy access.

Now, in my darkest moments of writerly despair and isolation, all I need to do is coo the right words and my baby's voice drops sweet nothings in my ear. Pretty sick, I know. But I'm enjoying all this while I can: HAL will never sound so good.

Price: US\$149.95.

— Julian Dibbell

Covox Inc., 675 Conget St., Eugene OR 97402 USA. Tel. +1 (503) 342-1271.

Julian Dibbell is a writer for the Village Voice, where this review first appeared.

FOR THE MAC: VOICE NAVIGATOR

The Apple Macintosh is the ideal computer for all typists with three hands — two for typing and one to move the

mouse. For all two-handed people, Articulate Systems has produced the Voice Navigator, which makes it possible to instruct the Mac just by talking to her. It's great fun, but is it of great use?

The Voice Navigator consists of a small box (which fits exactly under a Macintosh Plus or SE) containing a digital sound processor, a microphone and software for training and recognition. With the standard software, the machine can recognize up to 200 instructions per program (e.g., the Finder, WordPerfect or Cricket Presents). After some training, the Voice Navigator can perform all the instructions you now now input using the mouse or a keyboard command.

Installing the hardware is easy. Unfortunately, the manual is the famous awkward combination of instruction *plus* information. Before you can actually use Voice Navigator, you're on page 150 or so. When will technical writers learn: when I've just bought a new machine or software I do not want to read about it, I want to get it working as soon as possible.

TRAINING

To train the little beast, you first create a word list containing all the commands of the program you want to use the Voice Navigator with. A word list can be created for any Macintosh program, but it does require some typing. Therefore, word lists are included for the best known programs (Adobe Illustrator, MacDraw II, FullWrite, MS Word, Write Now, etc.).

The Voice Navigator is highly intelligent, so the actual training goes quite fast. Saying every item on the list a few times into the microphone is enough for quick and reliable recognition. Yet training may take several hours per program, for the simple reason that you have to repeat a couple of times up to two hundred words per program.

The Voice Navigator works in a hierarchical way, much like the menu-interface. So, for instance, if you are typing in MacWrite and you want to underline a word you first say "Style," then "Underline." Meanwhile, you simply go on typing.

In principle, the Voice Navigator is language independent. For the menu-item "Find," you may pronounce "Find," but if you'd rather say "Cow," "Eisenbahnknotenpunkthinunderschieber" or "Pizza Gambarotta," it makes no difference to the Voice Navigator, as long as you remember to always use these words for "Find" from that point on.

In reality, the Voice Navigator cannot register differences that are not known in English. For instance, using the Italian words "fatto" (fact) and "fato" (fate) for two different instructions is impossible. These two words only vary in the pronunciation of the "t" and this is not a

« difference which can result in two separate meanings in English.

The real turbo power of Voice Navigator is the ability to create macros combining a series of instructions. Building the macros can be time consuming, but once completed, all you need to say is "Helvetica" and there it is. Just say "calculator" and there it comes. Say "one plus one" and there's your answer. Macros can be made not only for menu selection, but may also include mouse-movements like "drag," "double-click" and "scroll."

The Voice Navigator can take orders quite quickly one after the other, as long as you clearly pronounce separate words. Of course, the Voice Navigator operates optimally if it receives its orders from one boss only. But it isn't shy. Once it's trained by a woman, say, the Voice Navigator could take orders from several other people, including a man.

The downside is that the percentage of misunderstandings rises to a level that makes it useless for practical use. But the fact that Voice Navigator does understand so many instructions from different speakers is amazing. Most human beings can't.

THE INTERFACE OF THE FUTURE

From a technical point of view, the Voice Navigator is a miracle. It can be used for all instructions on the Macintosh, and installation and training is relatively easy. Yet, it is unlikely that the Voice Navigator is the human-computer interface of the future. Training it takes time, and the hit rate isn't 100%.

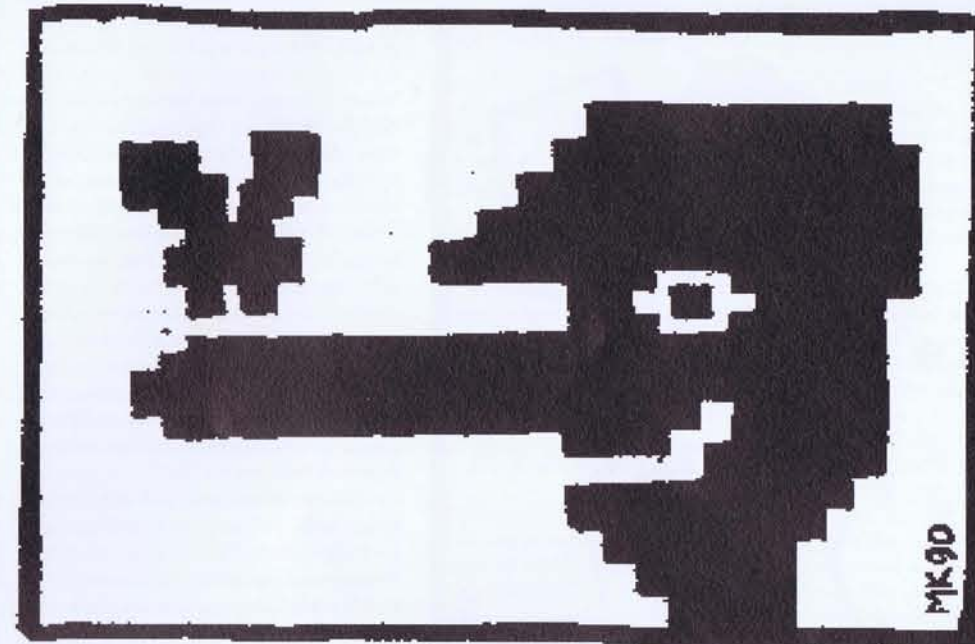
But those are minor problems. The more serious is that most typists probably can't make use of Voice Navigator's macro-driven speed advantage since they are such slow typists to begin with, or because they do all the extra operations (change font, size, etc.) later.

Today's vocal interface may have a place controlling car radios, telephones, etc. But voice won't be the preferred interface for computer users until it can type what we are saying.

System requirements: Apple Mac Plus, SE or II, minimum 1mb ram, harddisk. Price: \$1,295.

— Piet Westerdorp

Articulate Systems, 99 Erie Street, Cambridge, MA 02139 USA.



I say, I say, I say, my computer's got no nose . . .

A strange package, this. A dedicated database designed to store jokes and a special text processing environment to help you create new ones. The manual, unforgivably, describes it as being "like an accelerator card for your funny bone." It's a joke development tool — in about the same way as a wordprocessor is a tool to develop Pulitzer Prizewinners.

Cliché merchants say that only a poor workman blames his tools. Sadly, they are right on this occasion — or are they? The Humor Processor tells us, "to err is human, it takes a computer to really screw up." (Category: computer; occasion: after dinner; keywords: error, mistake). Unfortunately, that's the *only* computer joke the system contains, so maybe the bore's adage does apply. Still, perhaps computers just aren't very funny.

How about *stupidity*? Humor Processor has two approaches to finding a joke for you. The first is the easy route — it tells you how. There are some 150 different categories to choose from. Selecting "search" with the mouse, and entering "stupidity" as a category, eight jokes of varying degrees of weakness are offered, such as "I'd give my right arm to be ambidextrous."

Clearly, two hands are better than one when writing jokes. You can then better use the *brainstorming* capabilities to generate your own. This system teaches you joke writing too, it seems. To brainstorm your way into the *Comedy Store*, select brainstorming mode, and arrange a "set-up" — the first line of your joke. (Stick with it, they say anything can be learned — even patience.)

Some set-ups are provided, such as "my husband is so ignorant about religion that..." Having selected a set-up, and edited it to your liking, it's ready for tickling into laughter. There are then two windows of inspiration to fill, and lots of lines to choose from. These are the *images* with which to tweak the set-up. There are about 150 of these too, each containing over 50 images. The computer image list, for example, contains such inspiring gems as "sloppy floppy," "jam in the printer," and "programming through the night."

To help you plug the words into the jokes, tips describe the basic joke formulas, like the exaggeration formula — "My wife's so ignorant about computers that she thinks a jam in the printer means there's food in it." (*Knock it off, Nick, or we'll die laughing — Ed*) It's easy to see why the last step in the advice list is almost invariably, "now polish and refine your joke idea."

If you manage to create any jokes, it will store them in whatever database category you choose. It has keyword search facilities, so computer jokes can be saved with search keywords like PC, IBM, Nixdorf and silicon. The entire database of selected parts of it can be printed out, or ideally imported into a wordprocessing package for re-presentation.

Installation is easy, a matter of making a \HUMOR directory and copying the files across. It requires 384K RAM, and preferably a mouse. The manual states that the Humor Processor is aimed at bank managers, marketing professionals, doctors, lawyers, teachers, politicians and DJs. Perhaps it is, though hopefully not in any professional capacity. This is not a program to be taken too seriously — surprise! Aha, the basis of a joke? Back to the brainstormer....but alas, no, it could not inspire me.

Perhaps if the software came with a beer voucher, and was only used with a group of friends at the keyboard, laughter would result. The authors understand the difficulty, it seems. The manual contains a "WARNING: CREATING ORIGINAL JOKES IS DIFFICULT." This is the most reliable instruction about joke writing in the entire package. Practice makes perfect? Now, how does that *cliché* rewrite formula go...

— Nick Beard

Response Software, 1901 Tunnel Rd., Berkeley CA 94705. Tel. +1 (415) 843-1034. Price: \$49.



Voyage round my thesauri

Spell→Attack→Face→Guise→Veneer
 →Sugarcoat→Sweeten→Mollify→
 Chasten→Lambaste→Roast→Blister→
 Pockmark→Vice→Foible→Caprice
 →Idea→Brainstorm→Illumination→
 Exegesis→Unscrambling→Example→
 Paragon→Type→Humor→Perversity
 →Hardihood→Boldness→Grit→
 Decision→Alternative→Judgment→
 Brains→Sense→Crux→Articulation→
 Suture→Interconnection→Coupling→
 Hookup→Caboose→Concert→Asso-
 ciation→Embroidment→Fisticuffs→
 Scrap→Smidgen→Trace→Footprint→
 Sign→Omen→Advertisement→
 Publication→Magazine→Arsenal→
 Store→Heap→Gobs→Trillions→Lot
 →End→Climax→Prime→Recherche
 →Picked→Coupled→Suited→De-
 sirable.

We proved it: *DESIRABLE* is a 68th degree synonym of *SPELL*!

But seriously, you have to be careful with these thesaurus programs. Click on a word, and behold, an arsenal of synonyms appears. Pick one of these, and hey presto! there's another host of terms. Unless you exercise self-control, within a few look-ups you've forgotten what you wanted to find and your brains are rocketing off into a virtual word world at blistering speed. But coupling words in this manner is a great way of desk-top brainstorming. It unclogs most blocks.

Deneba's Big Thesaurus and Franklin's Language Master are two electronic thesauri based on the same electronic version of Miriam Webster's Collegiate Thesaurus from Proximity.

This thesaurus is organized by meaning groups, which gives it a lot of structure.

The big advantage of Language Master is that it's available for MS-DOS; Big Thesaurus isn't. So you PC users out there can stop reading and order NOW!

Mac users have a choice: Language Master is a simple program with an interface that doesn't really take advantage of the Mac environment. You can have only one non-resizable window open at once, which you have to close to work on your text again. And it provides only about half as many synonyms as Big Thesaurus, without Deneba's comparable and related words, antonyms and contrasted words. And the current version doesn't even run on a IIx!

On the other hand, it does give the definitions you'll only get from Deneba's Spelling Coach Professional, not Big Thesaurus. Apart from this, the one thing that Franklin does that Deneba doesn't is automatically inflect the synonyms according to the word in your document. This is very smart, but perhaps people who don't know how to inflect words shouldn't use wordprocessors in the first place?

Big Thesaurus is the ideal tool for writers whose wordworking demands are bigger than their budgets and disk space. It's fast, elegant, and uses the Miriam Webster to its full extent. It even comes with a condensed thesaurus for floppy-based systems.

But Spelling Coach Professional is the real McCoy! It bundles all Big Thesaurus's features with Webster's Ninth Collegiate Dictionary and a superb spellchecker. It works interactively in any program (except WordPerfect), does batch checking on text files and, best of all, has a customizable dictionary. The 95,000-word main dictionary can be supplemented by plug-in word-lists for medi-

cal (35,000 words), legal (28,000) and technical (30,000) writing. More additions seem to be in the pipe line!

The spell checker also keeps track of little grammatical and punctuation errors, like typing words twice and incorrect use of quote marks.

Of the three packages, Spelling Coach offers the most flexibility and won't drown you in information. It allows you to specify what to display, and you can tailor it to your system configuration. We tested it on a 1MB Mac Plus and on a IIx loaded with inits and it ran perfectly on both machines. But it needs a hard disk for its 3 megabytes of files.

One drawback is that it's only available with American orthography. Also, its behavior in localized environments is not perfect. It relies on the find/replace function of a wordprocessor when batch-checking, and seems to confuse the host program with its English commands.

But apart from these minor shortcomings, we wouldn't want to do without it for the world. We feel perfectly happy browsing back and forth through Coach's windows floating around our text. But on the other hand, it does mean we spend twice as long writing little reviews like this one.

— Paul Perry & Willem Velthoven

Language Master (\$99) from Franklin Software, 3511 N.E. 22 Ave, Fort Lauderdale, FL, USA. Tel: +1 (305) 566 3511.

Big Thesaurus and Spelling Coach Professional from Deneba Software, 3305 N.W. 74th Avenue, Miami, FL 33122, USA. Tel: +1 (305) 594 6965.

Willem Velthoven is a graphic designer and editor of the excellent Mediamatic, the bilingual magazine of art and technology. Paul Perry is a Canadian artist living in the Netherlands.

Style Wars I

Scandinavian PC Systems' new Corporate Voice is billed as the world's first style replicator. It's based on the Readability Plus style checker for the PC/compatible, but with the added function to read in bulk text and capture the style as a template for writing new work.

Corporate Voice has two modules, Analyze and Newstyle. The first is a nicely upgraded version of Readability Plus (see Electric Word #19). It has a larger word checklist, and all bar graphs now show a comparison with the target style.

You create custom style templates with Newstyle. Briefly, you feed it text files - ASCII, WordPerfect, WordStar or Microsoft Word - to create a raw style diagram, or "teardrop." You then edit out the stats for deviant sentences and enter

a list of "trade words" to avoid. The resulting template is then fit to use with Analyze. SPCS provide 15 templates. As well as the bread-and-butter ones, they include styles for the Bible, Psalms, Tom Clancy, Louis Lamour, and James Bond novels (CV is sensitive enough to tell the difference between Fleming's work and the John Gardner clones.)

CV has many interesting possibilities, from corporate tool for enforcing house style to freelancer's secret weapon. You could even poach a competitor's house style. Since you need a sample of 20,000 words or more, an OCR scanner will help, as rivals don't often oblige with ASCII files on a plate! (More likely, the typist will be stuck with it.)

The manual also suggests CV as an aid to productivity: "build a style model and insist that all reports score 90% or better before you'll review them." This

Term KILLER!

MultiTerm is a newcomer to the small but competitive field of terminology management software for PC/compatibles. Essentially, this nifty package picks up where forerunners such as Chris Blower's SuperLex, Ink International's TextTools, and LinguaTech's MTX/Termex leave off.

Since language engineering is a small community (Trados is INK's German partner) it may come as no surprise that all terminology managers more or less function the same way.

They are all TSR-programs that can be installed and (with the exception of Termex) de-installed from DOS at will. While working within your favorite wordprocessor, they allow you to build glossaries, look up terms and paste selected entries into your document.

The implementation of MultiTerm differs in some significant ways from its competitors. Instead of organizing terminology by keeping separate dictionaries by language pair for each project, client and/or field, MultiTerm stores all information in one database. By having each term and each translation tagged for language and subject matter (or any other attribute), any subset of the database can be selected for the project at hand.

It's a great system. While querying the database, you can easily switch from and to any source or target language and apply any filter on the term attributes. As for searching for a term, MultiTerm, like TextTools, allows you to search a word or phrase with wild cards in any position (a feature which Termex dearly lacks). Unlike TextTools and Termex, however, MultiTerm also allows you to query translated terms or phrases, albeit only

sounds like a recipe for discontent; in amateur hands, CV could easily end up entrenching a bad or inflexible house style.

A useful book comes as a freebie with the program. *Writing to Please Your Boss* by Elizabeth Cohn and Susan Kleimann (ISBN 1 878322 04 4) is a guide to corporate writing. As well as covering writing and presentation, it also offers solutions to the common interpersonal gripes between manager and staff writers so if CV does cause ructions, the remedy is at hand.

Corporate Voice runs on any PC clone with 256K RAM; it's also licensed for LAN use with up to five workstations. Price: £149.

— Ray Girvan

Scandinavian PC Systems (UK), 36 Hawkes Drive, Warwick, CV34 6LX, UK. Tel: +44 (926) 314334.

strings occurring at the beginning of an entry.

An important criteria in judging the suitability of a terminology manager for translation projects is whether it can also handle long phrases such as "Make sure your stationary is properly aligned and press [ENTER] to start print job." TextTools imposes a maximum length of 64 characters for both term and translation, while Termex limits the term to 50 positions and the translation to 250.

MultiTerm offers a different solution by making a distinction between header and term. The maximum size for a term is 255 characters, 40 characters for a header and no limits on the length of a translation. This means that for terms longer than 40 characters, the header will consist of only the first 40 characters of the term. MultiTerm also allows for listing synonyms in a term by using commas for separating strings and can store up to 50 terms per entry.

Like in Termex, supplying information in MultiTerm for an entry means 'painting' that information on a blank screen (a maximum of 4096 characters are allowed per entry). Since MultiTerm helps the user insert language and attribute tags, this interface guarantees the utmost flexibility.

In querying the database, Trados has also ensured high flexibility. With a couple of keystrokes, the user can scroll through the database term by term, call up a hit list when querying with wild cards and trace any cross reference. Since all information on a term is always directly shown on screen, the user doesn't have to call up several windows to edit or view the information requested.

As far as compatibility is concerned, the utilities that come with MultiTerm allow for very flexible importing and exporting of terminology. Even Ink's proprietary format is supported, as well as export to a tagged Ventura-format for which a stylesheet is included.

Thank heaven, a program for re-indexing corrupt databases is provided. Trados also offers a text analyzer comparable to Ink's Texan.

The network version of MultiTerm is beautifully implemented. Multiple users can consult the database simultaneously; users' screens are automatically updated as entries change. It certainly looks as if MultiTerm is the most powerful and flexible multilingual terminology manager on the market today.

Prices: MultiTerm standalone: DM 1500; MultiTerm Net (2 users): DM 3000; Text Analyzer: DM 500. Separate rates for multi-user and site licences are available from Trados.

— Marcel Brugmans

Trados, Rotenbühlstr. 87, 7000 Stuttgart 1, West Germany. Tel: +49 (711) 627068

Soft Copy Roundup

MIGHTY VDE

In PC Magazine, John Dvorak called this PC/compatible text editor "the most amazing piece of wordprocessing software I've seen in ten years." What fascinated Dvorak was not just the astonishing functionality achieved with very little programming code, but also the attitude - and implications - of the author who circulated it freely asking only for a modest sum for site licences from corporate users.

VDE is an amazing wordprocessor, offering almost everything except the layout and document processing features found in far fatter programs. And like QEdit (see EW #19), it supports the old WordStar command set, which after much back and forth between other DOS and Mac wordprocessors, and together with the old PC keyboard layout, is ergonomically the most efficient I've ever learned.

— Colin Brace

Eric Meyer, 401 12th Ave SE, #139, Norman, OK 73071 USA

NUMBER-CRUNCHING WP

Launched in the UK in late 1989, Cicero Plus is the Anglicized version of a PC/compatible word processor successful in Sweden for several years. It will appeal more to the small office user rather than the wordsmith, as its major attraction is the integration of text and spreadsheet functions.

Cicero's ordinary wp facilities are better than average. It has neat touches, like the option to see a verbose document description while "housekeeping," multiple windows, and a waste area to store deleted text. Cicero unfortunately offers limited compatibility with other products. It reads and writes ASCII, and will export DCA format to DTP packages, but won't handle database file formats. Oddly enough, Esc calls help and F1 backs out to the menu - the opposite of the industry standard! These and other iconoclastic policies of RTB may limit the program's appeal. Price: UK£295.

— Ray Girvan

RTB Program (UK) Ltd, Tredan House, Church Road, Bookham, Surrey, KT23 3JG, UK. Tel: +44 (372) 58283.

LOCOSCRIPT PC

LocoScript PC is the result of a long and major re-write of the word processor bundled with the popular CP/M micro, the Amstrad PCW. An integrated package, it also comprises a tree-type file manager and a database. It's targeted primarily at PC novices and PCW owners moving from CP/M to MS-DOS.

Its particular forte is the repertoire of over 700 characters covering all European languages. If you need Anglo-Saxon 'eth' and 'thorn', 'inverted Bulgarian shch' or 'Azerbaijani G bar', LocoScript will supply! In normal QWERTY mode, Alt and Ctrl combinations call accents, European characters, and lines and boxes. Further "supershifts" access Cyrillic, Greek or Symbol keyboard modes with similar variants. UK£125.

— Ray Girvan

Locomotive Software, Dorking Business Park, Dorking, Surrey, RH41YL, UK. Tel: +44 (306) 740606.

WORDGENIUS

WordGenius is a PC/compatible utility which aims to speed up your wordprocessing by intercepting a partly-typed word and letting you pick the ending from a menu with a single keystroke. It also has a limited spellchecker for near-words with just one typo.

Both program and dictionary are memory-resident, the maximum 20,000 words taking up some 250K. So the more RAM you have, the better. WordGenius will learn new words as you type, but this needs a tedious "Ctrl-D" after typing each word, and you can't add sub-sets of a word already taught. I have tried similar programs before; Brown Bag's MindReader, and Dundee University's BCS Award-winning PAL. I still can't see much point for the skilled typist. Why meddle with a conditioned reflex by demanding a decision in mid-word? However, the impressive saving in keystrokes (you need just three per word) will make WordGenius very attractive to the disabled user with keyboard difficulties. Price 1780 Norwegian crowns (\$300).

— Ray Girvan

Birdstep Software A/S, Ospelia 13B, 2020, Skedsmokorset, Norway. Tel: +47 (6) 874688.



Zen and the art of marketing computers

"The Macintosh Way: The Art of Guerilla Management," by Guy Kawasaki (Scott Foresman and Company, Glenview, Illinois USA, 1990). Price: US\$19.95.

by Jeffrey S. Mann

Imagine getting a business card pressed into your hand which describes someone's job as a "software evangelist." Guy Kawasaki was Apple's main software evangelist in the early days. His job was to convince software developers to invest time and resources in "creating products for a computer with no installed base, 128K of memory, no hard disk, no documentation, and no technical support, made by a flaky company that IBM was about to snuff out."

This was certainly not a task for a "business development manager" or "third party relations coordinator;" this job took divine inspiration. Now he's written a book where he preaches his ideas about techies, marketing, restaurants, cars and women.

His ideas aren't that revolutionary (the main pearl of wisdom is "Do the right thing and do things right"), but he knows how to bring them over cleverly and engagingly. The easiest way to get into *The Macintosh Way* is to open it to a random page and pull out a plum. You're likely to get so absorbed that you've read 20 pages before realizing it. This is not a book which needs to be assimilated sequentially; hopping around works fine.

Kawasaki bristles with ideas about sales, demos, screwing the competition, taking care of your employees, compensation plans, store design, which car to buy, why Apple is such a great company, why Apple is such a lousy company. He also knows how to formulate his ideas in a couple of pithy paragraphs.

Sometimes you forget that he's just talking about software products. That's the idea. If you're just talking about another product, you aren't going to capture this man's imagination, or that of the marketplace either (unless you're IBM or Ashton-Tate).

The "Exercises" littered through the book provide some of the best moments because they are so to the point. He provides practical suggestions like "Call your company and ask for a press kit." Another one says:

The Fullwrite Professional brochure, produced by Ann Arbor Softworks in 1986, contained 1000 square inches of surface area. Of the 1000 square inches, 30 were dedicated to product specifications and the rest to colorful pictures of Yuppies.

Calculate the ratio of 30 to 1000.

Get the point?

Lack of software was the biggest problem the Macintosh had for the first couple of years (you get tired pretty

quickly of mousing around with MacDraw and MacWrite), but evangelists like Kawasaki cajoled and nurtured young startups like Aldus, Silicon Beach Software, and especially 4th Dimension. He liked 4th Dimension so much that he left Apple to become the president of ACIUS, the company which sells it in the United States. The story of how that came about is perhaps the most interesting part of the book.

One of Kawasaki's tasks was to convince Ashton-Tate to bring out a Macintosh version of their super-popular dBASE product. dBASE's fatal flaw is its ancestry. If Kawasaki is anything, he is all-Mac. In the pseudo-macho Silicon Valley-speak favored by Kawasaki, "He bleeds six colors," a reference to the rainbow in Apple's logo.

The idea of depending on a massive company which makes its money from the hated, heathen MS-DOS was more than he could stomach. He also expected that Ashton-Tate would bring out a mediocre product destined for failure in the Macintosh market. A year behind schedule, Ashton-Tate did just that.

Kawasaki figured that the database market was too important to leave to bozos like Ashton-Tate. If Macintosh was going to push its way into the business environment, it had to have a good database available. So he acquired a product from a French developer for Apple to sell. Ashton-Tate didn't like the idea of Apple selling software, and bullied them into dropping the idea. More accurately, (according to Kawasaki) Apple let themselves get bullied.

« That's his version of the story. Unsurprisingly, no other side is presented; after all it's his book, ain't it? For Kawasaki, the cave-in was the sign that Apple was becoming like most other computer companies whose customers buy products despite, not because of, the companies which make them.

Kawasaki is not afraid to name names. He blasts Ashton-Tate, Microsoft, Quark, Ann Arbor, as well as Apple and others, for what he considers stupid moves. He doesn't recall many of his own mistakes, but then that's not *The Macintosh Way*. It's much better to push the blame onto someone else. It's even better to convince everyone that that was what you were after all the time.

The Macintosh way shows all of the qualities of success in the cliquish Macintosh world in Silicon Valley. He suggests buying a Porsche 911 the day your competitor releases a new version just to drive them crazy. In a global economy, most people's competitors are around the world – in the Macintosh world you run into them at the corner health club.

This book is primarily useful as a direct primer for products in the mass market, but the ideas are more or less transferrable. Dare to be different, do the right thing in the right way. Which is dangerous news for the mediocre. You've got to be really good to get away with these tactics.

He says to send the company president to give demos at user group meetings – s/he'd better be good or will get eaten alive. He has a lot of good ideas about attracting attention from competitors, trade shows, user groups, trade press, etc.

If you're writing a book which is a tribute to your own cleverness, there's no reason to hold back on the self-indulgence. He closes with a pointless and at times insulting chapter called "The Macintosh Guide to dating and marriage" which is largely a tribute to how nice it is to have a wife who lets him spend a lot of time on his Mac.

This chapter reads like a pre-adolescent discovering that girls can be pretty nifty keenos too; almost as fun as baseball sometimes. Half of Kawasaki's pre-publication reviewers told him to trash this chapter. I'm with them. Treat it as an anomaly and enjoy the rest.

Latest news: Kawasaki recently left ACIUS, the company he praises so highly in this book. Typical marketing type; don't believe anything he says.

Jeff Mann doesn't use a Macintosh; he just writes about people what writes about 'em. In his remaining spare time, he's a manager of product marketing for a company which makes application development tools.

Unravelling the infrastructure of a new technology

"Natural Language Processing Technologies in Artificial Intelligence – the Science and Industry Perspective," by Klaus K. Obermeier (Ellis Horwood, 1989). Price: £30.

This is, quite simply, an excellent book. It contains a concise yet comprehensive survey of the whole natural language processing (NLP) field, covering: natural language interfaces (transformation based, dialog based) and text generators (as embedded in database or expert systems), text understanding (skimming, automated indexing), speech recognition and synthesis, writing aids (spelling checkers, grammar and style checkers), and machine translation.

For each of these subfields, the crux of the information processing task and the different approaches at the technology-push side are explained. This is followed by a critical summary of the applications, current projects and available products, ranging from Batelle's NLQ relational database query system to Excalibur Technologies' Savvy/TRS neural network-based text recognizer. Throughout, the presentation is well-balanced (though clearly made from a USA point of view) and refreshingly up-

to-date. It is also practical, as vendor addresses and pointers into relevant literature are amply included.

But what Obermeier has wrought here is more than a concise NLP compendium. It's his shrewd vision and insight into the infrastructure of the NLP technology which makes this book stand out brilliantly. Here is a linguist with a PhD in computational linguistics and related project experience in industry, providing an unprecedented bird's eye view of his field, annotated with educated comments and informed opinions.

Businesspeople will profit from the advice on NLP marketing and the graded forecasts (short term: 1995; mid-term: 2000; long term: 2010), which by any standards measure up to (say) McKinsey consultancy reports. At the same time, linguists, AI workers and other professionals in the software and emerging NLP industries will benefit from the analytic assessment of the underlying technology issues such as the decades-long primacy of syntax, the AI trap (incidentally, the "AI" catch phrase in the book's title is largely due to the publisher, I would say), the gap between the do-able and the merely interesting...

As the author puts it, "current NLP research is caught between the ideologies of the various academic disciplines," and he argues that NLP must be established as a science in its own right, in order to accommodate the more innovative linguistic and conceptual models on which the future of this technology will depend.

— Tony Whitecomb

That old familiar feeling

"Developing Effective User Documentation: A Human-Factors Approach" Henry Simpson and Steven M. Casey. (MacGraw-Hill, New York, 1988). Price: \$42.95.

by Piet Westerdorp

"This book is unique," state Simpson and Casey in the preface to their book, *Developing Effective User Documentation: A Human-Factors Approach*.

Yet the difference between this book and all the other how-to-write-user-documentation books seems like the difference between the Tramecksan and the Slamecksan, the two groups which populated Lilliput: exactly one eighth of a Lilliputian inch.

The book is certainly organised in the usual way. Classification of documentation and users is followed by discussions of the development process, tools, production and testing.

Simpson and Casey classify user documentation in three ways. We have system versus user, procedural versus reference, and internal versus external (user's guide, reference manual, reference card, quick reference guide and job performance aid). Very true and very familiar. And very arbitrary.

Are professional users that much different from ordinary users? When is a user advanced? When is she or he to go from instruction to reference? What should the internal documentation do that the external doesn't? These questions are vital for »

Here is a linguist with a PhD in computational linguistics and related project experience in industry, providing an unprecedented bird's eye view of his field.

«good documentation, but they remain unanswered.

After specifying user profiles (novice users, professionals with computer experience, skilled clerks, and computer professionals), the authors explain how to make documentation match user needs. For this we have to follow a straight procedure. Determine: (1) the types of users; (2) the operating system; (3) the documentation functions; (4) the user tasks and user information requirements; (5) the types of user documentation; and (6) the details.

Sound familiar? Well, this matching of user groups and documentation types is the first item to live up to the book's promise of being unique—by approaching user documentation from a human factors angle, rather than from a technical writing angle.

ASSUMING YOU CAN WRITE

The second unusual characteristic of the book is the authors' assumption that you

already know how to write. They don't "dwell on spelling, punctuation, or grammar."

Fortunately, Simpson and Casey do have chapters on organization, style and usage. These discuss questions like advance organizers, writing styles, paragraphing, and typography. There's nothing new in any of this, but I'm glad it's there all the same. Two examples of good documentation are given: the manuals accompanying Word Perfect 4.1 and Microsoft Chart (1984 vintage, probably version 1.0). Despite elaborate descriptions, there's no real explanation of why they are good. More illuminating (and more in accordance with common perceptions of documentation!) would have been to provide lots of examples of *bad* user documentation, with explanations of *why* they are bad.

The third "unique" aspect of this book is its attempt to "show how you can use the tool whose software you are documenting (the computer) to support the

documentation effort."

Now really, this isn't the first book to tell us that we can use computers for production and project management (Gantt or PERT charts, planning and management programs, spreadsheets, etc.).

Simon and Casey recommend using IBM-computers for text-only applications and Macintosh computers for dtp—because "there are only two widely used word-processing programs: MacWrite and Microsoft Word" for the Mac, while "for the IBM computer there is only a monochrome monitor with green phosphor and the graphics card plus colour monitor which results in much poorer legibility than the monochrome display."

From this it's clear that the manuscript of the book had been in a drawer for quite some time before it was published. A unique contribution? Hardly—but the sections on writing and designing user documentation are as good a guide as any other book on the subject.

Everything you always wanted to know about text handling, but were afraid you'd find out

"Automatic Text Processing: the Transformation, Analysis and Retrieval of Information by Computer," by Gerard Salton (Addison-Wesley, 1989). Price: US\$44.25.

If you need a general introduction to how computers handle text, this is it.

Designed as a textbook for courses in computer science subjects (compression, encryption and file access), library and information science (retrieval techniques), or computational linguistics (document analysis, text generation and understanding, automatic text translation), these

500 pages of closely packed text, tables and diagrams will take interested and semi-computerate readers through the technology underlying your wordprocessing program, your database management system and program and your automatic spell- or stylechecker.

The style is no-nonsense exposition, admirably uncluttered with jargon given the range of topics covered. Each subject is well-delineated in its own section, making the book easy to use for byte-sized reference on text processing in general. And if you are a math freak, specially-marked sections take you through the arcane realms of fuzzy set extensions to the Boolean retrieval model, and explain how ciphers based on computationally difficult problems can handle data encryption. Bibliographies at the end of each chapter document how research into the kinds of linguistic smarts that EW readers hear about every two months began in the labs decades ago.

An interesting feature of this book is the number of pages devoted to language processing. A few years ago, natural language engineering approaches to text might have gotten a short chapter at the end: Salton gives them almost a quarter of the book, with a real attempt to show how some of the leading models in syntax (ATNs) and semantics (case frames and scripts) are structured. The examples are inevitably based on English, though it might have been interesting to learn of the design implications that may arise when your dictionary or parser has to handle morphologically-rich languages (such as the Romance languages in Europe, or Turkish).

From an infotech point of view, it is not surprising to find the succinct section on automatic translation alongside that on text-critiquing tools in a chapter entitled "Automatic Text Transformation." No illusions here about how an AI perspective might take MT to be a model of how human brains translate: translation is just one more algorithmic manipulation of text strings.

A final chapter on "Paperless Information Systems" covers graphics and speech processing, e-mail and electronic publication—the logical conclusion to the hash-table access, thesaurus-group generation and Knuth, Morris and Pratt methods evoked in the body of the book. The multimedia buzzword is not used, but the material on how our words and images are stored and circulated in binary form should suggest further practical applications for the mass of text techniques explained in the book. Should be on every language technologist's bookshelf.

— Andrew Joscelyne

Hardcopy Roundup

"Hyphenation," by Ronald McIntosh (Computer Hyphenation Ltd., UK).

Hyphenation-wise, the wordprocessor is a mixed blessing. It has liberated us from hyphenation decisions, while all too often subjecting our words to a veritable Texas chainsaw massacre. Ronald McIntosh believes "bad hyphens can destroy the peaceful enjoyment of a quality product." He hopes this book will encourage good hyphenation in print and publishing professionals.

Hyphenation is a confused subject in English, mostly because of differing practices in Britain and America ("two countries divided by a common language" in the words of George Bernard Shaw). British hyphenation was traditionally based on etymology; wherever possible, words are divided according to their Greek or Latin roots. Thus "omnipotent" would be hyphenated "omni-potent."

American lexicographers—and renegade British compositors—instead prefer to hyphenate according to sound or stress, so "omnipotent" could become, "om-nip-o-tent." After coexisting happily for centuries, the American system is now coming to dominate in Britain, partly because of the influence of imported software. A simple tale, but McIntosh tells it with real flourish.

This book contains detailed hyphenation guidelines for British and American English, plus examples of how to hyphenate nearly 40 other languages, including the obscure and exotic, like Swahili, Basque and Anglo-Saxon.

— JS

"Darpa Neural Network Study" (AFCEA International Press).

There are few IT managers who have not wondered about neurocomputing, and its possible applications in their field. This study is a good review of the whole field, with proper executive summaries and accessible conclusions, in addition to technical detail for those who need it. In 1987, the US Defense Advanced Research Projects Agency (DARPA) commissioned a report to examine ways of reducing automatic target recognition (ATT) for smart weapons "to practice, rather than a black art." Neural networks were the prime object of the research, the results of which are published here. Comprising some 34 chapters, plus appendices A-Q, it adds up to a sizable study, though somehow the index got lost. It includes most aspects of neurocomputing, and is technology—rather than cognition—biased. There's a good survey of applications and currently available technology, and the opinions of leading researchers on the future. These are entertaining, and present an air of optimistic scepticism about neurocomputing. A valuable addition to any IT manager's bookshelf.

— NB

"Dictionaries: The Art and Craft of Lexicography," by Sidney I. Landau (Cambridge University Press).

Landau is editorial director of Cambridge University Press, New York, and has over 20 years lexicographical experience as former editor-in-chief of dictionaries for Funk & Wagnall's and Doubleday, so he ought to know what he's talking about.

Eight chapters cover "What is a dictionary?" (suitable reading even for the completely uninitiated), a history of lexicography (not nearly as dull as it sounds), key elements (the entry term, alphabetization, etymology, pronunciation, grammatical information, etc.), definition (kinds of meaning, citations, etc.), usage (kinds of usage information given, attitudes towards usage, etc.), dictionary making, computer use, and, finally, miscellaneous issues such as legal considerations and the dictionary's ability to reflect social values. Pshaw!

It all adds up to the nearest thing you're likely to find to an exhaustive treatment of the subject, written with wit, skill and elegance. Technical terms and the obscurer points of the lexicographer's art are clearly explained, so this is suitable reading for the layperson, and not just the specialist. Full of interesting facts, insights and opinions about language and the dictionary business, this book isn't just recommended for lexicographers, but ought to be required reading for anyone whose work involves a systematic approach to language.

— JS

"Logic Grammars," by H. Abramson and V. Dahl (Springer Verlag).

Logic-based languages, such as PROLOG, are well suited to natural language processing, because grammatical formalisms are readily transcribed into these languages. Logic grammars have found wide application in NLP and in formal applications such as compiler writing. This book introduces the main concepts, presenting basic material in depth, and a good range of advanced topics to add breadth.

Main topics covered include: grammars for formal language and linguistics, writing simple logic grammars, types of logic grammars, applications, and logic grammars and concurrency. The book is aimed at those familiar with logic programming, and PROLOG in particular. An excellent text, it will interest anyone in the field of AI, computational linguistics, formal languages, and compiling techniques.

— NB

Unofficial guide to the best computer games

by Ron Martinez

Unofficial Guide to the Best Games, edited by Nicole Segre. (Mac's, South Croydon, Surrey). Price: £2.95.

This is a nicely done review of some worthwhile interactive entertainments. It features an informative introduction by Duncan Evans, which is as good an overview of the current state of computer entertainment as you're likely to find. Throughout, the writing is crisp, sometimes witty, and always suffused with a deep appreciation for the works reviewed.

One might, however, question the general description of these works as "games." In one "game" reviewed, SimCity, the user is able to "paint" a working city on the screen, and see it attempt to survive and grow over a period of months or years. Is this a game? How do you win this game? What do you win? Who are you playing against? Possibly no more than your own shortcomings as a would-be civic visionary.

But let's accept the term "game" as a semantic or, more shortsightedly, as a marketing convenience. What then of the audience for games? Paradoxically, on

a planet enthralled by football (American and otherwise), game shows, gambling, and other game activities, somehow computer entertainments are generally considered kid stuff.

This phenomenon probably has something to do with content. A lot of games (including several reviewed in this book) plunge the user into a cheesy SciFi slaughterhouse, arm him (or her, but mostly him) with an arsenal of nightmare weaponry, and besiege him with myth and media-composite demons intent on murdering him. This is seriously adolescent stuff, the kind of Lord of the Flies universe you might expect to take shape when you leave a gang of adolescent boys together in the wilderness. (Then again, it might be unfair to single out adolescent boys for blame. Look what kind of world adult men dreamed up in Beirut, Central America, and elsewhere.)

A subtheory of evolution called neoteny posits that a species' evolution includes the retention of its childish traits in adulthood. Evidence of this is purportedly found in the resemblance of infant apes to adult humans, as well as in the form and coloration of countless lesser beings in their various stages of develop-

ment. If this is true for cultural evolution as well as physical, what are we to expect for the future of our civilization?

Take for example games that are even more explicitly metaphors for the inner life of the adolescent male: fantasy role playing games (FRPs). In these games, beings with half-formed personalities described by sets of numerical attributes (Charisma: 30; Strength: 80; Intelligence: 15) roam around in packs looking for trouble. They wander in a xenophobic funk through a fantasy world, by turns indifferent and hostile, meeting weird strangers who they promptly attempt to slaughter. Those successful at this murderous game are rewarded with their victims' treasure, as well as with a more fully developed personality, as their attribute levels are adjusted to reflect their new level of experience.

Add rape to this scenario, and you have what in New York City is known all too well as "wilding."

Believe it or not, the game designers' community is attempting to come to grips with the moronic content of much of its output. At a recent conference in San Jose, California, there were lively, sometimes heated sessions entitled, for example, "Computer Games and Social Responsibility," and "The Artistic Core of Interactivity."



It might be unfair to single out adolescent boys for blame. Look what kind of world adult men dreamed up in Beirut, Central America, and elsewhere.

JULY 1990

4-7 — 17TH INTERNATIONAL SYSTEMIC CONGRESS

University of Stirling, Scotland. Themes: computational linguistics, applied linguistics, foreign language teaching, Systemic and other functional theories of language. Info: 17-ISC 1990, Martin Davies, Dept of English Studies, University of Stirling, Stirling FK9 4LA, Scotland, UK.

9-13 — WORLD CONFERENCE ON COMPUTERS IN EDUCATION

Darling Harbour, Sydney, Australia. Info: Ms. Holly Jobe, Montgomery County Intermediate Unit, Montgomery Avenue & Papermill Road, Ardenheim, PA, USA.

16-17 — INTERACTIVE MULTIMEDIA IN EDUCATION 90

University of East Anglia, UK. For classroom teachers; demonstrations, workshops, etc. Info: +44 (603) 33276.

17-19 — OPTICAL INFORMATION SYSTEMS

INTERNATIONAL 90 Wembley Conference Centre, London. Europe's biggest conference on document image processing and optical data storage systems. Info: Meckler Ltd., Grosvenor Gardens House, Grosvenor Gardens, London SW1W 0BS, UK. Tel: +44 (1) 931 9985. Fax: +44 (71) 931 8908.

21-26 — CONFERENCE ON COMPUTER-ASSISTED LANGUAGE LEARNING AND THE USE OF COMPUTERS IN THE HUMANITIES

UK. Part of 4th World Congress for Soviet/East European Studies. Info: see above.

21-26 — 4TH WORLD CONFERENCE FOR SOVIET/EAST EUROPEAN COUNTRIES

UK. Language studies, including the use of computers. Info: Dr. J. I. Press, London University, Mile End Road, London E1 4NS, UK.

29-4 — 8TH INTERNATIONAL HUMOR CONFERENCE Univ. of Sheffield, UK. Organized by the International Society for Humor Studies. Info: Mark Glazer, University of Texas at Pan American, Edinburg, TX 78539, USA. Tel: +1 (512) 381 3551.

AUGUST 1990

2-4 & 6-9 — FIT 12TH WORLD CONGRESS

Belgrade, Yugoslavia. Info: FIT (International Federation of Translators), Tel: +32 (91) 283 971

8-11 — MACWORLD

Boston, MA. 13-18 — 18TH INTERNATIONAL CONGRESS OF ONOMASTIC SCIENCES University of Helsinki, Finland.

19-24 — TECHDOC 90

Ramada Renaissance Hotel, Washington, DC. Sponsored by the Graphic Communications Association, 1730 North Lynn Street, Suite 604, Arlington, VA 22209, USA. Tel: +1 (703) 841 8160.

20-25 — COLING 90

University of Helsinki, Finland. The 13th international conference on computational linguistics. Call for papers on topical issues in computational linguistics or software demonstrations. Info: Mr. Fred Karlsson, COLING '90, Dept of General Linguistics, University of Helsinki, Hallituskatu 11, SF-00100 Helsinki, Finland, tel: +358 (0) 1911.

27-31 — DOCUMENTATION ET TERMINOTIQUE Brussels. Course for translators, linguists, etc. leading to certificate. Info: C. de Schaezen, Centre de Terminologie de

Bruxelles, Rue d'Arlons, 1040 Bruxelles. Tel: +32 (2) 513 3486.

28-30 — FORUM 90: INTERNATIONAL CONFERENCE FOR TECHNICAL COMMUNICATION INFORMATION

Stockholm. Info: Forum 90, Box 38 S-124 21 Bandhagen, Sweden.

28-1 SEPT — 4TH EURALEX CONGRESS

Benalmadena, Malaga, Spain. Themes: bilingual, practical, and computational lexicography. Info: Euralex-Vox, c/o Viajes Iberia

Congresos, Avda. Diagonal 523, 08029 Barcelona, Spain.

31-4 SEPT — TYPE 90

Oxford, UK. Sponsored by the Association Typographique Internationale (ATyPI). Conference on the impact of computers on typography. Info: Roger Black, Type90, Suite 1416, 60 East 42nd Street, New York, NY 10165, USA. Tel: +1 (212) 983 7181. Fax: +1 (212) 983 6043.

SEPTEMBER 1990

6-9 — CYBERARTS INTERNATIONAL

Los Angeles Biltmore Hotel, Los Angeles, California. Organized by Keyboard and EQ magazines, this just might be the first professional conference and performance showcase of emerging interactive and multimedia technologies as they apply to the arts. Presentations, workshops, and exhibits are planned. Contact Bob Gelman, CyberArts International, Miller Freeman Expositions, 500 Howard Street, San Francisco, CA 94105. Tel: +1 (415) 267 7646, fax: 995 2494.

12-14 — INTERNATIONAL PROFESSIONAL COMMUNICATION CONFERENCE (IPCC 90)

London. Theme:

CyberLex

Screenwriter Anita Loos wrote *Gentlemen Prefer Blondes* in 1925 as a short story for her close friend H.L. Mencken's *The American Mercury*. "Menck liked me very much indeed," she wrote later, explaining why she wrote the piece in the first place, "but in the matter of sentiment, he preferred a witless blonde." Loos decided to get revenge on all her blonde tormentors, hence *Gentlemen Prefer Blondes*. Mencken rejected her submission. "Little girl," Mencken wrote Loos, "you're making fun of sex and that's never been done before in the USA. I suggest you send it to Harper's Bazaar, where it'll be lost among the ads and won't offend anybody." Harper's Bazaar decided to run the piece, but only if Loos turned it into a serial. By the third month, ads for men's clothing, cars and sporting goods began to appear in the magazine — the first time men had ever read the Bazaar. Newsstand sales doubled, then tripled. James Joyce, who had begun to lose his eyesight, saved his reading for protagonist Lorelei Lee. And George Santayana, when asked what was the best book of philosophy written by an American, answered, "*Gentlemen Prefer Blondes*." The phenomenon had only begun. The first edition of the book sold out on the day it reached bookshops. As did the second print run of 60,000 copies. Ultimately, 45 editions were printed before initial demand eased. And it was translated into 13 languages. Sixty five years later, *Gentlemen Prefer Blondes* is as fresh as the day it was written. As ever, readers are encouraged to send in their examples of language technology in action.

A gentleman friend and I were dining at the Ritz last evening and hesaid that if I took a pencil and a paper and put down all of my thoughts it would make a book. This almost made me smile as what it would really make would be a whole row of encyclopedias. I mean I seem to be thinking practically all of the time. I mean it is my favorite recreation and sometimes I sit for hours and do not seem to do anything else but think. So this gentleman said a girl with brains ought to do something else with them besides think. And he ought to know brains when he sees them, because he is in the senate and he spends quite a great deal of time in Washington, dc, and when he comes into contract with brains he always notices it. So it might have all blown over but this morning he sent me a book. And so when my maid brought it to me, I said to her, "Well, Lulu, here is another book and we have not read half the ones we have got yet." But when I opened it and saw that it was all blank I remembered what my gentleman acquaintance said, and so then I realized that it was a diary. So here I am writing a book instead of reading one.

Communication Across the Sea: North American and European Practices.

Organised by the IEEE Professional Communication Society. Info: John B. Moffett, John Hopkins University, John Hopkins Road, Laurel, MD, USA. Tel: +1 (301) 953 5000 ext 8260.

12-16 — EXPOLINGVA BUDAPEST

Budapest. The Central European Language Fair. Info: Interbright, PO Box 225, 1476 Budapest, Hungary.

15-18 — INTERNATIONAL MULTIMEDIA CONFERENCE

New York. Sponsored by Multimedia Computing Corp., to explore the future of multimedia. For strategic planners in product development, research & marketing in com-

puters, telecommunications, video and publishing. Video Expo and CAMMP (Computer Aided Multimedia Presentations) trade shows will be staged simultaneously in New York's Javits Center. Info: Multimedia Computing Corp., +1 (408) 778 0787.

17-18 — HOW TO DESIGN SCREENS FOR ONLINE USER DOCUMENTATION

Association of British Insurers, London. Organised by the Informatics Resource Centre. Info: +44 (1) 871 2546.

17-20 — INFORMATION 90

Info: Concorde Services Ltd., 10 Wendell Rd, London W12 9RT, UK. Tel: +44 (1) 743 3106. Fax: +44 (1) 743 1010.

18-20 — EURO INFO

Auditorium della Tecnica, Rome, Italy.

Conference and exhibition organized by SEAT and Learned Information, sponsored by EIIA and EUSIDIC for the European information industry. Contact: The Organizing Secretary, Learned Information Ltd., Woodside, Hinksey Hill, Oxford OX1 5AU, UK. Tel: +44 (865) 730 275, fax: 736 354.

18-20 — ELEC-TRONIC PUBLISHING 90

National Institute for Standards and Technology (NIST), Washington DC, USA. International conference on electronic publishing, document manipulation, and typography. Linear and nonlinear documents to be discussed. Sponsored by EPSIG and NIST. Info: Lawrence A Welsh/EP 90, Building 225, Room

B252, NIST, Gaithersburg, MD 20899, USA. Fax: +1 (301) 590 0932.

21-23 — LANGUAGE AND COMPUTERS

Sheffield, UK. Info: Moira Monteith, Sheffield City Polytechnic, English Dept., 36 Collegiate Crescent, Sheffield, S10 2 BP, UK.

25-27 — 6TH INTERNATIONAL EXPERT SYSTEMS CONFERENCE AND EXHIBITION

Novotel, London. Call for papers on applications, integration, methodology and future possibilities. Info: Learned Information, Woodside, Hinksey Hill, Oxford OX1 5AU, UK. Tel: +44 (865) 730 275.

OCTOBER 1990

2-4 — EXPOLINGUA PORTUGAL

Lisbon. International language and translation fair. Info: International Where and How, Verlag GmbH, Postfach 24 64, Lennestraße 14, D-5300 Bonn 1, FRG. Tel: +49 (2) 28 22 30 86.

2-4 — 2ND INTERNATIONAL CONGRESS IN TERMINOLOGY AND KNOWLEDGE ENGINEERING

Trier, FRG. Themes: new applications for terminology; knowledge-based systems; natural language processing and knowledge engineering; documentation languages and ordering of knowledge; electronic dictionaries; knowledge engineering in social sciences and humanities; professions, teaching, training; computer support; knowledge transfer tools. Info: INFOTERM, PO Box 130, 1021 Vienna, Austria.

2-5 — SEYBOLD COMPUTER PUBLISHING

San Jose Convention Center and Civic Hall, San Jose, California. The theme of this year's conference and exhibition is "The Evolving Process of Communication". Contact: Seybold Seminars, 6922 Wildlife Road, P O Box 578, Malibu, CA 90265. Tel: +1 (213) 457 5850, Fax: 457 4704.

4-8 — COMDEX/ EUROPE AT SICOB

Paris Nord Villepinte Fairground. Fall version of the COMDEX/SICOB collaboration, uniting North America's largest computer trade show with one of Europe's biggest computer and office technology events. Conferences and seminars. Produced by the Interface Group Inc. Info: David Kammer, Tel: +1 (617) 449 6600.

8-12 — CALS INTERNATIONAL

Tara Hotel, London. Euro version of the TechDoc conference for all those in the technical publishing

industry. Organized by the Graphic Communications Association, 1730 North Lynn Street, Suite 604, Arlington, VA 22090, USA. Tel: +1 (703) 841 8160.

9-11 — IMAGE PROCESSING 90

Wembley Exhibition Centre, London. Only exhibition of its kind in Europe: image processing from electronic publishing to digital microscopy. Info: Blenheim Online Ltd., Ash Hill Drive, Pinner, Mddx HA5 2AE, UK. Tel: +44 (1) 868 4466.

13 — NATIONAL FESTIVAL OF LANGUAGES

Warwick University, Coventry, UK. Exhibitions, workshops, etc. Info: Festival of Languages, 16 Regent Place, Rugby, UK. Tel: +44 (788) 546443.

14-17 — EDUCOM 90

Atlanta, Georgia. "Preparing for the Renaissance: Computing and Communications for Technology, Science and the Arts". Contact John Gehl, Program Chair, School of Information & Computer Science, Georgia Institute of Technology, Atlanta, GA, 30332, USA.

16-18 — INTERNATIONAL TIME — THE INTERACTIVE MULTIMEDIA EVENT

Barbican, London. Relocation of this previously Brighton-based event. Contact PLF Communications Ltd, Towermead Business Centre, High Street, Old Fletton, Peterborough PE2 9DY, UK. Tel: +44 (733) 605 35, fax: 455 22.

17-21 — ANNUAL CONFERENCE OF THE AMERICAN TRANSLATORS' ASSOCIATION (ATA)

New Orleans, LA. Info: ATA, 109 Croton Ave., Ossining, NY 10562, USA.

18-19 — CONFERENCE OF THE INTERNATIONAL ASSOCIATION FOR LANGUAGE AND BUSINESS

Switzerland. Theme: language and interna-

tional economic relations. Info: J D Graham, Internationale Vereinigung Sprache und Wirtschaft e. V., Am Flutgraben 22, D-4100 Duisburg 17, FRG.

24-25 — INTERNATIONAL CONFERENCE ON INTERACTIVE AUDIO, INTERACTIVE VIDEO AND OPEN LEARNING

University of Amsterdam, The Netherlands. The program should interest people teaching languages, music or documentation sciences in secondary and tertiary education. Contact: Judith Janssen, Jasper van der Burgh or Heleen van Loon, ITT, Universiteit van Amsterdam, Spuistraat 134, 1012 VB Amsterdam, The Netherlands. Tel: +31 (20) 525 4589, Fax: 525 4429.

21-24 — LES INDUSTRIES DE LA LANGUE — PERSPECTIVES DES ANNEES 1990 Montreal, Quebec, Canada. International gathering organized by the Société des Traducteurs du Québec and the Office de la langue française, with the cooperation of Québécois, Canadian, French, and Walloon language industry observers. Info: Edith Girard, Secrétaire du Colloque international sur les industries de la langue, Office de la langue française, CP 315, Tour de la Place-Victoria, Montréal, Québec H4Z 1G8, Canada.

20-21 — EDI AND THE LAW

QEII Centre, Westminster, London. Info: Blenheim Online, Blenheim House, Ash Hill Drive, Pinner, Middx HA5 2AE, UK. Tel: +44 (81) 868 4466.

28-30 — THE DTP SHOW

Business Design Centre, Islington, London. Info: Blenheim Online Ltd, Blenheim House, Ash Hill Drive, Pinner, Middx HA5 2AE, UK. Tel: +44 (81) 868 4466.

6-8 — COMPUTER GRAPHICS

Alexandra Palace, London. Exhibition and conference organized by Blenheim Online. Expected to include a computer film festival. Info: +44 (1) 868 4466.

13-15 — COMPUTERS IN THE CITY

Barbican Conference Centre, London. Info: Blenheim Online. Tel: +44 (1) 868 4466.

13-15 — NEURAL NETWORKS

QEII Centre, Westminster, London. Info: Blenheim Online Ltd, Blenheim House, Ash Hill Drive, Pinner, Middx HA5 2AE, UK. Tel: +44 (81) 868 4466.

15-18 — EXPOLINGUA FRANKFURT

MesseGelande, Frankfurt. International language, translation and multilingual communication fair. Info: International Where and How, Verlag GmbH, Postfach 24 64, Lennestraße 14, D-5300 Bonn 1, FRG.

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DECEMBER 1990

3-5 — COMPUTERS FOR THE HANDICAPPED

Zürich, Switzerland. Organized by the Schweizer Gesellschaft für Informatik (SGI), the Austrian Computer Society and the Deutsche Gesellschaft für Informatik. Info: Dr. Zagler, Technical University of Vienna, Institute for Electronics, Gußhausstraße 27/359/1B, A-1040 Wien, Austria.

3-5 — SEYBOLD EUROPEAN PUBLISHING CONFERENCE

Den Haag, The Netherlands. Color, data integration, document management, multimedia and standards, especially in data communications and video. Contact: Seybold Ltd., 26A Seaside, Eastbourne, East Sussex, UK. BN22 7QJ. Tel: +44 (323) 410 561, fax: 410 279.

4-9 — AFRICA TELECOM 90

Harare Conference Centre and the Sheraton in Harare, Zimbabwe. Pan-African conference organised by ITU (International Telecommunications Union) and the Telecommunications Corporation of Zimbabwe. Info: ITU. Tel: +41 (22) 730 5244.

6-9 — SINGAPORE LANGUAGE FAIR

First ever. Info: #09-16 World Trade Center, Singapore 0409.

11-13 — 14TH INTERNATIONAL ONLINE INFORMATION MEETING

Olympia 2, London. Info: Learned Information, Tel: +44 (865) 730275.

14-16 — KOREA INTERNATIONAL LANGUAGE FAIR

Seoul. Info: International Where and How Verlag GmbH, Postfach 24 64, Lennestraße 14, D-5300 Bonn 1, FRG. Tel: +49 (2) 28 22 30 86.

JANUARY 1991

17-21 — EXPOLINGUA VIENNA

Messeplatz, Vienna. Info: Wiener Messen u. Congress GmbH, Messeplatz 1, Postfach 124, A-1071, Wien, Austria.

APRIL 1991

9-11 — 5TH CONFERENCE OF THE EUROPEAN CHAPTER OF THE

Association for Computational Linguistics

Berlin, DDR. Info: Jürgen Kunze, Zentralinstitut für Sprachwissenschaft der AdW der DDR, Prezlauer Promenade 149-152, 1200 Berlin, DDR.

MAY 1991

1-5 — MONDOLINGUA

Geneva. Info: 29 rue du Bourg, 1002 Lausanne, Switzerland.

JULY 1991

11-14 — TED EUROPE

Montreux Conference Center, Montreux, Switzerland. The first European version of the highly acclaimed TED2 conference held in Monterey, California, this convergence of Technology, Entertainment and Design is a fascinating event, not to be missed. Contact: Mike Whitacre, TED Europe, 1130 Camino Del Mar, Ste. 251, Del Mar, CA 92014. Tel: +1 (619) 259-5110, fax: 259-1495.

Union) and the Telecommunications Corporation of Zimbabwe. Info: ITU. Tel: +41 (22) 730 5244.

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Classified advertisements

SERVICES OFFERED — TRANSLATORS

BURKANOW, Talaibek. Linguist, experienced translator German/Russian, English-Russian, Russian-German. Technical, commercial, legal, political, patents, general and literary. Consecutive interpreting German-Russian-German. Thälmannring 30, DDR — 5322 Bad Sulza, East Germany, tel: 773.

BURNS, Joseph, M.A., German to English patents, related documents in mechanical

engineering. 10 yrs. experience. IBM-XT, modem, fax, telex, laser printer. 9365 Fivepoints Rd., Athens, Ohio, USA. (614) 664-6044, (614) 593-2793, FAX (614) 593-4

The Word Surgery is Open



Here are some more of the brainteasers you've been quizzing Dr. Writestuff with since the last wordsurgery.

THIS ONE'S NOT TERMINAL
Dear Dr. WriteStuff,

I keep reading in Electric Word about all this great terminology management software for PC/compatibles. Why aren't there any such programs available for the Mac?

Maria-Elena D'Angelico, Torino, Italy

Dr. WriteStuff Replies: D'Angelico, you've posed a very interesting question to which the Doc can only reply "non lo so." Believe me, I wondered.

It may be because while the Mac has always had a slight edge in graphic problems, it's somewhat lagged behind in the variety and sophistication of text processing software that's available for PC/compatibles, due perhaps to the relative ease with which simple, character-based programs can be written for DOS-based machines.

The Doc also thinks it may have something to do with the fact that the Mac is rather more expensive outside of the US, and as such is used less frequently as a translator's workstation. Remember that although the Mac is used around the world, a very large portion of the software for it originates in the US, where the population by and large is singularly lacking in multilingual consciousness, despite (or perhaps because) of its historically immigrant background.

Whatever the case, the Doc thinks it's a real shame, particularly considering how adept the Mac is at handling accented and other special characters, even different scripts. But if you are a little bit clever, you can easily put together your own system for managing terminology on your Mac.

A number of simple filecard Desk Accessories could easily be configured as a terminology database. The Doc has taken the pulse of DAtabase (Preferred Publisher); this is certainly a healthy candidate, but there are others as well.

With DAtabase, you could build (or import) a terminology database and use

it from within your favorite wordprocessing program. You could even automate a copy & paste procedure with a macro program like Tempo or QuickKeys to make it act just like one of those DOS TSRs.

You could build multiple databases with DAtabase, and when you got a little more familiar with the program, export and reimport your files to reverse your language pairs.

If you have enough memory to run MultiFinder and are feeling ambitious, you could put together a database using a full-fledged Mac database program (like FileMaker II, 4th Dimension, or Omnis) which you could also use together with a wordprocessing program. Then you'd have something your DOS colleagues would be green with envy of.

But the Doc prescribes the first solution; it might be just the cure. DAtabase costs US\$119 and is published by Preferred Publishers, 5100 Poplar Ave, Suite 617, Memphis, TN, 38137, USA. Tel.: +1 (901) 683-3383.

FONT FOLLIES

Dear Dr. WriteStuff,

Alright - I give up! After a few weeks of dabbling around with my new Mac on my own, I am thoroughly confused - what exactly IS a printer font, what's a screen font, what am I supposed to do with them and where do I file them to get them to do what I want? Help!

Grant Baxter, Boise, ID, USA

Dr. WriteStuff Replies: Grant, there's nothing that gets the Doc's circulation up like a pretty typeface, but any uncertainty in this font business can sure take the wind out of your sails. In any case, your fonts (or *typefaces* in trade jargon) are only as good as your printer, so it's there we begin.

If you have an Apple ImageWriter printer, you simply install the familiar "suitcase" font icons, which contain the fonts displayed onscreen.

These fonts are bitmapped representations of the typefaces you want to print with, and are available only in a few standard sizes (usually 8, 10, 12, 14, 18 and 24 points). To use them, you either install them in your System file with Apple's Font/DA Mover, or use a utility like Suitcase or MasterJuggler which does the job a little more elegantly. The latter programs allow you to keep font files in a separate folder, which makes using lots of fonts a little more manageable.

When you go to print with your ImageWriter, the Mac will simply convert what is displayed on the screen to printer output. You'll note, though, that if you have installed the *double size* of the font you wish to print, you'll get much better results for various technical reasons.

If you're lucky enough to have a PostScript LaserWriter printer, you can use PostScript fonts. The basic ones (Times, Helvetica, Courier) are built into the printer, so you only need the suitcase versions installed. Additional PostScript fonts, available from Adobe and others, are supplied on disk. You'll find the familiar suitcase version which approximates what the PostScript font looks like onscreen, and another which is the "downloadable," or printer font. This contains mathematical definitions of each character which are far more precise than any visual representation.

The former you simply install as above, the latter you place in your System folder. If you're using an odd size (i.e. not a screen font size) PostScript font in a document, it can look really lousy on your Mac's screen. But fear not. When you go to print, the program you're using tells your Mac to send the mathematical font descriptions from the font file in your system folder. That's why it usually takes awhile. But as I always tell my patients, it's worth the wait.

But the Doc loves typefaces and doesn't like to wait, so we're saving up for a harddisk for our printer to download all the printer fonts onto. This way, we'll save valuable real estate on the harddisk of our Mac. What's more, it means more time on the golf course as it also means shorter download times; the printer then accesses all font information directly from the printer harddisk.

A TRUE GORBAPHILE

Dear Dr. WriteStuff,

I'm searching for a PC or Mac based translator for Russian/English. Can you help me?

Sid Jones, Milpitas, CA, USA.

Dr. WriteStuff Replies: Certainly, Sid. LINGUIST, from microTrans, could be just what you're looking for. LINGUIST is a fully bilingual text input and translating system. The translator performs simple literal word substitution translations - admittedly crude by comparison with translation systems like Metal, but the output is nevertheless said to be comprehensible, especially for scientific/technical translations.

And it's user-modifiable - you can add your own entries to the dictionaries and even modify existing dictionary entries during translation sessions. LINGUIST costs only \$385, including one language set. Additional sets cost \$95. It runs on IBM PC, XT, AT and compatibles with DOS 3.0 or later. Russian to English is currently available, with English to Russian shortly to be released. For further information, contact microTrans, 348 Turnstone Drive, Livermore, CA 94550, USA. Tel: +1 (415) 447 0596.

Die SCS Informationstechnik GmbH ist ein Unternehmen der international operierenden SD-SCICON, einer Beratungs- und Software-unternehmensgruppe mit weltweit 5.500 Mitarbeitern. Auch in Deutschland zählen wir zu den ersten Adressen der Branche.

Unser Fachbereich „Wissensbasierte Systeme“ expandiert. Wir suchen daher für den Standort Hamburg eine(n) weitere(n)

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Wenn Sie Kenntnisse und Erfahrungen in der Technologie und Anwendung der maschinellen Übersetzung sowie der Verarbeitung natürlicher Sprache mitbringen und über das Standing eines Beraters verfügen, möchten wir Sie kennenlernen.

Wir bieten Ihnen interessante, abwechslungsreiche Beratungsaufgaben, einen hohen Grad von Eigenverantwortung in einem kreativen Umfeld, das Ihnen die Chance gibt, sich persönlich und fachlich weiterzuentwickeln. Vorbildliche Sozialleistungen sowie systematische Weiterentwicklung sind für uns selbstverständlich.

Für weitere Vorabinformationen steht Ihnen Herr Dr. Hartmut Krasemann (Tel. 040/531 03-296) zur Verfügung.

Ihre schriftliche Bewerbung richten Sie bitte an unseren Personal-leiter, Herrn Joachim Stein,
SCS Informationstechnik GmbH, Oehleckerring 40, 2000 Hamburg 62.

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BACK TO THE FUTURE

WE STILL HAVE A LIMITED NUMBER OF BACK ISSUES OF ELECTRIC WORD AVAILABLE.

PREMIERE ISSUE. Extremely rare. The old ALPS. Radical Velotype keyboard. Hays' "Photocopy" article. The first issue to contain the "Electric Word" logo. The largest machine translation project in the world. Mercury/Ternex review.

2. Alan Melby on the translator workstation. Tron. Andrew Seybold. **Tim Leary** in-depth look at scholar/entrepreneur **Roger Schank's** Cognitive Systems. BSO's Distributed Language Translator. Review of hypertext Guide.

3. The philosophy behind video games. **Filofax**. In-depth look at the only profitable machine translation company. **Smart**. Crouzet's voice recognition cockpit. INPAC, the synthetic writer. Behind the scenes at the Independent. Bookshelf. PC-MOS review. **Amnesia**, the first computerized novel.

4. MT pioneer Michael Zazchak on the Space Age and Machine Translation. **Bill Atkinson** on the HyperCard. Transputers. Lexicographer supreme Laurence Ungard. Einstein. Olivetti's revolutionary natural language computing environment. The **Oxford English Dictionary CD-ROM**. State of the art of DTP. France's Callopie MT project. **Knowledge Pro** and Knowledge Maker. Reviews: Q & A natural language database. **Grammatik II** style checker.

5. Interactive screenplays. **Maghi King**. Alex Gross on glossaries. Dubbing and titling in film and television. Philip's elegant **Rosetta** machine translation project. **State of the art of OCR**. Susan Shepard's stunning look at the online phenomenon. Review: the electronic ghostwriter **Thoughtline**; the style checker **RightWriter**; Marquand's ergonomic keyboard. **USA Today**.

6. Computer visionary **Alan Kay** on the psychology behind modern interface

design. PCW's **David Bunell** on his HyperCard MacWorld. **Jeff Raskin's** Information Appliance, the Canon Cat. **Controlled English**. Gachet and his unified **Systan MT** System. Review: INK Text Tools, the translation aid.

NotaBene, the multilingual wordprocessor even WordPerfect is nervous about: the HUM Concordance Text Analysis program; an Electronic Sherlock Holmes Companion; **Electric Language**, the book about how using electrons to work with words is changing the way we think.

7. First Anniversary issue with now scandalous cover and story on **sex and dating** on the Minitel, how **Longmans** collects world English, document image processing, how to test a machine translator, how to build your own personal workstation, critic of television **Neil Postman**, Andre Abbou and the state of the language industries, Stewart Brand's **The Media Lab**, reviews of freeform databases, Microlytics' **WordFinder**, McGraw Hill's Science and Technical Reference on CD-ROM, Borland's **Sprint**, MacLink Plus, Electronic Text's **WordCruncher**, Jurisoft's **CompareRite**.

8. The Media Lab's **Nicholas Negroponte**, Bitstream's type design whiz **Matthew Carter**, HyperCard Handbook's **Danny Goodman**. Will Your Grandchildren Speak Chinese? about Chinese wordprocessing. **Whatever Happened to CD-I?** The Logos machine translation story, wordprocessing technology for the blind, 15 tips for using **Microsoft Word**, and Reviews of WordStar 2000, **PageMaker 3.0**, Procomm Plus, SideKick Plus, Radius greytone display, Total Word, WordPerfect for the Mac, and a preview of **Grammatik III**.

12. Special documentation issue. The current state of the art of making manuals. Documentation at **BMW**. **Apollon's** online documentation system. **Documentation in Space** - what they'll use on the space station. Stars: Collin's chief dictionary publisher **Pierre Cousin**, SITE, the UN's chief terminologist Harald Hille. 15 tips for using WordPerfect.

9. First issue after merger with Language Monthly. New LinguaFranca and

Mondglossos sections on multilingual wordworking. News about the grammar checking rivalry getting tense. Features include Vicky Hearne's rant against **Controlled English**. How the Japanese do it (wordprocessing [waporu] that is).

Computer Aided Language Learning, 15 tips for using **Ventura Publisher**. Reviews on multiscrit wordprocessors, **IZE**, Megachomp's **Russian word-processor**, The Fifth Generation by J. Marshall Unger.

10. Cover story: **The state of the art of speech recognition**. Exclusive report on IBM's natural language research, and **Critique**, its functioning grammar checker. How to build a translator workstation on the Mac. Stars: syntactician Laurence Danlos, Meroe's John Chandioux, and **Rolodex**. 15 tips for using **PageMaker**. Reviews: NBI's Legend, Lotus Agenda, **Shoshana Zuboff's** "In the Age of the Smart Machine: The Future of Work and Power."

11. Cover on hypertext inventor **Ted Nelson**. Features: BBC's **Domesday** interactive video project. **Neural Networks** and language processing. Ericsson's **Interdoc** indexing and storage facility. 15 tips on using **Xywrite**. Stars on speech recognition whiz Joseph Mariani, langtech researchers at **Cap Sogeti**, and Linotype. Reviews: **Micro Oxford Concordance Program**, WordMark, **AskSam**, Symantec's GrandView, Sita Language Learning System.

17. Cover star is **Marvin Minsky**. How to get into the business and technical side of **CD-I**. Authors on wordprocessing. Groupware overview. Wordcrunching in the Far East. In depth look at **Siemens** natural language products and programs.

Reviews: Ventura 2.0, Illustrator and Freehand, Vwwriter, Xpress, Steve Jobs and John Sculley. Jeff Raskin's rant against Hypertext.

13. Conquering 1992. An in-depth look at Europe's Multilingual Challenge; EC multilingual tech policy; 8 case histories on how companies are already handling the multilingual challenge. Resource Guide on technology for handling the multi-lingual challenge. Star on Dan Winkler, co-creator of HyperCard.

14. State of the Art issue. First comprehensive look at Japan's mammoth machine translation effort; the First Electric Word Awards for Technical Excellence - we pick the best wordcrunching products in the world; wordprocessing standards **CALS/SGML**; the man behind **Hidden Agenda**; a visit to WordPerfect in Utah; comparison of **OCR products for the Mac**; and the BBC's official de-fucker.

15. Back to School issue. Alan Kay's **Vivarium** project. Interactive multimedia. Special needs. **Grammar checking** in education. CALL Resource Guide. Stars: Wan Ruman, Logotron's Christopher Roper, Reference Software's Grammatik III.

16. Cyberspace issue. Is ISDN Necessary? Alternative networks. British Library Online. Computer Crime. **Hypertext Background**. The Guinness Disk of Records, redesigned Charles Bigelow, reviews TermDok, Slaves of New Work and Techno-scourge **Alain Finkelkraut's** new book.

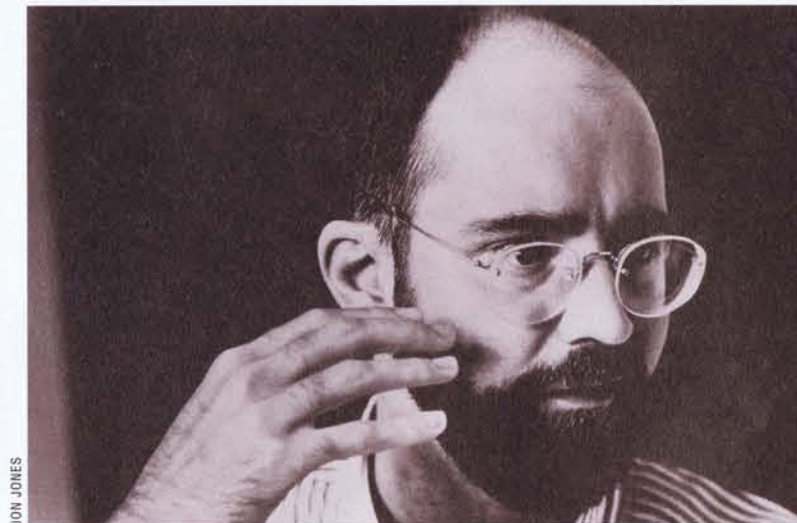
17. Cover star is **Marvin Minsky**. How to get into the business and technical side of **CD-I**. Authors on wordprocessing. Groupware overview. Wordcrunching in the Far East. In depth look at **Siemens** natural language products and programs.

Reviews of the latest computer-aided writing programs. Book reviews: Drucker and Gilder, StarsDragon System's Janet Baker, and the prototypical hacker, Captain Crunch.

18. Cover: IT philosopher **Michael Heim** on **The Dark Side of Infomania**. Inside SITE, Europe's largest techdoc company. Computing pioneer **Doug Engelbart**. The first look at **MediaMaker**, potentially the Page-Maker of Multimedia. Selective Index. Stars: Circle Noetics Sasha and Margaret Nizhnikov, Philips **Rosetta MT** leader

19. Xerox's new technology for the 90's. Susan Karr, the woman who designed the Macintosh interface. **Robert Anton Wilson** on E-Prime and upgrading the software for the mind, wordprocessing in Tibet, restricted language, the state of the art of document image processing, review of **IdeaFisher**, Star Janice Word and her reading program, Learnout and Hauspie and speech recognition and Eiko Akazawa of **Systan**.

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by Mark Reid

Nicholson Baker is a lanky, likeable American story-teller. He's thirtysomething and thinks he's a failure. He wanted to write "normal" novels with plots and all, and instead he's turned out two plotless novellas. Everyone else thinks he's a big success.

His first book, *The Mezzanine*, is about a lunch-hour, and concerns in particular a broken shoelace. His latest work, *Room Temperature*, is about a man's afternoon with his baby, and in particular the effect of his breath, blown across the room from the baby-feeding place towards a mobile. Such is the tortoise-pace of the tale that we have to wait until chapter seven to find out whether the mobile is stirred by the breath-blower.

Baker has a microscopic style of analysis: jumpers are described textile fibers first, drinking straws are explained over several pages. In *The Mezzanine*, this style extends to the use of footnotes.

"It's the first novel to have them," says Baker. Indeed, there's rather more text "below the line" than in the anchor story. There's a lengthy subsection on footnotes themselves where we learn that:

"Digression is the only way to be thorough, and footnotes are the only form of graphic digression sanctioned by centuries of typesetters."

The only irritation with the footnotes is that the small, elevated marker digits are rather too small in the narrative, so that it's hard to find the footnoted word *after* reading the footnote (and that order of prose consumption rapidly establishes itself).

Would Baker mind us playing "which came first?" with his double-decker wordwork? "No." And he goes further: "Download the novel onto computer, but not just to ease footnote following. You can also benefit from the artistic anarchy denied by the physical format of a book." Like most other novelists, he relishes the idea of cutting out the publishers' middle persons.

Baker also suggests an electronic version of the excitement the reader feels as a book's pages-to-go "disappear" as the book is read: "Maybe the computer could have red text that gets redder towards the end."

FOR THE SCREEN ONLY

Baker makes investigative forays into such pivotal matters as why toothpaste makes a smile audible, and how to put knickers on after a shower without your feet wetting the legholes. This quirky content brings to mind — from another medium — the Talking Heads' David Byrne. Though Baker is in it less for the exploration of psychoses and more in order to strip down what people do and use like a slightly mad scientist:

WORDWORKER: NICHOLSON BAKER, NOVELIST

"I'm fanatically interested in structures" he says. "From big science to little shapes. You have to use scientific information — to write up modern life you can't ignore it."

In *Room Temperature*, Baker vies for the Nobel Prize for Literature and Science with the same ball, with his analysis of the common, or garden comma: "I'm attracted to its sea-horse shape. Its asymmetrical tapering serve has a baroque quality which makes it distinct from the Euclidean austerity of the full-stop."

With that zest for parts of grammar, imagine Baker's enthusiasm when he was Data Communications Manager, making Codex software for the Apollo computer workstations: "I was Dr. Strangelove!"

At home though, Baker's eye for the singular overrides his ability with the state of the art: "I'm still on a Kaypro 2X, with not even the standard gun-metal black. It's different from most machines, as it doesn't look like part of a World War Two field command center."

Baker does, however, insist on one thing when he's in session on the keyboard — sitting comfortably: "The machine on two big dictionaries and me on the strato-lounger."

He is still keen to write that "normal" novel, "It's just that it doesn't seem to work for me." For now we have to settle for his lurid insight: why does one shoelace always wear out before the other? His delight in detail is threatened by being forced through the minutiae, to near nothingness.

"Like Zeno's Paradox, into a mystical nano-instant, so short, it's simply the flaying of one synapse," warns Baker.

There is, though, another danger to his close-to view of the world; a block between brain and computer: "If I talk about these comma-sized concerns, they are changed. They're private thoughts, for the screen only."

And for Baker, there's only one way for his brain to contact the computer. Imagine. It's dusk. The city's slowing down in bars and over TV dinners. Neon's blinking on. And there's Baker, strato-lounging, sneakers newly laced. He turns the computer screen to a low light intensity, a faint green glow. He punches keys. Outside's darker still.

"You know something's coming out of your brain, but you can't be sure what it is." A faint green glow. "You can't be sure what it is."

Until it's a third bestseller!

Mark Reid works as a producer for the BBC World Service. He is based in London.

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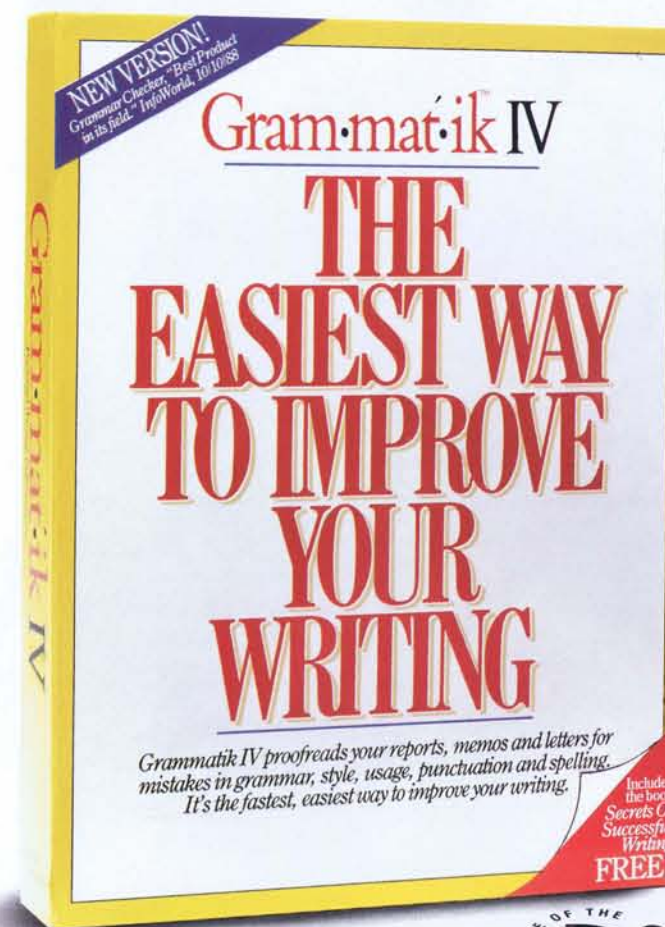
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