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If you're serious about publishing...

SEYBOLD
Report on Publishing Systems

Volume 17, Number 9
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January 13, 1988

The Fourth Wave: Publishing Joins The Mainstream

From the time of Gutenberg, graphic arts prepress functions have been performed by specialists using equipment designed specifically for the application and built, serviced and supported by organizations dedicated to this market. Now, rather suddenly, all of this has changed.

We believe that graphic arts prepress is becoming a computer application, firmly rooted in the mainstream of the computer industry, soon benefiting from and contributing to the enormous progress being made by that industry. All of us involved in the graphic arts industry face a stark choice: either join the mainstream or be left behind as an increasingly irrelevant side eddy.

A lot of people agree with this analysis. Others do not. Many more are merely confused. To clarify our view of what we believe to be happening, we are devoting this issue's main article to two essays: a historical perspective by Jonathan Seybold, and Bill Soltysiuk's thoughts on the dilemma faced by newspapers, magazines and commercial users.

Cadmus's Sun Breeze. Cadmus is one of many vendors moving from proprietary hardware to off-the-shelf workstations.

SEYBOLD
Report on Desktop Publishing

Number 8
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Sun386i: Unix, MS-DOS in One System 3

SUN MICROSYSTEMS is moving aggressively to position the Unix operating environment as an attractive alternative to Microsoft's OS/2 for the next-generation desktop software. This week, it announces another piece in that strategy: 80386-based Unix workstations which combine the Unix operating environment and Sun's networking facilities with the ability to run existing MS-DOS programs.

In this issue we look at the new Sun workstations and review the steps Sun is taking to make Unix attractive to desktop users. Should you be looking at Unix? Our analysis begins on page 3.

H&J: The Art of Composition 8

COMPOSITION—the process of breaking paragraphs into lines—is the foundation of a good publishing system. We see no reason why desktop publishing systems should not achieve quality of text composition equal to that produced by any traditional publishing system.

What features and capabilities do we look for, and why? See page 8.

Seybold Seminars: Conferences & Exhibits 20

THE ANNUAL Seybold Seminars for the professional publishing industry included a number of discussions relevant to desktop publishing as well as some new desktop products. We review these starting on page 20.

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SEYBOLD

Report on Publishing Systems

The Seybold Report on Publishing Systems chronicles developments in typesetting, page make-up facilities and related electronic prepress systems. Now in its 17th year, the Report continues to be the most important, influential and anticipated journal in professional electronic publishing. It is produced 22 times per year.

The Report includes material of interest in such applications as newspapers, magazines, technical documentation, directories and books. It is also an excellent reference work for desktop publishers looking for added features and capabilities.

Recent feature articles

- **Technical documentation systems**
  We assessed more than twenty vendors and their systems, including all the major players in the market.
- **Micro-based display ad systems**
  We reviewed the important emerging products based on PCs and Macintoshes.
- **High-resolution output devices**
  We provided an in-depth comparison of thirteen different manufacturers' products.
- **Digital color systems**
  We explained the electronic tools and processes available today and discussed the product lines of five suppliers.
- **"The Fourth Wave"**
  Our dissertation on publishing production joining the mainstream of the computer industry.
- **PostScript and its clones**
  We covered progress in the clone market and the strengths and weaknesses of Adobe's page description language.
- **Major graphic arts show reviews**
  During the year, we attend the most important graphic arts equipment exhibitions around the world and provide in-depth analyses of the new products and trends.

Whether you're a desktop publisher, or a million-dollar prepress system user, or somewhere in between, you're taking part in an exciting period of profound change in electronic publishing.

Activity in the market is at a fever pitch, forcing nearly everyone in the industry to make serious decisions about critical technical, creative and managerial issues.

With the choices so difficult and the stakes so high, where do you get the information you need to make the right decisions? Better yet, how do you put everything that's happening into the proper perspective?

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Report on Desktop Publishing

Microcomputer-based, low-cost publishing technology is the central focus of *The Seybold Report on Desktop Publishing*. Produced monthly, it is an indispensible guide to a dynamic and chaotic market.

With the unique Seybold perspective, The Report keeps you up-to-date with the constantly changing players and products in desktop publishing.

As we produce each issue, we integrate the products we review into our production operations. For example, with page layout programs, we actually produce our camera-ready pages using the review software. You see the results in print...good and bad.

Recent feature articles

- **Up-market PostScript printers**
  The quality is better, but we wondered if you could keep them busy enough to justify the price.
- **The new LaserWriters**
  We liked two of them, but the third left us cold.
- **Comdex coverage**
  We scoured the aisles to bring you the best roundup of publishing-related activities at the biggest computer show.
- **Unix workstations: a larger desktop**
  We examined the emergence of the Sun, Apollo and DEC workstations as viable publishing platforms.
- **Extensive product reviews**
  In recent issues, we covered the ups and downs of Quark XPress, ReadySetGo 4.0, Ragtime, Scoop, Lotus Manuscript, PFS: First Publisher, GEM Desktop Publisher and MacPublisher III. Past issues have featured extensive coverage of Ventura Publisher and PageMaker updates.

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The Seybold Report on Publishing Systems

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Interleaf on IBM PS/2. Interleaf's TPS 3.0 publishing software will soon be available on the IBM PS/2 Model 80. Arranged through a new deal with IBM, IBM Interleaf Publisher will be quite similar to Interleaf Publisher on the Macintosh II. IBM also announced a new version of Interleaf's software to run on the RT PC, supporting full TPS 4.0 functionality. **Page 33**

Sun announces '386 workstation. Sun Microsystems' challenge to IBM, Compaq and Apple is now in the open. The newest Sun workstation, positioned to compete head to head with the newest '386 PCs and the Mac II, combines the Unix programming environment and Sun's networking software with the ability to run MS-DOS programs. **Page 34**

SII gets $6.5 million from Daily Express. The UK's Express Newspapers has signed a contract with System Integrators for purchase of a Tandem-based System/55 system featuring Coyotes—not PCs—as terminals. **Page 40**

SEYBOLD SEMINARS '88

Climbing Aboard the Fourth Wave

EVERY MARCH we hold our Seybold Seminars for users and vendors concerned with the impact of new publishing technology. And following each year's Seminars, we devote a couple of issues of *The Seybold Report* to a summary of our discussions and a review of the products demonstrated for Seminars attendees. It is our way of recapping what happened for these attendees and of sharing the events of the week with our larger family of *Seybold Report* subscribers.

This year's event was the largest ever, and the first to make a serious effort to bridge the computer and graphic arts industries. It generated a massive amount of information—so much, in fact, that we must add an extra issue to cover it all. This issue contains summaries of most of the discussions that took place in the controversial "new technologies" sessions, the first two days of the week. Next week, you will get a second issue devoted to coverage of many of the products demonstrated at the Seminars. Others were covered in more detail in the last issue of our Report on Desktop Publishing. Two weeks from now you will get the final piece of the trilogy: seminar coverage from the balance of the week.

We are sorry for the length of these tomes, but there really was too much to be covered. Both the electronic prepress and the computer industries are at a crossroads. The decisions that users and vendors take over the next year or two will set the course of both industries for years to come. This is an extremely confusing time to be involved with this technology, but an extremely exciting one as well.

[See pages 6 and 31–32 for an index to our coverage of the Seminars in this report and in the Report on Desktop Publishing.]

Comments from Our Readers

Digital Technology cries 'foul'

In the NBA there seems to be an unwritten rule that the "big name" players should not foul out of a game. (After all, who did the people come to see?) It seems to me that the Seybold Report might have adopted this same rule in the recent review on "Mac and PC Ad Systems."

As might be expected, fouls are called on Digital Technology and Concept Publishing with the use of critical editorial comments. Yet the very same weaknesses are editorially glossed over when it comes to "big name" Compugraphic.

Let's look at a few instant replays, then you be the judge: DTI uses soft containers to hold text on the screen, which referee Solimeno concedes is "better than most." But he calls a foul anyway: "Users don't need containers, programmers do." Concept uses hard containers to hold text. Foul. "We think this is a significant shortcoming..." says the ref. Compugraphic uses the very same hard containers as Concept. Where's the call? Glossed over with "Although Compugraphic designed this feature on the assumption that in some cases the operator prefers to have containers of fixed sizes, it has taken steps to provide the operator with greater flexibility."

DTI uses delimiters in the text stream for formatting. Foul. "This is another reason we believe the Digital Technology product is better suited for smaller operations where text input and make-up are likely to be done by the same person." CG uses delimiters for its formatting in its "compose from model" feature. Where's the call? "But compose from model is very useful, although it requires a carefully input raw text stream." For DTI, delimiters are a limitation. For CG, they simply require "carefulness."

Concept Publishing gets a big technical foul—a whole heading titled "Limitations" under which is listed, "no indents, no runarounds, no spot color, no rotation of text and graphics," etc. CG has all those same limitations plus no screen tints by percentage, no reverse video on output, no manual kerning, no database for graphics, no Encapsulated PostScript, no mask cutting capability, no font selection by name capability, no vertical justification. Where's the call on CG? No heading titled Limitations at all? "Its feature set is roughly in the same category of Digital Technology's," says the ref. But DTI has every one of these features. That is really rough!

DTI uses modes, says the ref. Foul. That is a violation of the "Xerox Star" conventions for user interface. But what's the call when CG uses modes? "These modes can be effectively used in combination to get around the problems of lengthy repaint times and ad size memory limitations," says the ref. For us it's a violation. For them it's a work-around.

And what about the lengthy repaint times? DTI and Concept don't have them on their Mac II systems. But they are so bad on Compugraphic that the ref sees clearly "because repainting is relatively slow (as compared to programs running on the Mac II), we found it important to limit the amount of text on the screen." He sees the problem. So what does he call, in the very next sentence? A foul? He says, "In general, CG has done a good job, repainting only that portion of the screen that is changing." Editorial whitewash!

DTI uses an editing window instead of an on-screen WYSIWYG editor. Foul. The ref cites the lack of a WYSIWYG editor as a major weakness of DTI's in the summary. And this time CG does have a WYSIWYG editor. But what does the ref run into? "Although DAWN fully supports true on-screen WYSIWYG editing while composing, large amounts of text are better handled outside of the DAWN make-up program. The user must exit DAWN and call up a standard word processor for typing and editing text." What, no foul? No negative editorial commentary? You have to totally exit the program and get into another to do decent editing on larger amounts of text, and there is no call? That is the very reason DTI used its own built-in editor instead of a WYSIWYG editor. It is obviously better for larger amounts of text. The ref even sees it. But it's a no-call on CG and a foul on DTI.

But the worst call of all is made in one sentence. It's the epitome of cutting the "big name" player extra slack: "Encapsulated PostScript is another graphic format that CG would like to include with its package." Would like? Even the NBA doesn't count a Larry Bird shot just because he would like to have made it!

While the article does the industry a real service by pointing out the power and functionality of the micro-based systems as compared to both the desktop publishing products and the traditional proprietary systems, I thought the officiating left a lot to be desired.

Don A. Oldham, President
Digital Technology International
500 West 1200 South
Orem, UT 84058

—We might note here that a participant rarely has as good advantage point as an official. We suggest you try another instant replay and note that there is more in the article than you saw in first reading it.

On the question of containers, for example, we have been critical of Compugraphic's DAWN since we saw it at ANPA last year and repeated our criticism in this article. But now that CG is modifying the product to allow the flexibility that we like to see in this function, we toned down our criticism. If we had failed to do so, it would have been CG crying foul. We think it was fair to include Compugraphic's upcoming software release, just as we gave Digital Technology credit for some future developments that will be incorporated in its ad system soon.

In addition, we didn't want to get into a features war comparing these products. The author spent considerable time working with each of these systems. We wanted his judgments to be part of the story, rather than merely running down which products had more features.

So, although we might have missed the call on an occasional three-point shot that we judged a two-pointer, we doubt that we missed any slam dunks.

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Seybold Seminars '88: Welcome to the Fourth Wave

EARLY IN 1980, we came to the realization that the graphic arts prepress industry was about to enter an extended period of profound change. New developments in computer and electronic technologies would completely alter its technological foundation.

Despite all of the changes that had taken place during the 1960s and 1970s, the playing field for both users and vendors had remained relatively stable. We knew that was going to change.

We didn't have a complete understanding of what was coming and what it could (or should) mean for the industry—and we didn't think anyone else did, either.

This was the genesis of the concept for an annual seminar: a regular occasion to gather together the top people in the industry to share their ideas, approaches, experiences and analyses. We didn't expect the sessions to produce nice, tidy answers to all of our questions. But we did expect that all of us would emerge a lot more sophisticated in our thinking about what was going on and with better insights about where our companies should be going and what we should be doing.

We have been conducting these seminars every spring for eight years now, and they have turned out to be nicely unpredictable affairs. Each year, we try to focus discussion on the issues that we (with the aid of countless suggestions from participants and prospective speakers) think are the key issues facing the industry. Each year, the event takes on a life and a character of its own. There are always some new insights or new terminology (*e.g.*, WYSIWYG) that strikes a chord and is incorporated into industry lore by the end of the week.

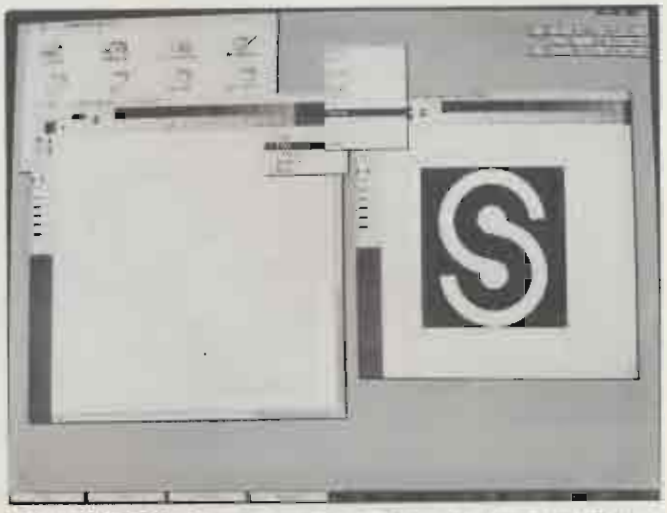
Part of the fun of Seminars week is taking stock of where the industry is and where it thinks it is headed. Thus far, the consensus on "where we are headed" has been redefined—or at least refined—every year. This year was no exception.

1988: a breather

In many ways, this year's event represented a breather in the ongoing discussions of pagination, integration, database management, etc. As readers of this report are surely aware, we think that the technological foundation upon which publishing systems are built is now shifting dramatically with the merging of electronic publishing into the mainstream computer industry—what we have called the "fourth wave" of publishing systems. *(See Vol. 17, No. 9, for a thorough discussion of the "fourth wave" concept.)*

These changes redefine the entire ball game, both in terms of underlying technology and in terms of how systems will be built, who will build them and how they will be sold and supported. And when people start changing the fundamental rules of the game, it is time to call "time out," try to figure out what the new rules are going to be, then proceed with the game. This year's seminar was such a "time out."

The fourth wave. The big news was that *almost* everyone agreed with the "fourth wave" premise! This was a dramatic change from just a year ago. We had not really expected the old orthodoxy to die with so little fuss.



SII on standard platform. *As part of the equipment exhibition, System Integrators showed its display ad software running on a '386 PC—not necessarily its final choice as a platform, but a demonstration of direction. Here the system's graphics capabilities are being used to create the SII logo. (See details about the SII demonstration later in this report.)*

As recently as last year, many vendors were still taking great pains to define the market in a fashion that drew a clear distinction between the mass desktop publishing market and the more robust, more specialized publishing requirements that they viewed themselves as serving. This year, virtually everyone acknowledged that this had been an exercise in self-delusion. Like it or not, both users and vendors admit that the publishing market is moving into the computer mainstream and that "desktop" and "professional" products belong to the same family.

Acceptance of the new direction extended even into the high-end text and digital color system vendors:

- **Scitex** embraced the concept (at least in theory), and followed up with links between the Quark Xpress desktop publishing program and Scitex color systems—as well as with a dramatic decision to support PostScript and Display PostScript in its systems.
- **Crosfield** announced that it was launching development of a new-generation system based on computer industry standards, including a new Unix workstation developed by Crosfield for applications like color image processing.
- **System Integrators** announced that it was making a dramatic change in its corporate direction, away from its own Ring operating system and proprietary hardware, and toward industry-standard hardware and operating environments.
- **Linotype** moved squarely into the computer mainstream with its new PC-based Series 2000 and a new focus for the company.
- **Xyvision**, the last of the tech-doc vendors to use proprietary workstations, announced that it is developing a high-end version of its product that will run on a standard workstation.

[Index for this section is on page 6.]

One by one, virtually all of the major traditional suppliers, from Compugraphic to Information International, affirmed their commitment to the "fourth wave" concept. The only two remaining holdouts were Atex and Hell, both of which (reluctantly) admitted that they, too, are moving in this direction, but are reluctant to make public commitments about how they will go about making the transition.

What now?

Yet for all the agreement about the fourth-wave premise, there is still remarkably little insight as to what to do about it. Everyone agrees that the changes ahead for both user and vendor will be monumental. However, even after three years of trying, we are still finding it difficult to get many people to articulate what users and vendors should be doing to adjust to the change. Some users and some vendors have obviously given this a lot of thought and have worked out their own strategy. Some have given it a lot of thought but are still confused. Some would apparently rather not think about it.

There is no question but that the prospect of the fourth-wave system environment is daunting for both users and vendors. For the most part, users are genuinely unsure of how they are going to get the solutions they want. Most of the Seminars attendees don't believe that they will be able to meet all of their needs with mass-market products alone. They are uncertain who will provide training, support, system integration, large-scale database facilities and the like.

Vendors, for their part, are often unsure of how they can stay in business in a world in which their real contribution is in "soft" items: application expertise, specialized application software and hardware, system integration, support and training—things that have previously been bundled with proprietary hardware. By and large, they now know they will not stay in business if they do not change, but they are not certain they know how to make a go of things under the new rules.

The encouraging trend here (and a big change from last year) is that users are saying very clearly that they *do* value system integration and support, and that they are willing to pay for them. We have the impression that many users have been to the brink of do-it-yourself system integration and do not like what they see when they look into the abyss. They would like a comforting hand to hold.

Mainstream chaos. The situation is significantly compounded by the fact that both users and vendors are beginning to realize that they are joining the computer mainstream just when the computer industry is most chaotic. The computer industry itself is going through a dramatic shift to new-generation systems. It is hard for anyone to know where to place his bets.

Getting your bearings

Newspapers & magazines. The attendees who were hit hardest by all of this were those from newspapers and magazines. The newspaper industry, in particular, was the one that drove the "third-wave" system developments in the 1970s. Its situation is now complicated by the burden of the enormous installed base of aging, proprietary systems that suddenly don't seem to have a future.

This leaves newspapers and magazines with a quandary as to what direction to go to solve the problems they've been pursuing for the past eight years. As one attendee commented, "In the past, newspapers and magazines drove the technological breakthroughs for the industry, but the issues they were talking about eight years ago (pagination, direct-to-plate, vendors' viability) are still unresolved." Until users can sort out fourth-wave platform issues, further discussion of the basic issues of pagination, etc., is meaningless.

Coming to grips with the fourth-wave platform issues is complicated by the fact that a sizable number of publishing system users do not appear to have been paying much attention to what has been happening in the computer industry. (They have not had to bother because their solutions have been provided for them by their system vendor.) Now, they suddenly have to catch up and there is a lot to learn. Frankly, we underestimated just how much of a problem this will be.

Some of the publishing stalwarts were overwhelmed by the computer discussions in the first two-day seminar. Feedback from these people convinced us that we need to provide more tutorial information about the computer industry in this publication. Stay tuned; we will get to it just as soon as we can.

We will be doing this because we believe that the day has come when publishing professionals—just like those in any other computer application—are going to have to pay attention to what is happening in the computer industry. When the entire technological base of your application rests on what is happening in the mainstream of the computer industry, you are going to have to understand what is happening in that industry so you can make judgments about where it is going. We will do our part to help that process along.

Newcomers. At the other end of the spectrum, new breeds of vendors and users are appearing on the scene, each coming at the graphic arts from a computer background (either due to the necessity to master publishing techniques for in-house use or riding the wave of interest in incorporating graphic arts capabilities such as fonts and h&j algorithms into mainstream, nonpublishing applications). These people understand the computer industry side of the equation, but have missed out on much of the discussion that has been taking place in the publishing industry over the past ten or fifteen years. Issues that publishing professionals take for granted are new to many of these people.

The challenge will be to establish a dialog between the two groups. Fortunately, there is a strong will to do this, and an increasing number of people can serve as bridges: publishing people who are becoming very knowledgeable about computers; computer people who are becoming knowledgeable about publishing.

Desktop publishers grow up. And then there are the desktop publishers, who are just now mastering the tools available to them, yet wanting to tap the capabilities, such as high-quality color processing, that were previously beyond reach on the high end, but that suddenly seem within reach due to the convergence of the high- and low-end suppliers via standard platforms, operating systems, page-description languages, interface protocols, etc. To this group the week was one long E-ticket to Disneyland, with both the technology and application discussions being eye openers.

The challenges

In general, the problems people worry about when confronting the new environment fall into three categories:

1. *How do you make the transition to new-generation systems?* This is a nasty dilemma for users and vendors who have a substantial investment in sophisticated third-wave systems. Even though it is now a lot easier to develop new systems based on standard hardware and software, it will take both time and effort to get large, fourth-wave systems up to the level of functionality of the mature third-wave products.

   Equally important, even if the fourth-wave system can do the job today, how do you migrate from one system to another in a reasonably graceful fashion?
2. *To whom do you hitch your star?* Joining the mainstream is not simple—especially right now when the mainstream itself is in a state of turmoil. You have to figure out what is going on and place your bets on *which* mainstream will be the best to take you where you want to go. What is going to happen with OS/2? Macintosh? Unix? Network protocols, interface standards, data exchange standards, and so forth? You have to understand these things and make judgments about them—a daunting prospect even for people who are deeply immersed in the computer industry.
3. *Who will assemble, sell and support fourth-wave systems?* This is something that has been troubling us for three or four years. Over that time, we have had great difficulty getting seminar speakers to articulate well-reasoned answers to this question—largely, we think, because few people had yet sorted out their thoughts.

   This year we heard some carefully thought-out answers. Some examples:

- John Warnock of Adobe Systems has concluded that the desktop programs are becoming too sophisticated to be sold through computer dealers. Yet there are no other low-cost, mass-market channels available. The answer, he feels, is careful attention to the user interface to keep programs suitable for mass-market distribution even as they become more sophisticated.
- Several users (including Boeing, Value Line and R.R. Donnelley) decided that their needs are specialized enough that no vendor will supply the system they need. They have therefore assembled their own. Donnelley has now made the complete transition and is becoming a system supplier to its own customers.
- Even for users who want to buy complete systems, Darryl Tjaden of CText sees a transition: In the near term, system vendors will supply application software, system integration, installation and training. Users will buy their own hardware. Longer term, the user will take over more of the functions of the system integrator. The application system vendor will supply application-specific software to run on a system selected and installed by the user.

Scitex signs with Adobe. *John Warnock of Adobe listens as Scitex's Efi Arazi speaks at a press conference at the Seminars.*

We will discuss these and other points of view in more detail in our next issue with the second half of our seminar coverage.

The road ahead

All in all, we appear to be at a remarkable juncture in the evolution of the industry. In the end, the most important result of this year's seminar may have been to get everyone together to confirm what we all have sensed, and to shape the consensus about what is happening.

Last year's seminar was more traumatic. We were on the brink of a change, arguing about whether or not it was truly just around the corner. One year later, that change has clearly arrived. This year, a far larger number of people were struggling to come to grips with the less familiar, less cozy, but far less confining world ahead. The task now is to figure how to turn all of the possibilities to our advantage.

Contents of this issue

This year's Seminars were organized as three back-to-back sessions:

- A two-day seminar on new technologies for publishing.
- Two concurrent one-day sessions, one for newspapers and magazines, the other for producers of long documents.
- A two-day seminar on the impact of the changes in technology on users and vendors.

In this issue we will cover the discussions of the first two days. In our next issue, we will report on highlights of the systems demonstrated to seminar attendees. We will continue with the balance of the seminar sessions in the issue following that one (our third issue in three weeks).

Index to Coverage of Seybold Seminars '88 Speakers

Key: ***DP = Seybold Report on Desktop Publishing, Vol. 2, No. 8.***
PS# = Seybold Report on Publishing Systems, Vol. 17, No. #.

Announcements and Product Introductions. A list of key announcements and product introductions, both in the seminar sessions and in the equipment demonstration area, appears on pages 31–32.

New Technologies: Integrating Environments

The first two-day seminar was devoted to discussion of new technologies that will affect the development of the next generation of publishing systems. This year, that meant heavy emphasis on the mainstream computing environments upon which new publishing systems will be based.

Other "hot" topics this year included: a status review of PostScript and Display PostScript, new work being done in PC programs for monochrome graphics, the turmoil erupting in digital color systems, new technologies for electronic (paperless) publishing, a review of standards for data interchange between systems, and a lively free-for-all for suppliers of digital type fonts.

It's a whole new horse race

The week started with a look at the foundations for Fourth Wave systems: the key mainstream computing environments upon which the next generation of publishing systems will be built.

We think it is quite clear that the computer industry is rapidly converging into a small number of mainstream hardware/software development paths (main streams). The most important decision facing everyone contemplating a new-generation publishing system is which stream to choose. This decision determines much of how you set about building a system. It may also have a significant impact on what your system will look like and how it will be able to grow.

A monumental contest. As we have already mentioned, choosing a system environment is particularly difficult right now because the computer industry is in such a violent state of flux. A handful of leading vendors are right in the middle of a grand slugfest that will probably set the shape and direction of the computer industry for the next twenty years. The stakes are enormous, and underneath the surface politeness and good humor, the principal contenders are playing hardball.

The personal computer/workstation industry is in the midst of a transition from simple standalone MS-DOS PCs to powerful, networked desktop workstations with a graphic user interface, multi-tasking operating system (to run multiple programs concurrently), and sophisticated capabilities to share data, programs and computing resources across the network. In short, the industry is moving rapidly towards systems which are ideally suited for publishing applications.

But this transition period results in great uncertainty and confusion. Everything is somewhat up in the air. No one can yet offer all of the pieces. So, anyone who wants to build a fourth wave publishing system has to weigh the alternatives closely, and then make some bets on who is going to come through with the best environment for his needs.

I've got the horse right here... We decided that the logical place to start was at the beginning: with a hard look at the most important mainstream computer environments. These will be the foundations for the next generation of publishing systems. Because operating environments were themselves the issue being debated, we encouraged the speakers to be somewhat partisan: convince us that our next publishing system should be based on OS/2, Macintosh, or whatever.

The first morning session included presentations by Sun Microsystems (which is driving the emerging Unix standard), Apple Computer and Microsoft (for OS/2), plus 3Com (networking), and DEC and IBM (who present the most important micro-to-mini-to-mainframe approaches). Micrografx (a Microsoft Windows/Presentation Manager developer) filled in more details about the OS/2 Presentation Manager the next day, and Apollo (a pioneer in networked system architectures) presented a vision of the "ideal" distributed processing network for publishing applications.

Heterogeneous environments. Although each speaker had his particular view of the best approach to building systems, all agreed (as did every other speaker over the course of the week) that the practical reality for most users of any size is going to be a *heterogeneous* system environment. That is, it will be the rule rather than the exception for organizations to use different types of mainstream computers for different applications. A lot of effort is now being spent on improving ways to tie these together into reasonably coherent systems.

Two years ago, SII was telling us that you cannot integrate a system by mixing cats and dogs. Now, *even IBM* is saying that mixed computer environments are a fact of life!

A starting point. Having said this, we think it is clear that most people seeking publishing solutions will come to realize that they must start with some operating system/system architecture as a base to build on. Although you accept the fact that you can probably tie different types of systems together, you want everything to be as coherent as possible.

We have also noted over the years that once people have made a choice of environment they tend to defend it with religious fervor. It will be interesting to see if this happens with publishing systems as well.

Opening kickoff: Sun Microsystems

One of the most dramatic developments at the Seminars was the emergence of Unix—and Sun/AT&T in particular—as a first-rank operating system contender in the minds of many seminar attendees. We have been including discussions of Unix and Unix workstations in our seminars and conferences for several years—despite grumbling from some attendees that Unix is not relevant to their needs. (Which is surprising, since virtually all of the so-called "departmental" publishing solutions, and a growing number of "high-end" systems, are built on a Unix operating environment base.)

The picture has now changed significantly. The shift in interest, and the way interest built over the course of the week, was palpable. By the end of the week developers and customers who had earlier told us that they were looking only at the Macintosh and OS/2 told us that they will now look much more seriously at Sun/AT&T Unix.

This is part of a broader trend that has been sweeping the computer industry. Even IBM, which last year relegated its RT Unix workstation to the class of "special market" products, this year promoted it to one of its four major computer platforms.

Catch the wave. The speech by Scott McNealy, president of Sun Microsystems, at the start of the conference helped to ignite this "conversion." Before turning to rapidly-moving developments in the Unix world, McNealy shared his views on the "fourth wave." He described the computer industry as one which has been turned upside down in a matter of months (not years). This has happened along two lines: a move to distributed processing (for publishing, putting the CPU power into the hands of the user), and a move to open architectures and standard platforms.

As a result he sees the buyer taking more control and depending less on the system supplier. He believes the user is looking for the best of two worlds: the advantages of a shared centralized database (and access to the corporate environment), combined with freedom of controlling his own operating environment at the workstation level.

McNealy urged that people concerned with publishing applications think in terms of the new computer system realities: high resolution, big screens (color and gray-scale monitors), 5- to 20-MIPS processing power, multi-tasking operating systems and high-speed networks. These are the sorts of capabilities most publishing applications require. They are also exactly the sort of things that Sun and other mainstream computer vendors are rushing to provide.

Taking on OS/2. Sun dismisses the Apple Macintosh environment as being a single-vendor, "closed" environment. McNealy thinks that the winning computer environments will be those that have the support of an entire development community. He therefore sees Microsoft's OS/2 and Unix as the two key operating systems for the future. OS/2 is handicapped by the fact that it has been crippled to run on the Intel 80286 processor and because it is "locked into the Intel chip architecture."

OS/2 is also an operating system under development. The Presentation Manager graphic user interface is still a promise rather than a reality. There is no software in the field that takes advantage of the potential of OS/2.

This provides a window of opportunity for Sun and others to establish Unix as the principal alternative to OS/2. Unix is a mature multi-tasking operating system. Combined with Ethernet, TCP/IP network protocols, Sun NFS (Network File System) and other standards that have grown up around Unix, it already has more power and sophistication than OS/2 promises. It also has a good-sized body of sophisticated application software, armies of bright programmers who know the operating environment inside out, and the ability to run on a wide variety of computers.

The missing pieces. But Unix has never been cohesive enough to challenge the microcomputer operating systems. There have been different versions of Unix, each with its own partisans. And the fact that Unix runs on so many different computers is very much a mixed blessing: each computer is sufficiently different that even if the same version of Unix were used in all (which it is not), you would still need a slightly different version of a Unix application program for each different Unix computer.

Moreover, there is no consistent user interface for different Unix software packages. A typical Unix system presents a hodgepodge world with different programs—each with its own user interface—running in different windows on the same workstation screen.

Sun/AT&T. In the past year, Sun has moved aggressively to pull Unix together and address these shortcomings to turn it into a "second standard" for desktop operating systems. It wants to make Unix a strong alternative for users and developers migrating upward from MS-DOS to more powerful computer systems.

Sun (champion of the Berkeley version of Unix) joined forces with AT&T (creator of Unix and guardian of the most important rival standard) to create a single "converged" Unix, which has all of the features of both versions. This alliance has since been extended to include AT&T licensing the Sun SPARC processor chip, and AT&T agreeing to purchase a 20% stake in Sun.

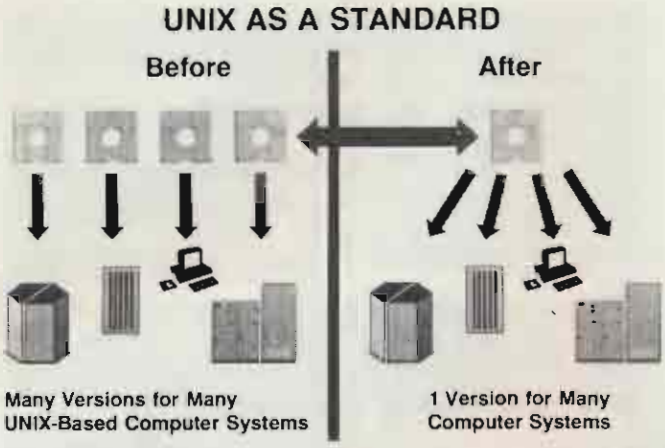
The new version of Unix will include a screen windowing system that combines the industry-standard X Window scheme (developed at MIT) with Sun's own NeWS windowing scheme. In this fashion, the different ways of dealing with windows on the screen will also be "converged".

SPARC. Sun has also turned the Unix world on its ear by developing its own Reduced Instruction Set (RISC) computer chip to run Unix. The SPARC (Scalable Processor Architecture) chip will eventually be used in everything from 7-MIPS (7 times the power of a DEC VAX/780) desktop machines to 100-MIPS supercomputers. Unlike the Intel and Motorola processors used in the PC and Macintosh, the SPARC design is licensed to a number of chip manufacturers, so that companies like Sun that use SPARC can be assured of competitive suppliers striving to improve price and performance.

Sun has also licensed SPARC to other computer and workstation vendors so that they can use the same technology if they so choose. AT&T, Xerox and Areté had already rallied around SPARC before the Seminars. Unisys announced during the Seminars week that it is doing the same.

Binary interface. SPARC provides an opportunity to establish yet another standard. PC and Macintosh software developers can sell their software in shrink-wrapped packages, confident that it will run on any Macintosh or any decent PC or PC clone. You can take a program floppy out of one machine and stick it in another, and the software will run. All have the same Application Binary Interface (ABI).

This usability, combined with huge numbers of compatible machines in the field and established retail sales channels, provides the basis for mass-market PC software. The



Unix binary interface. *Along with a converged version of Unix, Sun is proposing a common Application Binary Interface for each family of central processor (Intel, Motorola, SPARC, etc.). This would guarantee that you could run a program on the same floppy disk in any machine using that ABI, regardless of model or manufacturer.*

wealth of software that results is, in turn, is the major reason to buy the PC or Mac that will run that software.

A converged Unix, a converged operating environment, and a single processor standard would make it possible to package a single vetsion of a Unix program that would run without alteration in a fair number of Unix machines.

Sun itself will support several binary interfaces. It expects to be able to build very inexpensive SPARC computers (see next section). But McNealy also mentioned 80386 processors to be used in its new wotkstation and the Motorola processors used in its older workstations.

The next 90 days. Most of this bappened within seven months prior to the Seminars—a period that McNealy quite rightfully said had turned the computer industry on its ear. But there is a lot more coming.

In a vety unusual move, McNealy looked at the audience and said, "Trnst me, do not make any decisions about an operating environment until you see what is coming in the Sun/Unix environment in the next 90 days."

The developments, he indicated, would include more SPARC licensees. Unisys announced later in the week that it will use the chip; LSI Logic announced the following week that it will manufacture SPARC chips for PC-priced SPARC computers. Snn will buy these chips for low-cost workstations it will build.

These developments also include the new Sun386i workstation described on page 33 of this issue, and the new Sun/AT&T/Xerox Unix user interface (see below).

User interface. The user interface is really the key missing piece in the Unix puzzle. McNealy ptaised the Macintosh for a simple user interface that is consistent across all application programs. Unix desperately needs something equivalent.

At the Seminars, McNealy announced that Sun and AT&T had agreed on a Unix user interface, and that AT&T would be announcing this shortly. The announcement is scheduled for the day this issue is mailed *(see page 33, this issue)*.

Rapid evolution. All of this is happening very quickly. If anything, it is likely to accelerate rather than to slow down. McNealy predicted, for example, a SPARC-based Unix workstation priced to compete with 80386 PCs before software is available to take advantage of the 386, OS/2 and Presentation Manager.

In summary, McNealy reiterated his plea for a completely open system architecture—one that allows the user to control his own destiny in a multi-vendor world. In short, he suggested that everybody "catch the wave" rather then get caught behind it.

Microsoft: Where's the beef?

If there is a loser in all of this, it is the Intel-based PC standard, represented here by Microsoft and a discussion of OS/2. No one is writing off the PC. No one suggested that PCs will not continue to be the dominant desktop computer. But there is no longer a feeling that in the long run the PC is all that matters. There was a clear assumption among Seminars speakers and attendees that, if anything, Macs and Unix workstations are likely to gain a bigger share of the publishing market in coming months at the expense of PCs.

Several factors probably contributed to this. The most obvious is the wait for OS/2 Presentation Manager (the graphical user interface that promises to make PCs as easy to use as the Macintosh) as well as other elements of the OS/2 strategy, such as the LAN Manager and SQL Server. All of this is necessary to make OS/2 a true network operating environment rivaling Unix. And most of it is required for the host of new applications necessary to make upgrading to OS/2 worthwhile.

Apple and Unix vendors have sought to exploit the window of opportunity afforded by the delays in OS/2. But there are other factors at work as well. For one thing, Microsoft has shown relatively little interest in traditional publishing applications—although it has been very active in the word processing market, which is moving upstream into the low end of the publishing marketplace.

By coutrast, first Apple and now Sun have shown a great deal of interest. Part of the problem with being in the mainstream of the computer industry is that graphic arts people do not control the development of technology. If someone else is going to be in the driver's seat, it is nice to think that you are important to them and that they care about your requirements.

The heat is on. Microsoft took a lot of heat during the week. OS/2 was repeatedly attacked for its inability to take advantage of the full 32-bit capabilities of the 80386 (catering instead to what Microsoft president Bill Gates himself terms the "brain-damaged" 80286), and many expressed their doubts as to the real delivery time-frames of the product. Unfortunately the Mictosoft presentation preceded most of these questions and didn't really defuse them before they got started.

Mark Mackaman, the company's product manager for OS/2, made the case for OS/2 as the basis for future publishing systems. Much of what he had to say was based on two fundamental changes that are driving the PC industry: it is moving from a text-oriented interface to a more graphic one

(similar to the Mac), and it is striving to incorporate (via LAN Manager) disrributed architectures.

In brief, OS/2-Presentation Manager will provide a vastly richer environment than does MS-DOS, and one that is much better suited for professional publishing applications.

In response to Sun's plea to wait to see what Unix will have to offer, Mackaman suggested that users could start immediately with the MS-DOS-based Windows 2.0 and Windows/386. These provide a user "look and feel" identical to Presentation Manager and support some OS/2-like features. (They do not, however, have the same program interface as OS/2-Presentation Manager, so Windows software will have to be modified fot OS/2.)

OS/2 design goals. Mackaman has set three goals for OS/2: a rich programming environment for graphical applications, device independence, and a consistent user interface. The programming environment will do all the mundane tasks for rhe programmer—including taking care of worrying about which display screen and output device(s) are being used (monochrome vs color, PostScript printer vs LaserJet, etc.).

Presentation Manager will provide a graphic user interface. However, although Microsoft does provide an Application Styleguide, it is reluctant to specify detailed user interface conventions for use *within* application ptogtams. This means that OS/2 softwate will probably not have the same consistency of user interface from application to application that Macintosh software offers.

PM facilities. Many OS/2-Presentation Manager facilities will be useful for publishing applications. These include data format standards, and format conversion facilities within the operating system which will facilitate easy transfer of data from one application program to another.

Micrografx on PM facilities

OS/2-Presentation Manager facilities of interest for publishing applications were covered in more detail the following day by J. Paul Grayson, president of Micrografx, one of the most sophisticated Windows/Presentation Manager application software developers.

Grayson is very enthusiastic about Presentation Manager. Features of particular importance for publishing include:

- *Advanced text and graphics display via a PostScript-like graphic interface.* Facilities include outline fonts constructed from Bezier curves, font sizing and rotation, a complete set of vector and graphics primitives, and true WYSIWYG display. Microsoft's Mackaman claims that these facilities are "at least equivalent to Display PostScript." Several times in his presentation, Mackaman slipped into teferting to the Presentation Manager display facilities as "PostScript." Hmm. . .
- *Device independence.* The programmer will write his software to talk to the PostScript-like Presentation Manager GPI graphic interface. "Device drivers" for each device translate rhese commands into those required for the particular screen or particulat output device. Although Mictosoft will provide a starter library of device drivers, it expects that manufacturets of screens and output devices will begin to provide the appropriate PM device driver when they sell their device. The user can then insrall the device driver and expect all of his old Presentation Manager software to run the new device.
- *True multi-tasking.* Big-system capabilities to run multiple programs concurrently.
- *Networking.* Built-in facilities include shared file servers, as well as provisions that allow application programs to run tasks in othet processors on the network.
- *Interprocess communication.* Programs can be linked to share data.
- *Integrated SQL relational database tools.* Provisions for accessing data using the SQL database query language can be built into OS/2. This is particularly important for database publishing and classified ad applications.

The only choice. Grayson contends that OS/2 is *the* key operating system for the future, partially because it has the weight of IBM and Microsoft behind it and partially because it represents a totally new development environment. Further, OS/2 will not be static. It will be adopted to support the 80486 and other new Intel processors, and IBM will most likely add further extensions to the base operating system.

Apple, he says, must now struggle to add OS/2-like capabilities to the Mac operating system while still maintaining compatibility with the existing Mac operating environment. Besides, he contends, the QuickDraw language used to display text and graphics on the Macintosh screen is much more limited than Presentation Manager's GPI.

PostScript. As noted above, one of the key facilities of Presentation Manager is that it will spare the application progtam developer from having to cope with the peculiarities of different display screens and different output devices. This approach strikes us as being almost completely opposite that advocated by Adobe Systems. Adobe is striving to make all devices look the same to the application ptogram. Theoretically, the same output file can drive any Adobe PostScript device. The conversion into the specific command sequences required to drive the screen or output device is performed by the PostScript controller that drives that device.

Microsoft, by conttast, has assumed a wotld populated by a wide variety of screens and output devices, each of which may be somewhat different. Insofar as is possible, the *operating system* makes them all look the same to the application software.

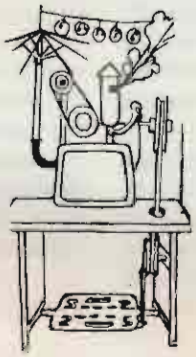
This approach may encourage a proliferation in types of output device and output device command languages. We would not be surprised to see the advent of printers that interpret the Ptesentation Manager native graphic language without the need for a translation into PostScript ot othet standard data fotmat.

Mackaman said that Microsoft has no interest in licensing Display PostScript from Adobe Systems, but that it would offet Display PostScript if that ever becomes a standard.

Waiting for OS/2

All of this is beginning to sound like the classic computer industry ploy: "Just wait, you're going to love it!" But the big question for most people is: "When are we going to have it?" Real soon now, Mackaman said. In fact, "the clock starts

the end of this month [March]." Specifications have been available since the third quarter of 1987. Alpha code and documentation is available this quarter to program developers. Because of this, Microsoft contends that programmers can start writing programs based on OS/2 now, hopefully having them ready when the final release of OS/2 is delivered (now scheduled for customer shipment in October 1988). But if this is anything like what we have seen with Windows 2.0, we are not likely to see too many debugged programs for several months after that date.



The result is that most Seminars attendees are being cautious. They assume OS/2 will be good when it finally arrives, but they are not certain exactly when it will be debugged or how much computer horsepower it will really take to run it effectively.

Grayson contends that the caution is excessive. He predicts that the first OS/2-Presentation Manager publishing applications will be on the market early in 1989. He said these will include: Aldus PageMaker, Micrografx Designer, the new Opus word processor-cum-document composition program from Microsoft, Micrografx Graph, Quartz and the Lotus Notes program. He also predicts a big push by Microsoft and IBM to solicit OS/2 software developers at the Comdex/Spring show in Atlanta. Mackaman claimed that there are already 4,000 developers working on OS/2-Presentation Manager programs.

Apple: Protecting its lead

For all of OS/2's promise, we were struck by the increasing recognition among Seminars participants of just how much of a lead Apple has in the realm of user interface. When the Mac first appeared, everyone talked about it in terms of being "user friendly" and "easy to use." We have argued from the beginning that the most important virtue is not so much ease of use as it is *consistency* across applications—a view that was echoed repeatedly over the course of the week.

It is not clear when, if ever, OS/2 and Unix will be able to offer an equivalent consistent user interface across all applications—a situation that Apple will do everything in its power to perpetuate *(see "Apple Sues HP and Microsoft" in The Latest Word)*.

The growing appreciation for the power of the Mac user interface, combined with respect for the Macintosh II as a graphic computer, the wealth of exciting new software being developed for the Mac and Apple's astute moves to tie into larger systems (EtherTalk network support, the DEC alliance, etc.), have moved the Macintosh into a much stronger position as a platform for professional publishing. For the first time, at this year's Seminars virtually all the users talked of the Mac with respect.

Designed with publishing in mind. The Apple presentation was given by Larry Tesler, VP of advance technology. Larry gave us a soft sales pitch, explaining the benefits of the Macintosh, including ease of use, quick installation, lower cost of ownership (less user training and support), and easy, low-cost connectivity via the built-in LocalTalk (AppleTalk) networking.

But the biggest advantage for this audience as far as Tesler is concerned is the fact that the Mac was designed with publishing in mind.

Development work. In response to McNealy's jibes about the Mac being a single-vendor system, Teslet pointed out that operating systems are typically written by one company (Apple, Microsoft, DEC, IBM, etc.), and that Apple has a large development team devoted to constant operating system upgrade and evolution. Further, Apple encourages third parties to extend the Apple operating environment through the development of add-ons and extensions.

He contends that the computer industry is not yet ready for a single, industry-wide operating system, and that Apple will continue to evolve the Macintosh operating system, user interface and graphic environment.

Apple now offers limited multi-tasking (under MultiFinder). It is working on a major upgrade of the operating system that will provide full multi-tasking and more advanced network operating functions. It is also working on extensions to its user interface. It would not commit to any schedule beyond saying that it plans new operating system software releases to appear approximately every six months.

Hypercard is also important for Apple's future, both as a tool for electronic (nonprint) publishing and as a means of improving the user interface and providing better documentation.

Heterogeneous systems. Like the other computer vendors, Apple has endorsed the concept of heterogeneous system environments. The ability to tie a Macintosh into a DEC VAX environment was demonstrated at the Seminars. Appropriately configured Macs can also run MS-DOS software (with an add-in card) and Unix (a properly equipped Macintosh II).

Display PostScript. Tesler admitted that the Macintosh QuickDraw graphic language used for screen display "is not a perfect match" for PostScript. QuickDraw will be evolved to make it a better fit with PostScript. But he discribed Display PostScript as "crude and slow" and not suited for use on smaller, less expensive computers. Moreover, Apple regards display technology as part of its "family jewels" and does not want to place this in someone else's hands.

Networking. Tesler said that Apple recognizes that its twisted-pair LocalTalk (AppleTalk) cabling is "not sufficient for all applications" and indicated that the company will be placing more emphasis on the efficient AppleTalk protocols running on Ethernet cabling (EtherTalk).

"Knowledge Navigator." Tesler concluded the talk with Apple's *Knowledge Navigator* video. This is a vision of how people will use a computer to comunicate in the the not-too-distant future. It is very similar to a tape that Xerox showed to Seminars attendees seven years ago—except that the Xerox tape was an actual demo, the Apple tape is a simulation. In both cases, the computer supported communication, messaging,

mail, and document preparation and review. Apple has added voice recognition, speech synthesis, natural language queries, phone messaging and full motion video—all of which make the computer much sexier and much more like a human assistant. Everything seemed to happen by magic—at the command of a voice instruction or a finger pointing on the page of a document. Lots of fun.

IBM: riding the fourth wave

Ron Eich, director of development for the IBM Publishing Systems Business Unit, was clearly delighted with the fourth-wave analogy. The fourth wave, he says, is bringing hardware and software from the mainstream to publishing applications. IBM had hoped this would happen. But the wave is bigger than anyone expected, and it is moving faster than anyone expected. Each wave of change in graphic arts prepress has been founded in changes in technology. Each wave has engulfed the previous wave. The challenge for people in the industry is to get on top of the wave before it crashes over us.

Eich believes that the "third wave," proprietary hardware, hindered progress. The supplier had the difficult task of developing not only the hardware it needed, but also operating systems, networking schemes and peripheral interfaces, as well as the application code. All this development slowed progress. Now, with standard platforms, suppliers can focus on just the applications—not the platforms. This will help to accelerate the rapid growth of useful application programs, resulting in a bigger and faster-moving wave.

Tying it all together. IBM feels that two other areas are affecting the fourth wave: industry standards and the need for integration of heterogeneous environments. With regard to the latter, IBM said that its goal is to offer publishing solutions on all four of its platforms (PS/2, RT, S/3x and S/370). We noted that this was a significant change from IBM's previous presentations, which had talked about only three mainstream platforms (the RT was relegated to "specialty market" status). Eich agreed that this is so, and that it does represent a change of thinking within IBM.

There are other factors IBM feels will fuel the movement of the fourth wave: the need for color systems, advances in display technology, faster and more reliable character-recognition systems, gray-scale image capture and handling, a much larger range of print options, pressing enhancements and optical media.

According to Eich, some significant changes to our environment will come out of this fourth wave: common user interfaces, common display and print imaging models, typographic libraries, SGML/Text processing language, and connectivity.

Eich emphasized the role standards will play in the emerging heterogeneous system environments. Some of the areas he feels are key to success in the publishing arena are a generic markup language, document interchange standards, font standards, and page/document description standards. (Isn't it interesting to hear IBM talking about multi-vendor heterogeneous systems?)

But IBM also feels users are going to be very concerned with system integration. IBM's added value depends on the integration of several segments of the publishing industry and the ability to offer integrated solutions across a range of standard platforms. This all relates to IBM's SAA system architecture. With this approach, IBM plans to offer common building blocks and links across platforms, use of common interfaces across these platforms, and methods of data exchange via common data streams or transforms. All of this depends on an open architecture and the ability to connect equipment via multiple networks and approaches.

No application is an island. Like DEC, IBM is basing its future on the fact that publishing is not an island by itself. Instead it is an integral part of the office that feeds it (and is fed by it). IBM is committed to building two-way bridges between the office and professional publishing world, which will allow a seamless interchange of documents between the two arenas.

In summary, IBM plans to "ride the fourth wave," tying all the pieces of heterogeneous systems and applications together. And like many of its counterparts, IBM feels standards are making the bridges easier to build.

3Com: The year of the LAN?

Bob Metcalfe, the "father of Ethernet" and chairman of 3Com, looked at the fourth wave from the perspective of someone whose mission in life is to tie different computers together.

Metcalfe gave an entertaining overview of networking and its role in publishing systems, with particular emphasis on building heterogeneous, multi-vendor networked systems. Metcalfe gave three primary reasons why users should want multi-vendor compatibility:

- ***Price:*** Giving the customer the freedom to choose the most cost-effective computers for the job.
- ***Product cycles:*** People buy the best and most appropriate product available when they are ready to purchase.
- ***Customization:*** Users can accommodate highly specialized applications by linking different types of computers.

Invented for publishing. Metcalfe asserted that local area networks were invented at Xerox PARC to support publishing applications. He still views them as being the natural and logical way to build publishing systems.

Metcalfe believes there are 4 key networking standards:

- ***AppleTalk:*** Apple's low-speed, twisted-pair LocalTalk wiring is widely used for inexpensive, low-performance applications. Apple now also supports AppleTalk protocols running over Ethernet cabling (EtherTalk).
- ***Token Ring:*** This is important primarily because it is an IBM standard.
- ***Ethernet:*** The granddaddy workhorse of local area networks. There are now Ethernet implementations that run over twisted-pair phone lines as well as over coaxial cable.
- ***FDDI:*** The new, emerging international standard for very high-speed transmission of data over fiber-optic cables. (Crosfield Electronics had just announced the use of FDDI in its GALAN network for digital color systems—*see Vol. 17, No. 10.*)

Diskless workstations. In 1986 the number of PCs in use finally passed the number of dumb terminals in use. In 1987,

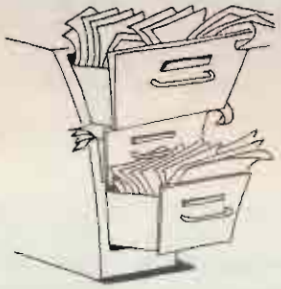
the total computing power (expressed in MIPS) of all IBM personal computers installed exceeded the total computing power of the entire installed base of IBM mainframe computers. By the end of 1987, 10% of all PCs in businesses were attached to local area networks. Metcalfe expects this number to rise significantly in the current year.

But he argues that PCs attached to networks are not really PCs anymore. Increasingly, he contends, PCs will be built specifically to be network workstations. Many of these will be diskless PCs: computer, memory, keyboard and display, but no internal disk, no fan and no noise. Such a workstation allows the user to have compute power on his desk without needing his own disk drive. It also makes it far easier to support central data management and file backup.

To many, this sounds like a step backward to minicomputer systems with smart terminals. But it does work. We have a diskless PC on our 3Com network and have been surprised at the response time in loading programs from the file server over the network—although admittedly we have a lightly loaded network. Performance when fetching from an 80386-based server is almost faster than fetching off a local hard disk. It's just a hard concept to swallow after getting used to our personal file cabinets.

Wide area networks. Publishing applications, Metcalfe believes, are progressing rapidly from concern with multi-user workgroup systems to multi-location activities in which local area networks are tied together via communication links to form transparent wide area networks (WANS).

Distributed processing. It is the notion of a file server as being an electronic file cabinet that we believe to be the central failing of most PC-based networking topologies to date (this notion originated in the original Xerox PARC metaphor of the electronic office built around electronic desktops, file drawers and file cabinets).



Metcalfe described how at the operating system level the sharing of resources among several different operating systems is becoming a requirement. Users are becoming increasingly eager to share computing resources as well as data among MS-DOS machines, the Mac world, Unix and OS/2. Sun's NFS and other Unix networking topologies already provide for distributed processing. OS/2 promises to offer similar facilities. One of the central elements underlying OS/2 LAN Manager is the ability to establish dynamic data links among workstations on a network transparently to the operator.

Operating system integration. Metcalfe sees four dominant operating system environments at the desktop level:

- *Unix*, which he describes as a "portable time-sharing system."
- *DOS*, which he describes as a single-user operating system for small PCs.
- *Macintosh*, which he describes as a single-user operating system with an excellent user interface.
- *OS/2*, which "accomplishes everything" and has the support of many hardware and software developers.

Like it or not, people are going to want all four!

Standards. This brings us to the final point: the emergence of strong, industry-wide system standards. The most important of these is the international Open Systems Interconnect (OSI) standard for exchange of information between systems. Metcalfe believes that 1988 may turn out to be "the year of OSI." The OSI model for open system integration is now becoming reality. And, by the year 2000, Metcalfe believes that all computer industry suppliers will be OSI compatible (with the possible exception of large "Blue" suppliers).

Echoing a theme that attendees would begin to hear in their sleep by the end of the week, Metcalfe stated that 3Com sees the future as tying together heterogeneous systems via OSI, with the development of compatible protocols being the means of doing so.

DEC: Enterprise-wide publishing

As the premier supplier of a common desktop-to-mainframe architecture, with sophisticated ties into other machine environments (remember the "Connect your IBM gear together with a VAX and DECnet" campaign several years back?), DEC has aggressively moved into the compound document publishing market, offering products ranging from PageMaker on a VAXstation to Datalogics on a VAX.

Howard Woolf, manager of DEC's Electronic Publishing Systems group, spoke about "Extended enterprise-wide electronic publishing." There were few surprises as he sketched out DEC's rationale for its "all-in-one" approach.

Woolf invented an acronym last year that summarizes DEC's approach: WYDSIWYN (what you don't see is what you need). Briefly stated, the idea is that most of the costs incutred in publishing are in research, document preparation, revision, review, document management and control, and all of the other elements that make up the entire process. *This* is what users should be focusing on.

Multi-vendor world. Like all of the other vendors, DEC acknowledges the reality of a multi-vendor publishing environment. People are simply not going to throw out all of their existing equipment and start over again.

However, he feels that there is real value to the customer in having a vendor that will take a lead in pulling all of the disparate elements together. Clearly, DEC wants to be such a vendor.

Networking beyond the office. It is evident from Woolf's talk that DEC has extended its view of networking beyond the scope of the office. In addition to multi-department and multi-office networking requirements, DEC now sees the need for integrating the outside world as well. This world includes the clients of the customer, government agencies, sub-contractors, and anyone else who takes part in (or supplies data and information to) the documentation or publishing process.

DDIF. To cope with this need, DEC is formulating a strategy based on standards in the following areas: system architectures, networking (DECnet), output standards, compound

document standards, and a common windowing environment. To support this strategy, DEC is continuing to work on its revisable document interchange format to convert documents into a common format for all systems sharing the data and the use of its DDIF to format and communicate documents among multiple systems and programs.

It is DEC's position that applications are needed on multiple platforms, from desktop PCs to mainframe VAXes. One example of how it plans to support its strategy of tying these together is its plans to integrate Apple into the DEC world. DEC plans to meet with Apple in August to plan the details of this integration. Another example of its strategy in practice is the integration of Interleaf, which will use DEC for storage of files, central printing and sending of files to other devices or locations. It soon plans to do a similar implementation with Aldus *(see Vol. 2, No. 6, of the Report on Desktop Publishing for a more detailed discussion of DEC's integration strategy)*.

Apollo: Future network computing

We had asked Clark Hills, electronic publishing program director for Apollo, to provide us with a strategic overview of where we can expect network computing to go in the future. He didn't disappoint us. According to Hills, Apollo's vision goes beyond the mere linking of machines via a cable, to focus on networked design centers, where multiple machines (and machine architectures) are closely integrated via sophisticated networking technology. Indeed, in his predictions of the future of network computing, Hills spoke about using workstation technology to "unify the complex corporate computing environments" that exist within each organization.

A challenge to PCs. According to Hills, "workstations are what PCs are trying to become." This is a roundabout way of stating that workstation computing—particularly the distributed processing and transparent data sharing that has characterized network computing (and nowhere more elegantly than in Apollo's proprietary Domain network)—is the model of computing that best addresses the needs of workgroups today and tomorrow. Since workstations have been doing this for years, *ipso facto* they will always have a competitive edge over PCs (which are struggling to "reinvent this wheel" from the ground up) for industrial-strength business applications, such as publishing. Therefore, why not start with a workstation, and get the future today?

That, of course, is also Sun's pitch, which it has combined successfully with making adherence to industry standards an issue, to the considerable detriment of Apollo, which in recent years has had to play catch-up with Sun to stay in the black. Apollo has been on the offensive recently, what with the introduction of its "personal supercomputer" *(see Vol. 17, No. 12)* and its recent discovery of industry standards. Still, its implementation of network computing has traditionally been one of the most seamless and elegant (it has a 2,500-node network running at its corporate headquarters as evidence), and therefore a model toward which the industry as a whole should strive.

Delivering the total resources of the network. Hills defined network computing as delivering the "total resources of the network to the user as if it were one system." To this end, we have come full cycle, from early days where computing meant multiple users time-sharing; through the personal computer "revolution," where the axiom was to have a processor for every user; to today, where it is now possible to throw multiple processors, indeed, multiple machine architectures, at a given user's application.

Of course, this revolutionary concept does have a major side benefit (and therefore selling point), in that it enables organizations to utilize their current investments in diverse computing architectures without necessarily having to replace everything at one go.

Workstations for less than $2K. Hills also gave us Apollo's view of where workstation technology will be in 1993. For starters, entry-level prices are predicted to be less than $2,000 list by then, which places them well within the competitive price range of PCs. These "bargain basement" machines will sport 50 MIPS, which means they will allow real-time solid modeling capabilities at every workstation (and for publishing, a PostScript-driven screen display that really hops). Performance servers will approach 150 MIPS in single-processor versions, and 500 MIPS in multiprocessor configurations. Multi-thousand-node networks will be common.

The glue tying these machines together will, of course, be a network computing operating environment, utilizing the standards the industry has embraced to date, including Ethernet, TCP/IP, SNA, LU6.2, Sun's NFS, and Domain distributed data access services; and X.25, T-1, ISO, fiber optic, Etherbridge, MAP/TOP, and DECnet network computing services. Although it is debatable whether Domain will ever achieve the prized "industry-standard" status, Apollo makes a convincing argument that such a service is required to integrate departmental workgroups tightly.

Even though Sun's NFS has achieved industry-standard status by virtue of it being thrust into the public domain (something Apollo is now seeking to do with its value-added), it has had to make tradeoffs (mainly in the area of having to explicitly mount remote volumes) that Apollo's Domain has been able to avoid. Since the name of the game in the future will be, according to Hills, "working to homogenize heterogeneous environments," Apollo is betting that its expertise in this area will eventually pay off.

Whatever one thinks of Apollo's chances against Sun, DEC, IBM, and even Apple, one could do worse than to study Apollo's network computing model as a guidepost to where the computer industry must head.

New Technologies: PostScript & Output Devices

The most important new developments in output and display technology center on issues involving PostScript. The two hottest issues at the moment are Display PostScript (using the PostScript language to drive an interactive display screen), and non-Adobe implementations of PostScript (PostScript "clones").

In addition to these issues, this section also included consideration of Hewlett-Packard's PCL language as an alternative to PostScript for professional publishing applications, a tutorial on raster image processing, a discussion of system architectures for using a common imaging model for screen display and hard-copy output, and a look at high-resolution PostScript output.

Display PostScript

Using PostScript to operate a computer screen has, until recently, been a sort of Holy Grail for computer makers: it would be a wonderful thing to have the same imaging model for all your output devices from screens to typesetters, except that nobody knew how it could actually be done in a practical way. Last September, Steve Jobs announced that his Next computer would do exactly that, and that Adobe Systems would have the technology ready in time for the computer's rollout. It seemed like a big gamble. But many observers' doubts were removed at the January Macworld show, when Adobe ran some canned demonstrations of Display PostScript at reasonable speeds.

In his talk during the Seminar sessions, Chuck Geschke described some of the extensions to the PostScript language that Adobe has devised to accommodate Display PostScript. These address three key issues:

- ***Windows and multi-tasking.*** The interpreter must support multiple execution contexts, in order to allow switching among several windows open on the same screen. Under X-Window, which will use PostScript as its imaging model, those windows might not be controlled by a single program or even a single computer.
- ***Speed.*** To run Display PostScript fast enough to operate a computer display without putting the user to sleep, Adobe had to streamline the operation of the PostScript interpreter. It now supports binary input tokens or prescanned objects, which bypass the normal process of converting ASCII keywords into PostScript internal data. Another refinement is cached paths; this generalizes the process of font caching that PostScript printer controllers have used from the beginning.
- ***Customizing.*** Since Adobe will not be designing most of the software that drives the screen, it has had to modularize its code. Display PostScript will be sold in the form of an object-code kernel plus a well-defined set of interfaces to the operating system, the display device and the window manager software. These interfaces will consist of generic source code that each OEM can customize as needed.

To give attendees an idea of how fast the current version of the technology can run, Adobe showed a film of its demo program running on various hardware platforms. The same demonstrations could also be seen running on those platforms on the show floor. We were impressed. Although it takes the full power of a 32-bit computer to make a display work that fast, it seemed to us that Display PostScript is indeed a viable technology for the future. The same optimizations could certainly be applied to laser printer controllers, allowing the next generation of Adobe PostScript machines to compete on raw speed with some of the faster clones that are coming down the pike.

A *de facto* display standard? The principal issue that remains, of course, is whether Display PostScript will achieve the critical mass necessary to become a *de facto* display standard, just as PostScript has become the *de facto* output PDL standard. That DEC and Next have embraced it is a start. And it got a psychological boost by Scitex's surprise declaration of support for Display and output Color PostScript. (The audience burst into applause at the announcement during the color session.) It is clear that Display PostScript is preferred by publishing professionals, who have pursued true WYSIWYG like Captain Ahab went after Moby Dick.

It is unlikely, however, that Display PostScript will catch fire until at least one of the "big three" operating environment developers adopts it—at least as an alternative to its own proprietary imaging models. Although not ruling out the option of Display PostScript at some future date, both Microsoft and Apple have devised their own display imaging languages (GPI for Presentation Manager, QuickDraw for the Mac). Both companies have described their imaging models as being proprietary value added (or "the family jewels" in Jean-Luis Gassée's words) that they'd be reticent to place in the hands of a third party.

Moreover, both Sun's NeWS windowing environment and Microsoft's GPI are based largely on their own implementations of Display PostScript (with enough differences that Adobe recently refused to let Sun call its implementation *PostScript*). And Apple has stated that it intends to enhance QuickDraw to embody "many of the features" of Display PostScript. Just as the PostScript clone issue in the output world has muddied the waters as to exactly what is "true PostScript compatibility" (according to Adobe, the only true PostScript is Adobe PostScript), the continued parallel developments of PostScript-like imaging languages by the big three could slow down or stall the adoption of Adobe's Display PostScript indefinitely.

This impasse was illustrated by the Q&A following Geschke's talk. Several application developers in the audi-

ence asked how they might take advantage of Display PostScript when developing for the Sun, Apple, and IBM environments. Geschke had no ready answer, suggesting that they develop for the already announced environments or wait for new announcements sometime in the future. When pressed, he would not even hint as to when a software developer's kit would be available.

Given that it is generally pressure from application developers and end users that spurs platform manufacturers to provide a new capability, Adobe's strategy could be viewed as one of fostering a "grass-roots" movement to pressure manufacturers to take out an OEM license for Display PostScript.

On the other hand it is also possible that this demand will subside should developers discover that the platform makers' native imaging environments give them a "good enough" correlation with the output image to make the matter moot, at which point it may no longer matter whether Display PostScript becomes the *de facto* standard.

Display clones? On the exhibit floor, both RIPS (Raster Image Processing Systems) and CPS (Computer Peripheral Sciences) were showing that their clone controllers could run a computer screen. Neither vendor was anywhere near the speed of Adobe's demonstrations.

CPS had an Apollo Domain 3000 cycling through a preconcocted set of PostScript files, displaying each one slowly in turn. CPS was offering visitors the chance to type PostScript commands at the keyboard and watch them be implemented, but we didn't see any takers.

CPS acknowledged that speed is a problem and said it was working on it, from both hardware and software angles. It is already porting the product to a '386 PC and will add a Mac II later. The company's initial product will be a true-font preview screen for its two newspaper system products—Astrotek and PCtype. Later it will add interactive features to support display ad and pagination applications. But sometime in June it expects to have a Display PostScript clone available as an OEM product.

RIPS, which demonstrated a faster implementation than CPS, was very explicit in disclaiming any attempt to clone Adobe's Display PostScript, though it did say that one of its OEM customers would be using the RIPS controller to drive the screen in some future product.

Clone compatibility issues

As PostScript has become accepted as the dominant page description language, dozens of companies have set out to develop their own "clone" implementations of PostScript. They would like to be able to provide output devices that can accept output data files prepared to drive an Adobe PostScript machine.

All of the PostScript clone companies make extravagant claims of "full PostScript compatibility." But what is "PostScript compatibility," and how do you know if you have it?

We asked Frank Lee, president of Desktop Publishing Solutions, to address this issue. Frank's company has set out to test clones for compatibility, and he has been deeply immersed in the problem. We asked him to share his experiences and insights to date.

What is compatible? Stating that the application testing of clones (as a measure of compatibility) is a tisky business due to the language's "robustness," Lee went on to describe his company's quest to define a true measure of a clone's compatibility. He suggested a classification with four levels of PostScript compatibility, each fraught with *caveats* due to the gap between published specifications as found in the Addison-Wesley "red book" (Adobe's *PostScript Language Reference Manual*) and Adobe's various implementations of PostScript for various output device manufacturers.

Red Book Level I is the minimum level of functionality that could be considered "PostScript compatible." To achieve this level of compatibility, a given implementation must demonstrate its ability to execute correctly all the applicable PostScript commands as summarized in the red book.

The problem with this level of compatibility is that a given implementation could be 100% compatible with the red book specification but still fail to print jobs correctly because it left out certain commands that the red book describes as being "implementation specific." It also could implement certain operands and other PostScript conventions (such as the available amount of virtual memory) differently from Adobe's own implementations.

Level II therefore provides the same level of Red Book compatibility as defined in level 1, but also matches the undocumented idiosyncrasies of the language, such as the way PostScript converts a floating-point number to *infinity.0* rather than returning an error under certain numeric overflow conditions.

However, level II only represents *functional* compatibility. According to Lee, Adobe has provided a mechanism, the *eexec* verb, which enables it to add new commands to the interpreter, as well as to allow for the encoding and decoding of a font (and perhaps other information as well).

Level III consequently adds support for *eexec*, as well as the ability to decrypt Adobe fonts—which of course plunges one into the legal morass raised by Adobe's various copyright protections. As Lee points out, it's uncertain how long it will be before Adobe is challenged at this level of compatibility, "if ever."

Level IV compatibility would include the PostScript Language Supplements that Adobe publishes for each specific Adobe device-level implementation (*e.g.*, the Atlas controller for the Linotype L300 versus the one for the Varityper VT-600). Lee includes these printer-specific commands in his evaluation of clones. He allows developers to choose a subset or superset of the device-level operators depending on the printer-specific featnres a developer wants to include.

Type fonts. Lee steered well clear of the font issue, but did present a "hypothetical" situation that gave pause to many an attendee: "First we output a job using Adobe fonts on the Adobe interpreter. Next, we attempt the same job on the ABC interpreter using fonts from the XYZ library. Aha! The output doesn't match. The XYZ fonts are incompatible! We then send the job to both interpreters, this time using downloadable fonts from the XYZ library, and observe the results from both interpreters to be identical. Now whose fonts are compatible, Adobe's or XYZ's? *(See "Font free-for-all", page 28, for further discussion of font issues.)*

What to expect. Lee was very cautious about predicting how soon we will see truly compatible PostScript output devices. It is a lot harder than it looks—although certainly not impossible. As you would expect, we are most likely to see machines with level I and level II compatibility, but which support different font libraries (most likely supplied by Bitstream, Compugraphic and others). He would give no bets on when (if ever) we will see level III and level IV machines except those licensed by Adobe itself.

Testing. Although he did not dwell on it, the whole matter of how one tests for PostScript compatibility is also interesting. Lee contends (and we agree) that the usual technique of simply running a bunch of standard jobs through the controller is not sufficient. Very few application programs exercise more than a fraction of PostScript's functionality. A machine might run very well with the first 50 Aldus PageMaker files you try, then hang on the 51st. Even more likely, it might run fine on the programs you are using now, but not support the new program you buy next month or next year.

Although Lee didn't make the commercial, this is why we think rigorous independent testing is so important for users.

PCL

At the moment, the only significant competitor to PostScript as a standard typographic printer output language is the Printer Command Language (PCL) used in Hewlett-Packard's LaserJet printers. At the Desktop Publishing Conference last September, HP announced that it would extend the functionality of PCL to include scalable fonts (using Compugraphic Intellifont technology) and pen-plotter-type raster graphics. Tegra and Compugraphic also announced support for high-resolution output of PCL files.

The extensions to PCL are not ready yet, but we have been intrigued by the argument that PCL is the logical output language for simpler, text-intensive jobs. Tegra, in fact, has made this case fairly strongly.

However, as interesting as Tegra's products are, Tegra is still a relatively small company. If PCL is ever going to gain acceptance as a standard language for output of professional publishing products, it needs the support of an established industry leader. Compugraphic is the obvious champion.

Bill Ohm of CG made the case for PCL, with curious results. Rather than following the Tegra line that PCL is ideally suited for high-volume, text-intensive applications, CG takes the position that PCL is essentially a low-end desktop language. CG's purpose in supporting PCL is to allow CG users to offer the service of providing high-resolution output of PCL files created on personal computers. This is not the kind of approach that will turn PCL into a standard for high-end publishing applications.

Later in the week, **Roger Archibald** of HP took a very similar stance. He positioned PCL as being essentially a low-end output language. People who are serious about publishing, he said, would probably move to PostScript.

Other presentations

There were three other speakers in the same section on PostScript and output devices:

David Spencer, president of data recording systems, gave the next in his ongoing series of tutorials on raster output technology. This one focused on image processing done by a raster image controller to compensate for the peculiarities of the output recording engine. We plan to publish this presentation, along with some material on imaging of halftones, this summer.

Eduardo Martinez, one of the founders of Imagen, and now president of a new company called Folio, surveyed the alternative ways of implementing common raster image output technology for screen display and for printers. The conclusion: if you are building a single workstation and want to drive an output device, it makes sense to use the *same* raster image processing engine to drive both the screen and the output device.

If, however, you have a single output device shared by many users, it may be better to have separate *but completely compatible* controllers in the workstation and in the output device. Even in this case, however, it is best, he contends, to use a common font library that can be shared for all devices.

Walter Hansen, president of Ultre, was supposed to talk about the problems associated with implementing high-resolution PostScript output devices. But he devoted most of his time to presentations for two new PostScript clones, both of which use the Ultre recorder as an output engine.

New Technologies: Monochrome Digital Graphics

Monochrome digital graphics has been a staple of these seminars for many years. The reason for this is obvious: the ability to handle contone and halftone images digitally has been an integral component of every planned total pagination implementation from the beginning. Over the years we have focused on the traditional leaders (or should we say pioneers) in this field, including ImagiTex, ECRM, Camex, Sim-X and others, as well as the new upstarts coming from the micro world.

This year most of the progress in monochrome digital graphic processing has come from the low end, which in large measure has brought some of these implementations to a point where they can for the first time be seriously considered for a number of low- to medium-quality print applications, such as newspapers. Hence, this year our speakers came entirely from the micro field.

Raison d'etre. Until recently, there has been little movement in the area of image enhancement—what is known as the "electronic darkroom" functions. The exception is in scanning, where substantial progress has been made over the years in processing continuous-tone images (and above-1000-dpi line art).

This past year saw the introduction of two Mac-based products—Letraset's Image Studio and Silicon Beach's Digital Darkroom—but we question whether either will have much impact in the professional publishing market. As we see it, little image enhancement is done on monochrome images in the real world—certainly at newspapers, where tight deadlines (and the issue of editorial honesty) preclude tinkering with images.

Consequently, in this session we focused on monochrome graphic applications that we believe could have some applicability in the professional marketplace, such as electronic image capture (Aldus's SnapShot), gray-scale scanning (Datacopy), and new developments in micro-based raster-to-vector conversion (Microtek and T/Maker).

Paul Brainerd, Aldus

Brainerd began his talk with a live demonstration of one approach to image capture that he feels will have a big impact on the industry in the very near future. Using a Canon still digital camera he took several shots of the audience and panel members, including our moderator. The camera stores up to 24 digital pictures on a small magnetic disc. He showed how simple it is to remove the disc, load it directly into a PC (no developing required) and merge it with any page or text file as we are now used to doing with any type of stored graphic or clip-art graphic.

Of course, the photo could have been transmitted via a modem into the system as well. Alternatively, the photo could have been provided via a video camera in real time. But all three cases show the simplicity with which we can now capture low- to medium-resolution images and include them in our documents. (This technology is being actively explored by several newspapers—an application that conceivably could benefit significantly from it.)

SnapShot. Part of the image capture process is done with a video frame grabber and, in Aldus's case, a program called SnapShot (developed by Bioscan and recently acquired by Aldus). The frame grabber is a piece of hardware on a standard PC add-on card. It plugs into any standard PC. The SnapShot program allows the user to view images (or video) on an analog gray-scale monitor before the user selects the image he wants. At this point the user has some image manipulation capabilities such as cropping, sizing and global tonal adjustments. Once he gets the picture he wants the way he wants it, he stores it digitally on his PC. From there it can be treated as any other stored graphic image.

In many ways, this is exactly what Rise Technology has been doing for some time, except that Aldus uses less expensive technology, the Aldus SnapShot image can be imported into any program (including PageMaker) that will accept a TIFF image file, and Aldus does not play any of the Rise tricks to produce simulated continuous-tone pictures on 300- or 400-dpi laser printers.

Pages containing the pictures may be output on any device that Aldus supports, including both laser printers and typesetters. Naturally, the quality will be better on typesetter output than on laser printer output. If the output device can screen halftone images (as PostScript machines can), PageMaker feeds it continuous-tone data and lets it generate its own halftones. If it is driving an output device (such as an HP LaserJet printer) that cannot screen halftones, PageMaker will screen the halftones itself in software before they are output.

Applications. The quality of images printed on a laser printer is pretty much limited by the resolution of the printer. The quality of images printed on a Linotronic typesetter is limited by the quality of the original video image.

For now Paul sees the use of these quick-input, medium-resolution graphics and lower-resolution graphics for basic documents at the low end of the market, such as product assembly instructions, installation manuals, some catalogs, training manuals, and machinery setup documents. He also sees this as a possible approach for higher-quality documents where the low-res image is only used to show position (and eventually would be replaced with a higher-quality image using conventional photographic techniques).

Limitations. As we mentioned earlier, there are some limitations to this technology today. Resolution is limited to the standard IBM monochrome video formats of 640 by 200 or 400 lines, with up to 256 gray scales now possible. The still cameras (such as the one Paul used in the live demo) are still very expensive, in the $2,000-$3,000 range. But Paul predicts some help coming soon. For one, he sees the price for the still cameras dropping to less than $1,000 within the next twelve months. Just prior to the Seminars, new CCD arrays were announced in Japan that have four times the resolution of the current arrays. This could bring video technology to a quality level usable for most documents.

The bottom line on this new capability is that it is still expensive, but rapidly decreasing in price. The benefits are clear: speed, simplicity, convenience, no need for photographic processes or chemicals, and complete control of the entire process.

Jim McNaul, Datacopy

Jim McNaul, vice president of Datacopy, gave a good and complerely non-commercial overview of the challenges of digital processing of monochrome images using deskrop compurers. His emphasis was on images captured using a conventional seanner—although the same principles apply to processing video images as well.

A new generation of desktop scanners now on the market can read 6 ro 8 bits of gray level data (64 to 256 gray levels) at resolutions of 300 sainples per inch or more. This makes them suitable for scanning images for commercial-quality halftones from continuous-rone black-and-white prinrs.

This is a big change from the earlier generation of table-top scanners thar would "dither" images to produce coarse screened images when they scanned pictures. The new generarion of machines can record full, continuous-tone images that then can be sized, adjusred for tonal values, edited, and (providing you have a high-resolution output device) output at screen densities of up to 150-line-screen halftones.

But, there are some problems.

Data storage. The first problem is the perennial one: scanned images take up a lot of data storage. McNaul provided a simple table that illustrates this point.

Gray Scale File Size

	File size (8½" × 11")			
Resolution dpi	1 bit B&W	4 bits 16 levels	6 bits 64 levels	8 bits 256 levels
200	0.5mB	1.9mB	2.8mB	3.7mB
300	1.1mB	4.2mB	6.3mB	8.4mB
400	1.9mB	7.5mB	11.2mB	15.0mB
600	4.2mB	16.8mB	25.2mB	33.7mB

As you can see from this table, a full 8½" x 11" image scanned ar 300 dpi and 256 levels of gray would require over 8 MB of data storage. Data compression can help—sometimes. Standard data line art compression routines (such as rhe CCITT Group III facsiinile routine) are not suitable for continuous-tone data. Routines developed specifically for gray level dara are useful, although they do take computer time. (The solution is faster processors to do the compression/decoinpression.)

Nevertheless, as Bill Givens of ECRM pointed out two days larer *(see Vol.17, No. 16, to be dated April 25)*, the time and costs involved in handling all that data will continue to limit the practical use of digitized picture images for a long time to come.

Image processing. A second major question is where to process scanned iinages. McNaul explored all of the alternatives: image processing in the scanner, a special image processing box which sits between the scanner and the host computer, hardware assist attached to the host computer, image processing by software in the host computer.

There are some clear tradeoffs involved here. The later the image processing is done, the more flexibility remains. But it is often faster, easier and cheaper to do it early in the proeess. This suggests that in a typieal producrion environment there may be mueh to be gained by being able to size an image to mateh the inrended use and intended output resolution at the time of scanning. If you only inrend ro output a 2" × 3" image on a 300-dpi printer, why transfer, store and process image data you will not need?

This strikes us as a very rational approach to the storage problem.

Raster-to-vector conversion

This has been a fascinating topic for years. There is so much benefit to be gained from converring existing hard copy drawings into compact, editable, resolution-independent vector and curve images which can be processed with a computer. Until recently, most of this work has been focussed in the engineering area, where the task is to create geometric shapes that can be manipulated by CAD programs.

Only recently have people begun to address the problems of converting illustration-type line art. The more we talked with people working in the field, the more we became convinced thar the two applications share much in common, but there are also some important differences.

And so, we invited Heidi Roizen, president of T-Maker, and Bob Hsieh, general manager of Microtek, to share the podium.

High-contrast line-art conversion. Roizen assumes that everyone appreciates the benefits of having images and graphics in an optimum vector format as well as the ability to easily deal with this for manipulation and output (such as using PostScript or other similar formats). Many users have been converting bit maps into vector formats by hand for some rime now. An obvious technique would be to scan an image into Adobe Illustraror or Aldus FreeHand and hand trace it, thereby converting it into an Encapsulated PostScript format. But this is time-consuming and tedious work. Hence, T-Maker looked for an automated approach to the process.

T/Maker set two goals for itself—to provide an automatic process that could be run on desktop platforms, and one which is tuned for a specific market (in its case the illustration vs. the CAD market). What they found is that this process is "hard stuff." In fact, Roizen characterized T-Maker's product as being in its infancy.

Automating the designer's expertise. The trick was to automate what a designer might do in manually converting images. Worse yer, several designers will likely produce different vectored images depending on their interpretation of the image or their artistic style. To make the process manageable, T-Maker reduced the number of parameters to something an average user could deal with. Parameters for this type of operation deal with such things as noise level (when is a dot on an image really a dot—or just dirt or insignificant data?), minimum and maximum line segments, and the level of detail of the image (and more). All of these factors affect how the "program" perceives the images.

The good news is that the automatic operation can do in seconds things that would take minutes by hand. Roizen gave an example that takes less than five seconds using the T-Maker program and would have taken more than ten minutes using a manual approach. Obviously the program doesn't produce exactly what the designer wants the fitst time. He has to play with the parameters to produce different results until he is satisfied. For less qualified users, predetermined standard set-up parameters can be used to at least get the process started with reasonable results.

Conversion to CAD formats. On the CAD side, the process is somewhat different. Hsieh gave an overview of the process tbe program has to go through to convert bit maps to vector graphic formats. However, the need is basically the same. Hsieh claims that less than 25% of the drawings being used today are in CAD format. The rest conld be considered bit maps.

To reuse these drawings, modify them, etc., the user has three options today; re-inputting them using a CAD system, manually digitizing them using a digitizing tablet (which is very slow), or scanning them and automatically converting them into a vector format similar to the CAD format. This is becoming the most cost-effective method. However, until now the automatic conversion process has been fairly expensive, available only to the high-end market in the range of $100K and up.

Hsieh feels we are now just around the corner from handling this task for low-end desktop applications—about 80 to 90% of the capabilities we need are already here. The difference in this task from the one Roizen outlined for illustrations is that the CAD world is trying to reduce the scanned bit maps into recognizable objects (circles, squares, lines and arcs). For correcting drawings it is important to obtain these objects, since the object format was used to create them. This is very different from free-form illustration work, where standard primitives are less important and conversion to Bezier curves is vital.

Required processing. Hsieh explained some of the processing needed to achieve the vectored results. He discussed several processes such as thinning (sampling an image down to a skeleton amount), run-length encoding (forming line segments by determining end points rather than making an object out of every point along a line), and recognizing (determining which high-level object—circle, square, etc.—this sequence of line segments might be).

Available products. What's available? Microtek has its own product called CADMate, which sells for under $3000. There are others from companies such as AutoDesk (CAD/Camera) and American Small Business Computer (ScanPro). All of these are tuned to the mechanical drawing applications rather than the illustration area.

These are all early-version products. Hsieh feels there is still plenty of room for improvements, which will come with advances in technological areas such as scanners (lower cost, larger formats, higher resolutions, more gray scales), better text processing and OCR capture, nse of higher-level objects and more speed. But for now Hsieh feels the first pass of these automated programs produces "good enough" results. His process is less interactive than the illustration conversion products and uses the CAD software for clean-up where the batch program was not perfect.

New Technologies: Color

The talk of "standard platforms" (mainstream computers) as the basis for publishing systems has increased steadily at every Seybold Seminar since 1985. Through all of this talk, the general consensus has been that the last bastion of proprietary computer systems to fall would be high-quality digital color systems. Now even this stronghold is being threatened.

There are two key facts relating to digital color systems:

1. Digitized color images require huge amounts of data. Storing, transferring and manipulating this information typically has required at least some special-purpose hardware.
2. Print reproduction of digital color images is an art. There is a lot of hard-won specialized knowledge involved in doing a really good job of color reproduction.

Stable technology. The digital color market has remained remarkably stable over the past half dozen years. Three vendors—Scitex, Hell and Crosfield—have dominated the market. Dainippon Screen has yet to be much of a factor outside its home (Japanese) market. Scitex set the original standards for system functionality. Over time, Crosfield and Hell have bronght their systems to essentially the same level of functionality.

Nontechnical factors, including company image and/or financial situation and currency exchange rates, have played a major role in the digital color market. These two factors have been particularly evident in the up-and-down fortunes of Scitex.

On the technical side, there have been four clear ttends:

1. ***Decentralizing system functions.*** The original Scitex system had a single workstation that was used to perform all color retouching and page make-up functions. In recent years, the trend has been toward using several different workstations, each intended for a different production function.
2. ***Entry-level systems.*** Scitex has been the leader in repackaging entry-level versions geared for sttaightforward pro-

duction jobs. These systems have still been comparatively expensive, and have still used proprietary hardware.

3. ***Integration of text and graphics.*** The color vendors have been working on this for years. They have tried alliances (*e.g.*, Crosfield and III). They have purchased text composition development teams (*e.g.*, Scitex and Royce). They have explored links between sister companies (*e.g.*, Atex and Eikonix). They have embarked on substantial acquisition campaigns to expand into other prepress markets and to tie these closer into color systems (Crosfield with Hastech, CSI and Chelgraph; Hell with Xenotron).

   Thus far, the results have been primarily trade-show demonstrations of concept and feasibility.

4. ***Data exchange.*** Scitex has been the leader here with its Handshake protocol, which allows other systems to exchange page geometry, text and pictures with a Scitex system. It is used primarily to pass data from color design systems and text composition systems to a Scitex system, but it could be used for a variety of purposes.

   A consortium of vendors working under the leadership of Tom Dunn of Dunn Technology has hammered out a DDES standard for exchanging picture data (but not text or page geometry) via mag tape. It is unclear how much further this will go. Dunn ejected Scitex from his Lasers in Graphics conference last September, and Scitex is no longer terribly interested in DDES.

Although the data exchange standards (and Handshake in particular) are playing an increasingly important role, none of this has really had any dramatic impact on the structure of the color prepress market. This year things could change dramatically.

New ferment. There is clear evidence of continued growth in the use of colot and increasing interest in color. Even more rhan this, the once-staid color prepress market is becoming a free-for-all.

There is a lot of color activity at the desktop level. Low-cost computers now display and manipulate full color images. New hard-copy color printers are coming onto the market. Vendors are now introducing color systems based on personal computers!

A half dozen or more new color vendors have suddenly appeared, several of which use special, proprietary hatdware. Others are embracing off-the-shelf components.

The challenge of standard platforms. To give Seminar attendees a broad view of what is happening in the color market, we invited a cross-section of "upstart" companies to talk about their view of color technology and the color market. We then asked the three established market leaders to respond to the challenge.

Alvy Ray Smith, Pixar

Alvy Ray Smith has been involved in high-speed image processing for a number of years. His company, Pixar, builds ultra-high-speed image processing computers that can be attached to standard workstations (*e.g.*, Sun or Macintosh) to provide vast increases in picture processing compute power.

The existing digital color systems typically perform all interactive work using screen-resolution versions of picture data. The changes are recorded. Later, the system goes back and performs the equivalent calculations on the full, high-resolution picture file. Usually this is done as a background batch operation.

Smith contends that it is now possible to perform all the necessary transformations interactively, working directly with the full, high-resolution data.

The need for hardware assistance. Because of the amount of data involved, it is not practical to do this on the native workstation. But it is possible to add a special processor (such as that provided by Pixar), and lots of RAM (properly structured to cope with full-color images) to hold the full, high-resolution image to be manipulated.

Pixar stores 48 bits of color data for each picture pixel and configures its system with 12 to 192 MB of working random-access memory.

Image MIPS. Smith contends that image processing requires special kinds of computational abilities. Raw compute power (typically measured in MIPS) is a poor indicator of performance in handling graphic manipulations. A graphic computer will have very high-speed data buses and multiple parallel processors to work on each color concurrently. Pixar's processors, fot example, are rated at 120 MIPS. Yet they can actually be up to 850 times the speed of a 1-MIPS computer when processing graphics.

Costs. All of this computational power is not inexpensive. A Pixar workstation costs between $29,000 (for a basic 12-MB machine) and $159,000 (for a 192-MB unit). Each of these can be plugged into a standard $5,000–$10,000 workstation.

Since these prices do not include any application software, any input/output devices or any system integration, it is clear that a complete Pixar-based system would be considerably more expensive.

This is the biggest drawback. Are users really willing to pay Pixar-like prices to be able to manipulate high-resolution images in real time? Pixar thinks "yes." Customers can use standard workstations as a base and add hardware that will improve their productivity and the quality of their final product.

Bernard Peuto, Sun Microsystems

Bernard Peuto of Sun Microsystems gave a well-reasoned overview of development trends in standard workstation hardware. Although the primary driving markets are medical imaging, engineering and design, most of what is being developed will be appropriate fot graphic arts applications as well.

Peuto sees the rapid convergence of office, computer graphics and publishing applications. This will result in standard platforms that are incteasingly appropriate even for high-end color prepress operations.

Color is now becoming increasingly affordable, and the compute power of workstations is increasing rapidly.

Drive for color. The need for higher-quality color and for compute power to handle color images is not confined to

graphic arts applications. Peuto stated that applications such as mechanical CAD (MCAD), animation and medical imaging are driving the market. These tasks require both an increased degree of realism in visualizing data and huge volumes of compute power. He contends that, in the future, 8-bit color will be a minimum requirement for workstations; the next level would be unaccelerated 24-bit color.

In general, Peuto sees the computer industry delivering three classes of graphic workstation:

1. Basic workstations with smart frame buffers and a low-cost data bus.
2. Mid-range workstations with faster data buses and integrated graphic accelerators.
3. High-end workstations with 24-bit color and powerful add-in accelerators (*e.g.,* Pixar).

With the increasing power of the workstations on standard platforms and the availability of high-performance accelerators developed for other applications, it is no longer appropriate for graphics companies to develop their own proprietary hardware. Unless they adopt standards they will be left behind. In the future, such companies should develop software solutions for their particular applications, rather than remaining turnkey software and iron suppliers.

Larry Spelhaug, Networked Picture Systems

Larry Spelhaug (who recently left Xerox to become president of Networked Picture Systems) looked at the market from the perspective of a vendor offering a PC-based color system.

Spelhaug views systems like NPS's as bridging the gap between mass-market desktop publishing sytems and expensive proprietary systems. (The NPS system is based on an 80386 PC with 4 MB of RAM and a 32-bit Targa video-capture board, but no performance accelerators.)

He says that systems based on this level of hardware can do everything the large digital color systems can do except rotate images. Image rotation would require a graphic accelerator.

Brian Jordan, Crosfield Electronics

Brian Jordan led off the response of the high-end suppliers with a bombshell announcement: Crosfield agrees that even color prepress systems need to run on mainstream computer platforms. However, since it cannot find a mainstream workstation suitable for high-resolution graphics, it has decided to build one of its own.

Jordan defined a "standard platform" as a workstation supplied by a major manufacturer of workstations, *i.e.,* Sun, Apollo, DEC, Apple, etc. There has been no such thing as a standard environment, even within the Unix world. There are a variety of operating systems, windowing managers, etc.

In this sense Crosfield operates on a number of standard platforms. He cited the VAXstation used for its Wizard products, its networking, VAX computers, and so forth.

Color workstations. Like Alvy Ray Smith, Jordan thinks it would be difficult to use a standard Unix workstation for color prepress operations. One needs a very high-speed data bus for transferring picture information, for processing capabilities optimized for handling picture (as opposed to vector) data, and for accessing high-speed disk drives.

But the key thing is that any new graphic workstation *must adhere to industry standards.* Any hardware is going to become obsolete. The important thing is to write the software to make it as portable as possible. This means working to a common environment, common language, common window manager, common graphics primitives, and common network handling. Standards are available in the forms of Unix, C, NeWS or X Window, CGI, and TCP/IP plus NFS or DECnet.

Crosfield's workstation. Since Crosfield cannot find an off-the-shelf workstation that adheres to standards, yet has the performance it needs for color prepress applications, it has decided that there is room in the workstation market for another vendor: one who would build and supply such a workstation.

Hence, Crosfield announced that it is launching its own new range of graphics workstations. These are structured to make Crosfield a supplier of standard platforms to organizations that need access to high-performance graphics functionality.

The Crosfield workstations will have a high-speed data bus with a 45-MB-per-second speed, high-performance I/O with the ability to bring a high-resolution file to the screen in 3 seconds. They will have a flexible memory architecture, with common memory for the high-resolution and video data.

The workstations will run under Unix, and will support TCP/IP, Sun NFS, SCSI interfacing, Ethernet and Crosfield's new GALAN network. These products will be offered as a standard platform in the public domain, and will be the base for Crosfield's future developments.

There will be three versions. The first will be a monochrome station with a 1280×1024 resolution. The second will be a color version with the same resolution, and the third a further monochrome version with a resolution of 4000×3000, which will give the effect of a 300-dpi screen resolution.

The right move? Later in the Seminar, Bernard Peuto of Sun (who is not exactly a disinterested party) attacked the Crosfield decision. Crosfield, he said, had made the right analysis but had come to the wrong conclusion. Crosfield is not in a position to sell and support workstations in the general workstation market. And without a broad base of support for its product, Crosfield would be left in the familiar position of having to use limited resources to stay competitive with the fast-moving workstation market.

Despite his current affiliation with Sun, we expect that Peuto was speaking from the perspective of a former chief excutive of one of the many companies (ViewTech) that decided early in the 1980s to build its own Unix workstation for text composition because the off-the-shelf units from Sun and Apollo were not yet good enough.

The same thing could happen again here. Like Bedford, Texet, Xyvision, ViewTech and others, Crosfield could be underestimating the rate of progress in the standard workstation market. Crosfield says it has considered this. If it finds

that workstations available from larger vendors make its product obsolete it will be happy to switch to someone else's hardware. The key thing, it says, is to adhere as closely as possible to all relevant workstation standards so that the software can be ported to a new workstation with relatively little effort.

New systems. The new workstations will be used as the basis for new Crosfield color prepress systems. These will not be available immediately, as there is a lot of application software to be written and debugged. When they are available, they will be able to coexist on the same network with the current Crosfield color products.

GALAN. The other area in which Crosfield is trying to push the state of the art in standard computer systems is its new GALAN (Graphic Arts Local Area Network) fiber-optic network. *(See our recent feature on digital color systems, Vol. 17, No. 10, p. 16, and the coverage of Imprinta, Vol. 17, No. 13, pp. 4–5.)*

GALAN is specified as conforming to the new FDDI standards for very high-speed, fiber-optic networks. Because it can't yet buy FDDI chips from commercial sources, Crosfield will put the first GALAN networks into the field equipped with Crosfield network controller chips. Later, when standard units become available, it will swap its own controller for the standard chips at no cost to the customer.

As what may be the first commercial implementation of FDDI, GALAN puts the graphic arts industry back at the forefront of new computer technology. Jordan invited the other color system companies to support GALAN as well. As we will see in a moment, this produced some immediate results.

Handshake. Although Crosfield prefers its own PagePlan data exchange format, when pressed by questions, Jordan announced that Crosfield will support the Scitex Handshake protocol as well.

While Jurgen Klie of Hell spoke later in the session, Efi Arazi of Scitex and Jordan reached an agreement in principle while sitting on the podium. Arazi agreed that Scitex will support GALAN. Jordan agreed that Crosfield will support Handshake. If this is put into practice, it would be a tremendous step toward bringing the color prepress industry together: two of the three major vendors supporting the same network and network protocol and the same data structure for exchanging page and picture information.

In essence, each company would get to set one standard: Scitex would set the standard for page description information, and Crosfield would set the standard that would move graphic arts prepress into international standard FDDI networks.

Crosfield also said that, like Scitex, it will have to support color PostScript input.

Efi Arazi, Scitex

At the start of Efi Arazi's presentation, we announced that Efi had become engaged to a San Francisco plastic surgeon. The wedding took place the day after the Seminar ended. The couple will divide their time between Israel and San Francisco.

Turnaround. Arazi's typically informal presentation focused on two topics. The first was Scitex's financial turnaround. The company had taken a terrible beating in the last couple of years. Part of the problem stemmed from the fact that Scitex introduced a new generation of Intel 80286-based workstations at DRUPA in May 1986. Even though Scitex stated that these systems would not perform all of the functions of the older Hewlett-Packard minicomputer-based systems (which also were repackaged at the same time), customers got the message that Scitex was replacing its system product line. No one wanted to be the last on his block to buy the old hardware, and the new system took about a year longer than expected to turn into a finished product.

Concurrent with this, Scitex's expansion into non-graphic arts markets (principally printed circuit manufacture) was far less successful than expected. The company missed its financial targets and began to post substantial losses. This, in turn, generated a great deal of negative publicity, which further hurt sales.

Arazi says that all of this is now in the past. The last two quarters have been profitable, and the market now appears to understand that Scitex expects to continue to sell both the older HP-based Fyrox systems (which are still the company's main revenue earners) and the new Intel-based Whisper units (which are now starting to generate significant income).

The company's focus is now to simplify the process of color production and make it accessible to a much wider market. The showcase product in this regard is the SmartScanner CCD scanner, which uses artificial intelligence to set up the proper scanning algorithms for each picture.

Fourth wave. Arazi enthusiastically endorsed the "fourth-wave" concept. Scitex, he says, has already adopted many computer industry standards. These include the use of the Intel 80386 processor and SCSI interfacing. The Whisper products currently run under the Intel RMX operating system. Scitex believes that it will be relatively easy to switch to OS/2 and Presentation Manager when they are available. Arazi said that Scitex had run the software on a straight, unassisted 386 PC, but found that the performance was too slow. (A Scitex system contains several proprietary bit-slice graphics processors.)

The bottom line is an endorsement for mainstream computer products in principle, but no specific plan on migration from the new Intel-based Whisper units (which just began being shipped last fall) to more standard hardware.

Adobe and Quark. Arazi repeated the announcement (made at an earlier press conference) that Quark and Scitex had cooperated to exchange data between QuarkXpress and Scitex systems using the Handshake protocol. This is a remarkable bridge between a desktop publishing page composition and layout program and a high-end color prepress system. However, it makes eminent sense. Xpress is well suited for composition of many types of high-quality color pages, and it will only get better. We expect to see even more typographic refinement later this year.

Then Arazi dropped his bombshell: earlier that day Scitex and Adobe had reached an agreement under which Scitex will support input of PostScript files as well as Display PostScript. This was greeted by warm applause.

Jürgen Klie, Hell

Hell, too, is moving toward systems based on standard platforms. Jürgen Klie outlined the new developments in this area, which had been unveiled at Imprinta two weeks before. They included the use of a standard MS-DOS PC as the workstation for the new Chromacom 1000 system and the use of the Microsoft Windows operating environment. Hell also uses standard Siemens M-series computers within its products—which are, for Siemens and Hell, standard platforms.

In terms of other standards, Klie stated that Hell will support PostScript, but for black-and-white only, using an interpreter for the Digiset LS210. It has its own interface protocol with ChromaLink and also supports DDES. (Hell voiced the strongest support for DDES of the three vendors. The other two complained that the data format is inefficient and that it pertains only to pictures, not to any other elements on a page.)

Klie stated that if there were requests to support Handshake, they would be considered on a customer-by-customer basis.

Scitex's 'Handshake Now' meeting

Scitex took the opportunity of the Seybold Seminars to host its first "Handshake Now" meeting. This meeting was designed for companies interested in using or developing interfaces to communicate with Scitex systems via Handshake.

Despite being held on a Sunday morning, the meeting attracted about 70 participants representing 43 companies, about 30 of which were equipment vendors. The meeting was structured into three levels. The first of these consisted of presentations from Scitex concerning the status of Scitex and the tools that the company was making available to assist in the implementation of Handshake. The second was a series of presentations from Handshake users, and the third an open discussion.

We were told that 305 equipment vendors had requested information concerning Handshake. At the time of the Seminars, 42 vendors were offering Handshake support, and another 70 were developing support for it. At that time there were 40 users of Handshake, predominantly in the United States. The 42 vendors currently supporting Handshake included 17 in the U.S., 12 in Enrope, 10 in Japan, and three elsewhere.

Cnrrently Handshake is only available on Scitex Fyrox computers (Hewlett-Packard), and it will be available for Whisper (Intel-based) systems in September 1988. Handshake supports transfer of continuous-tone photographs, line art, page geometry, bit maps and text.

Handshake will accept fully paginated text from front-end composition systems. It converts fonts to line art using Linotype or Bitstream fonts, and will support Autologic ICL, Linotype Cora and Scitex STL codes.

Scitex also positioned Handshake as preferable to DDES as a transfer standard because the latter could handle only continuous-tone pictures, could support only magnetic tape transfers and was very slow. Nevertheless, Scitex is implementing DDES and will make it available shortly.

PC Link. To assist in implementation of Handshake, Scitex has developed a program for the PC called PC Link that enables a PC to simulate the operations of a Scitex system. This will enable developers to connect their systems to PC Link software running on a PC, rather than having to buy time to link up with a Scitex system.

PC Link can be supplied as a complete package or as library routines for the developer to assemble into his own software. It will run under MS-DOS 3.0 and above. A Microsoft C Compiler is also required, as are a serial interface and, ideally, an IEEE interface running at up to 120 KB/second.

User reports. The second part of the meeting started with a presentation from the president of the Scitex User Group in North America. This was followed by users and developers who presented their uses of Handshake.

- PPI uses Handshake in the production of the Federal Computer Link magazine, for which copy is written using a system from Compatihle Systems Engineering and Best-info. This system builds both an Atex spec file aud a Scitex page description file. This enables page layout and text data to be transferred into the Scitex system.
- Imapro has a bi-directional interface into Scitex via GPIB. Scanned images from Scitex are read into the Imapro workstation, which handles the page layout and transfers it back to the Scitex system. The system can also work with magnetic tape transfers. It can pass SCODL data for describing the page into Scitex, and can accept Intergraph CAD data, which it passes to the Scitex system.
- Æesthedes described its work, which is very similar to Imapro's.
- Chemco outlined how it can pass page geometry data from its MaskPrep and ColorPrep systems.

Miles Southworth from the Rochester Institute of Technology made a presentation on the need for interfacing and integration between systems.

Following these presentations was an open discussion covering many of the issues of implementing Handshake.

A standard color model

In a special evening session, Kodak's office product group reported on work it has done on system-independent standards for describing color values. The concept is that color images could be treated in a completely device-independent fashion. It would be up to intelligence built into each device (display screen, laser printer, film recorder, etc.) to render these colors faithfully.

Kodak says that the performance implications of this look reasonable. The need is pressing. Without some sort of standard, it will be exceptionally difficult to get consistent color output from the rapidly proliferating color devices in both the office and graphic arts. We are particularly concerned about the need for office and graphic arts people to work on a common color standard, and would encourage graphic arts people to become involved in this effort while there is still time to contribute.

Kodak is currently supporting ANSI X3V7 as the color standard. This is being considered in draft form by the ISO. Anyone interested in more information should contact Kodak at 800-445-6325, extension 605.

New Technologies: Electronic Publishing

At one point in American history, the railroads were king. When more cost-effective means of transporting goods arose (trucking, air freight), the railroads didn't respond and gradually went into decline. Business school professors like to cite this as an example of not understanding your product, since it is obvious (in hindsight) that the railroads were not in the choo-choo business, but rather in the transportation business.

Early in the 1980s, media industry observers liked to cite this analogy as a way of rationalizing publishers' experiments with alternative means of distributing their product—which has been redefined to be information rather than newsprint. Even the spectacular failures of some of the more ambitious videotex (now a dirty word) services haven't deterred publishers from exploring new means of leveraging their investment in their product. Certainly the wave of mergers and diversifications that have swept through the print media industry, where today it is difficult to find any publisher who isn't part of a multimedia chain or conglomerate, underscores the accuracy of this observation.

At the same time, corporate and in-plant publishers have also been searching for alternatives to print distribution of their products: the technical documentation, price lists, repair manuals, etc., that are increasingly viewed as the key ingredients to gaining an edge over competitors. The reasons for this are clear. It isn't uncommon to find large corporations with 40% of their documentation obsolete at any given point in time. Several in-plant publishers have complained that with the increased complexity of products being manufactured today, as well as the shorter life cycles of the products, it is difficult to ensure that the documentation will be "current," even just after it's published (regardless of what brand of tech-doc publishing system is being employed). And, of course, in-plant and corporate publishers are constantly under the gun to reduce costs and turnaround time wherever possible.

Alternative media. The increase in the amount of information being created and stored in electronic format has generated intense interest in denser, more cost-effective storage technologies. Optical discs in general, and CD-ROM (compact disc—read-only memory) in particular, have long been viewed as the "salvation" for all storage-bound applications. In addition, many publishers have viewed CD-ROM as a means of distributing reference works in a compact and cost-effective electronic format.

Over the last several years, the technical and cost barriers to the introduction of this technology have gradually eroded, thanks in large part to the success of the CD music industry. The only—but dominant—issue that remains today is that of the proverbial chicken and the egg: you can't generate a critical mass of purchasing interest in CD-ROM readers until there is a sufficiently large base of CD-ROM databases and software to choose from; yet this software won't be developed until developers are convinced that there is a sufficiently large base of installed CD-ROM readers to make their investment worthwhile.

Apple's CD-ROM

Perhaps the best measure of the seriousness with which the industry now addresses the CD-ROM business is the series of seminars that two industry giants—Microsoft and Apple—have sponsored on the subject over the past couple of years. We recently published an extensive report on the latest Microsoft CD-ROM conference, which took place the week before the Seybold Seminars, so we won't repeat many of the same basic messages that were conveyed at our seminar.

We did get a glimpse of how Apple intends to generate a critical mass of interest in CD-ROM from Eileen Hart's presentation on the newly announced AppleCD product, which will begin shipments early in May at a pricy $1,199 per unit.

CD-ROM + Hypercard. It has always appeared to us that CD-ROMs and hypermedia are a natural marriage. CD-ROMs give you lots of on-line information storage. What you need is some way to navigate through all that data. Hypertext gives you a way to navigate through data. What it needs is lots of properly structured data available to the user's computer or computer terminal.

Apple has come to the same conclusion. It now has both technologies, and sees a natural marriage between them. Hypercard is an excellent means of accessing screen-sized bites of structured information, but is generally hampered by the lack of disk space for the rather hefty-sized stackware that certain applications demand. AppleCD is a state-of-the-art CD-ROM device, with SCSI interface, support for both High Sierra and Mac HFS data formats, an audio chipset, 64-KB built-in buffer, and AppleShare support—but no convenient means of accessing the vast quantities of data that can be placed on a CD-ROM.

The interesting catalyst is that Apple is shipping Hypercard with every Mac it sells, and selling it to the existing installed base at a nominal charge. This means that Hypercard stackware developers are assured that there is a "critical mass" of retrieval engines out there to warrant developing software for it. Thus, Apple stands a good chance of cracking the chicken-and-egg nut—and finally getting CD-ROM off the ground.

Optical technology survey

Aside from the rather high price of the AppleCD device, the other potential barrier to its success—which, by the way, is shared by all other CD-ROM devices—is the "read-only memory" in its name. A pre-recorded CD-ROM must be manufactured via essentially the same process used to stamp music CDs.

Most of the attendees had seen the write-once, read-many (WORM) optical technologies at other trade shows, such as Comdex. Although these cannot be erased once written, they at least allow the disk to be recorded directly from a computer. Even more tantalizing are the fully erasable optical technologies that will finally begin to arrive at hardware developers this year.

Robert Lindgren of Applied Laser Optical Technology (ALOT) described the salient features of the three alternative optical technologies and participated in a lively debate about the merits of each.

Lindgren contends that the optical medium is attaining the critical mass necessary to become "real." Hardware reliability is increasing, drive prices are falling, and the number of applications appropriate for and being ported to optical technology are increasing. There are more than 100 real applications available in CD-ROM format today, with "many more planned."

ROM vs. WORM. Lindgren says that WORM technology will be mainly used in microfiche replacement work, as well as for pre-mastering CD-ROMs. He also believes that many publishers will use them to hold personal data collections of scanned images, archival files, line art, etc. WORM technology can also be more cost-effective for low-volume applications, since the cost of mastering and duplicating CD-ROMs must be factored in (easily ranging from $3,000-$11,000, according to Hart), but the WORM reader costs more ($6,000–$8,000 versus $1,100–$1,500) than a CD-ROM player. There is also no standard format for WORM drives yet, but ALOT is proposing one along the lines of the CD-ROM (ISO 9660) standard.

One of the unpublicized disadvantages of CD-ROM implementations to date is their relatively slow access times. Lindgren asserts that data accesses typically can take over a second to complete, and some may take as long as 4-5 minutes. Both WORM and erasable optical media promise to provide access times competitive with those of hard disks today.

One box for all media. There was considerable discussion about the desirability of having just one reader/player for all optical disk formats. Many attendees voiced concern about having to populate their already overcrowded desktops with two or three optical readers for the different disk formats. It seems reasonable that a customer should require only one device for all media, since a publisher typically would want to switch freely between "canned" data (CD-ROM) and created data (WORM or erasable).

Lindgren claims that there are no great technical barriers to achieving this goal, but that it would require a coalescing of a variety of economic and market factors to see the light of day (look at how long it has taken to "standardize" on CD-ROM—and there is CDI-ROM threatening to stop CD-ROM dead in its tracks).

Full-text retrieval

Regardless of which medium is used, there is still the problem of accessing the data once databases begin to grow into the hundreds of megabytes range. As we indicated earlier, Apple proposes to use Hypercard as its standard means of accessing data on CD-ROMs. However, the Hypercard paradigm doesn't lend itself to unstructured data, which many potential CD-ROM databases (and most WORM or erasable databases) would contain.

Peter Eddison of Fulcrum Technologies described the function of the Full/Text software it has developed not only for CD-ROM applications, but for most traditional computing environments (MS-DOS, Unix, IBM) as well.

Long-time readers of this report will undoubtedly be familiar with the long and troubled history of full-text, or library, systems in publishing applications. In the past a number of newspapers and corporations attempted to set up private on-line databases of their own, but most have subsequently turned to one of several "on-line service bureaus" both to store and to market their electronic information.

What is not well known is that the full-text retrieval technology of today has made a quantum leap in price/performance. Today it is entirely possible to maintain and access significant full-text databases on a microcomputer or a workstation.

CD-ROM has been instrumental in bringing the storage costs (and real estate) down to manageable, affordable levels. The Fulcrum Full/Text retrieval software has evidently become a *de facto* standard for accessing this data for a number of vendors and information services, including Knight-Ridder's Vu/Text service, which is the granddaddy of all on-line services.

A variety of data structures. Aside from operating on a variety of platforms, Full/Text can now handle a number of data formats, including revisable-form documents, word variants and compound documents with graphics and voice tracks, as well as large and complex documents. The user interface has also improved from the early days where steely-nerved research librarians had to rattle off a line of complex boolean operators in exact syntax to achieve the desired results. Full/Text provides around the search engine a menu shell appropriate for novices, while at the same time allowing power users to specify search strings directly. Search and index performance and storage requirements have been improved significantly, with index overhead down to 28% of total text (as opposed to the 105-250% of the original text required in the past).

Adobe Systems' Liz Bond

In many ways, Adobe is at the opposite end of the spectrum from Xiphias. Adobe builds its fonts to be resolution-independent, marking-engine-independent and alphabet-independent. The PostScript controller built into a PostScript output device is programmed to optimize the character bit map it generates to the particular characteristics of that output device.

Adobe encodes its fonts with its own "hints," which PostScript uses to genetate properly scaled 300- to 600-dpi fonts. These hints are proprietary. Adobe PostScript requires these hints to produce good-looking type in modest resolutions at small sizes. Only Adobe can include these hints in its characters. Therefore, only Adobe fonts will produce good-looking laser prinrer type at text sizes on Adobe PostScript printers.

Adobe's goal is to provide an extensive library of Adobe PostScript fonts. It licenses designs from the original manufacturer. It has also licensed Linotype to convert its library to Adobe PostScript format (complete with hints).

Linotype's Steve Byers

While CG finds itself on the outside of the PostScript world trying to get in, Linotype finds itself on the inside, with the opportunity to exploit its lead. It ultimately expects to have its entire type library in Adobe PostScript form, and it promises that its PostScript fonts will be "interchangeable" with its Laserfonts available on its non-PostScript high-resolution typesetters.

User reactions

In the user panel at the end of the week, Harold Evans of R.R. Donnelley (a committed high-resolution PostScript user) expressed dismay at the posirions taken by most of the vendors in this session. His goal is a univetsal and truly device-independent type font library, and this is not the direction the vendors are going. Only half in jest, he suggested that the typesetter manufacturers (Autologic, Compugraphic, Linotype, etc.) should band together to buy out Adobe Systems and establish a single font format for all font vendors and all output devices.

We do not think that this is a very likely prospect. Rather, it appears that Adobe and Linotype are still in the driver's seat, and everyone else is doing his best to find some way of undercutting (or at least getting some piece of) that position.

Seybold Seminars '88

Facts and figures

Time and Place: March 7 - 11, 1988. After seven years in Los Angeles, the Seminars moved to the Hyatt Regency Hotel in San Francisco this year. Attendees overwhelming requested that we return to San Francisco next year.

Attendees: A total of 1,113 people attended one or more of the seminar sessions. Approximately 40% of the attendees came from vendor companies (although some of these people are actually users); the balance were users, industry analysts and members of the press.

Seminar sessions: "New Technologies": Monday and Tuesday (covered in this issue). "Newspaper and Magazines" and "Long Documents" (concurrent sessions): Wednesday. "An Industry Re-defined": Thursday & Friday. Both the Monday/Tuesday and Thursday/Friday sessions also included concurrent sessions to allow smaller groups and discussion of more specialized topics.

Product demonstrations: Over 90 companies brought products to demonstrate to seminar attendees.

Seybold Seminars '89

Preliminary information

The 1989 Seminars will be held next March at the Hyatt Regency Hotel in San Francisco. Subject to revision as we get closer to the event, we have planned the following changes:

Seminar sessions: A three-day industry/technology session followed by several concurrent, interactive, two-day application-specific sessions.

Equipment demonstrations: We are concerned about seminar demonstrations turning into a trade show. We want this to remain a low-key, new-product showcase. Next year's seminar will be strictly a table-top affair: *vendors may bring no signs and no furniture.*

Craig E. Cline
Peter E. Dyson
Jonathan Seybold
William J. Solimeno
Andrew Tribute

Seybold Seminars Announcements and Product Introductions

Key: DP 8 = Seybold Report on Desktop Publishing, Vol. 2, No. 8. PS# = Seybold Report on Publishing Systems, Vol. 17, No. #. [Where available, page number appears in boldface after the issue #.]

Product announcements

Abaton—the 12/48 Fax Modem; PanelScan and C-Scan software; Mac OCR software. DP 8, **29**

Adobe—"auto-trace" for Illustrator '88. DP 8, **30**

Aldus—support for Digital Equipment's DDIF specification in a future release of PageMaker. DP 8, **30**

AT&T and ***Sun***—agreement on user interface for Unix. DP 8, **20**

Bitstream—Fontware Installation Kit for Windows 2.0; Kanji font for printer manufacturers; fonts for LaserWriter IIsc late in 1988; current availability of entire Bitstream font library in PostScript-compatible Bezier format. DP 8, **27**; PS 14, **28**

Compugraphic—fonts for Apple LaserWriter IIsc. DP 8, **27**

CPS—Astrotek 2000 newspaper system. PS 15

CSE and ***Magna***—interface between CSE page-spec and MagnaType. PS 15

Crosfield—to migrate to standard Unix platforms; to build own Unix graphic workstations. PS 14, **22**

DEC—PageMaker 3.0 to be available worldwide directly from DEC and its authorized distributors. DP 8, **30**

Electronic Publisher—to market UltraSpec, by Publication Technologies. PS 15

Folio—entry into the font business via an OEM product called The Font Department. DP 8, **26**; PS 14, **17**

Microtek—MSF-300A scanner (a flatbed version of the MS-300A) and the TeleScan, a 300-dpi, sheet-feed scanner designed to complement the company's line of PC fax boards and modems. DP 8, **32**

Quark—Xpress to output color page files in Scitex Handshake format for input to Scitex system. DP 8, **34**

Qubix—technical illustration software is now available for standard Sun/3-series workstations; Sun setting up VAR channels for the configuration. PS 15

RIPS—OEM deals with Birmy, Itek. DP 8, **23**

Scitex—to become an Adobe licensee for both output PostScript and Display PostScript. DP 8, **38**

System Integrators—abandoning proprietary Ring network operating system and its proprietary hardware for publishing applications and moving entirely to industry standards. The Ring operation will be spun off as a separate subsidiary. PS 16

Unda—deal with Camex to use Camex's text composition in the Unda workstation. PS 16

Xyvision—to offer a new version of its system running on a standard Unix workstation. PS 16

Product introductions

Ana Tech—tabletop, gray-scale version of its high-resolution CCD scanner. PS 15

Apollo—the Domain/Delphi on-line document retrieval software, plus a Mac-Apollo link called UShare. PS 15

Archetype—support for scanned artwork. PS 15

BellSouth—display-ad pagination program called Samson and structured-document processor, both for Macintosh. PS 15

Birmy Graphics—BirmySetter system, using the RIPS PC-based PostScript controller to drive the UltreSetter. DP 8, **23**

Compugraphic—PC program called Type Director that turns CG outlines into downloadable Hewlett-Packard soft fonts. DP 8, **27**

Computer Peripheral Sciences—its version of Media Net's PostScript clone, named AstroScript, displaying PostScript on screen and outputting to 300-dpi printer. PS 15; DP 8, **24**

Context—Graphic Gateway, SGML editor, ScanEd software and release 6.1 of DOC. PS 15

CSS—transputer-based PC card to emulate PostScript. DP 8, **25**

Dataproducts—400-dpi LZR 1260 PostScript laser printer. PS 15; DP 8, **26**

ECRM—bi-directional conversion program for TIFF files. PS 15

Frame—international version of Frame Maker and version running under X Window. PS 15

Imapro—600-dpi flatbed color scanner for $12,000. PS 15

Insignia Solutions—SoftPC, an MS-DOS emulator that runs on the Macintosh II under MultiFinder. DP 8, **30**

Intergraph—DP/Paint supplements DP/Publisher in creating presentation graphics. PS 15

Interleaf—CALS support; enhancements to TPS 4.0. PS 15

Island Graphics—three OEM products: Headliner developed for Berthold, Giant Paint for Hallmark, and SolarWrite running on Sun Microsystems workstation. PS 15

Itek Graphix—development version of IGX 7000 PS typesetter using a RIPS PostScript controller. DP 8, **24**

Kodak—prototype raster-to-vector conversion software; prototype color version of the 1392 printer. PS 15

LaserMaker—publication layout routines in composition program. PS 15

Lightspeed—demonstrated on-line interface to Scitex; announced Hell version to follow. PS 15

Linotype—first U.S. showing of 5series 2000 MS-DOS-based commercial typesetting system. PS 15

(Continued on next page)

Seybold Seminars Announcements and Product Introductions

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Product introductions (cont.)

Lotus—pre-release Manuscript version 2.0. DP 8, **31**

Mansfield Systems—TechScriber technical publishing program for Macintosh. DP 8, **31**

MegaVision—2K × 2K fast color scanner. PS 15

Metro ImageBase—line of 300-dpi "electronic art" for the PC and Mac. DP 8, **31**

Micrografx—Designer, a PC drawing package. DP 8, **32**

Microtek—MSF-400G, a 256-gray-level graphics scanner; MS-SCSI/G, a SCSI interface box. DP 8, **33**

Mirus—slidemaker for the Macintosh. DP 8, **33**

Moniterm—24" monitor for PCs and Macs. DP 8, **33**

Nissho—PostScript mimeograph-style printer. DP 8, **25**

NPS—improved composition functions for Page Express. PS 15

Omnipage—new graphical user interface; German hyphenation. PS 15

Pixelogic—ProViz video digitizer. DP 8, **33**

Prepress—color scanner for Targa board. PS 15

PS Publishing—dual-window operation on the Mac II. DP 8, **34**

Ricoh—using L500 film recorder in Telepress 35 fax system. PS 15

Rise—photo-printing (bypassing PostScript in printing halftones) on a LaserWriter. PS 15

Scribe—hypermedia publishing tools for Unix workstations. PS 15

Serif—PageStar Windows-based desktop publishing program. DP 8, **35**

Siemens—400-dpi gray-scale scanner. DP 8, **35**

SlideTek—high-res color separations on Ultre recorder. PS 15

SoftQuad—nearly-final version of Author/Editor. PS 15

SoftView—prototype of FormSystem general-purpose forms program for Macintosh. DP 8, **36**

System Integrators—display ad software running on '386 PC, although not necessarily the final choice of a standard platform. PS 15

Tektronix—300-dpi color thermal printer interfaced to Mac II. PS 15

Texet—LiveWrite, a WYSIWYG writing tool that is a subset of the Layout module of the Live Image System, and FreePage, a layout program for unstructured short documents. PS 15

TyRego—software for Xerox's 600-dpi Pro-Imager scanner. DP 8, **37**

URW—developmental version of MacIkarus. PS 15

Xerox—multilingual software for the ViewPoint environment running on a 6085 workstation. PS 15

The Latest Word

Strengthens development/marketing agreement

IBM announces Interleaf on '386 PC

IBM held a briefing in New York April 5 to announce the latest developments in its thrust to capture its share of the publishing market. There were three key developments:

- Interleaf's conquering of yet another hardware platform: the 80386 PC running under MS-DOS. The new software will be an IBM product.
- A new version of Interleaf software running on the RT PC that provides full TPS 4.0 functionality.
- Enhancements to the 4250 II electro-erosion printer, most notably an interface to the PS/2.

In conjunction with the briefing, IBM announced a new product development and marketing agreement between itself and Interleaf that will result in IBM/Interleaf products on a variety of hardware platforms that IBM offers.

IBM Interleaf Publisher. The 80386 version of Interleaf software is comparable in capability and price to the Interleaf Publisher developed for the Macintosh II. That means TPS 3.0 software for a price of $2,495. IBM Interleaf Publisher requires 6 MB of RAM, but otherwise it runs on an unmodified Model 80 PS/2 under MS-DOS. It will use the standard PS/2 two-button mouse, achieving the functionality of Interleaf's third button by pressing both buttons. In most other respects, the user interface will be consistent with that of other Interleaf products.

Like Interleaf Publisher for the Mac, IBM Interleaf Publisher will drive PostScript output devices. A fully configured system, including a monitor and an IBM 4216 Personal Pageprinter (Ricoh engine, six pages per minute), will cost between $18,500 and $25,000.

IBM Interleaf Publisher will be available in May. It will be sold primarily through IBM's direct marketing force and value-added dealer channels, including national distribution dealers that have their own sales forces, and industry remarketers, such as Interleaf itself.

IBM is expected to offer IBM Interleaf Publisher on future 80386 machines as they become available. (IBM stated in February that it expects its entire PC product line to be '386-based machines within 18 months.) Under the details of the new agreement, Interleaf is in no way restricted from marketing its software on 80386 machines through other channels.

IBM Interleaf Publishing Series. The second announcement was new AIX Interleaf software for the RT PC. Called the RT PC Edition, it is "functionally equivalent" to TPS 4.0, which is about to begin being shipped on the Sun platform. RT PC Edition is expected to be ready for customer deliveries on October 1, 1988, for a price of $6,595. A fully configured system with a 4216 printer will sell for about $31,000.

RT PC Edition is a big step up from the earlier RT Publishing Software package, which is a cross between WPS and TPS. It gives IBM a publishing product competitive with Interleaf on Sun. In December, RT Publishing Software was reduced in price to $2,900.

Existing RT users will be able to upgrade to the RT PC Edition software. Upgrading from WPS will cost $6,000; from RT PS will cost $4,625.

Unlike TPS 4.0 for other platforms, the IBM Series software will be enhanced to include software developed specifically for the IBM environment. A good example is a facility for exporting RT PC Edition documents into the BookMaster facility of the S/370 publishing system. Interleaf tags would be converted into the GML tags of BookMaster so that the Interleaf document could be stored on the ProcessMaster database, merged with other BookMaster or DCF documents, or printed directly from the host. (IBM announced in March that support for PostScript in the mainframe publishing environment will be phased in across the different host programs between April and June of this year.) The export facility will be a $500 option.

Although the RT PC remains a technical workstation most often found in the CAD/CAM setting, the AIX version is of strategic importance to IBM because of its commitment to put AIX on a variety of platforms. AIX is scheduled to be available for the Model 80 in September. IBM announced in March that AIX will be made available for its 370 series mainframes in March 1989. Interleaf software available for AIX on all IBM platforms would give customers an application consistent in functionality and user interface across multiple workstations.

Presentation Manager still on the horizon. This announcement signals the difficulties software houses are encountering when they try to port to OS/2, especially with Presentation Manager and IBM's Extended Edition, which trails the base-level OS/2 in development by up to 6 months. IBM is just now shipping Extended Edition to its key software vendors; until now the software has been so fragile that porting a large program like Interleaf hasn't been feasible. In fact, Interleaf found it more feasible to use hardware calls to an 80386 chip to fool MS-DOS than to port to Presentation Manager. This is of great benefit to users who want the Interleaf application now, and to IBM, which is looking for 80386 applications that make a Model 80 a sensible purchase.

Eventually, IBM will want Interleaf to write a version of its software that conforms to the software interfaces, conventions and protocols of SAA—Common User Architecture (CUA), Common Programming Interface (CPI) and Common Communications Support (CCS). (Presentation Manager is part of the CUA.) Such a version will inevitably look somewhat different from the current Interleaf products, but it will provide the consistency IBM is striving to achieve in the long run.

The perspective. The latest IBM deal reaffirms Interleaf's position as the leading supplier of publishing software. It continues a pattern in which IBM has allied itself with the leading software suppliers in a variety of publishing markets. Interleaf's products already span more hardware platforms than any competitor. With the port to the 80386, Interleaf has completed the continuum of file-compatible software from workstation to host, giving it a diversified line of similar products. With the strength of the IBM sales and distribution force behind it, its sales should continue to rise significantly. More importantly, with such a strategic partner, Interleaf can afford to continue its aggressive posture.

Unix as OS/2 competitor

Sun Announces '386 Workstation

SUN MICROSYSTEMS is moving aggressively to exploit the "window of opportunity" opened by the painful transition from MS-DOS to OS/2. Two of the pieces promised by Scott McNealy in his presentation have now come to pass. The first of these was the announcement on April 6 of the Sun386i, an 80386-based Unix computer that can run MS-DOS programs in screen windows under Unix. The second—and even more important—event is scheduled for today, April 11. This is the announcement of a Sun/AT&T/Xerox user interface for Unix.

User interface

We will take the user interface first. As mentioned earlier in this issue, this is the key missing ingredient in Sun's drive to make Unix the third desktop alternative to OS/2 and the Macintosh. Sun and AT&T have made enormous progress in converging the different flavors of Unix into a single operating system, in combining the two major Unix windowing schemes (X Window and Sun NeWS), and in focusing on a small number of program-level binary interfaces for Unix programs. The key missing piece has been a single user interface with Macintosh-like consistency across application programs.

This is what the new Sun/AT&T/Xerox user interface promises to provide. Like OS/2 Presentation Manager, it is not yet a product. However, Sun will provide a simulation of the final product which it expects will allow software developers to begin building products that will make use of the toolkit and user interface of the final offering.

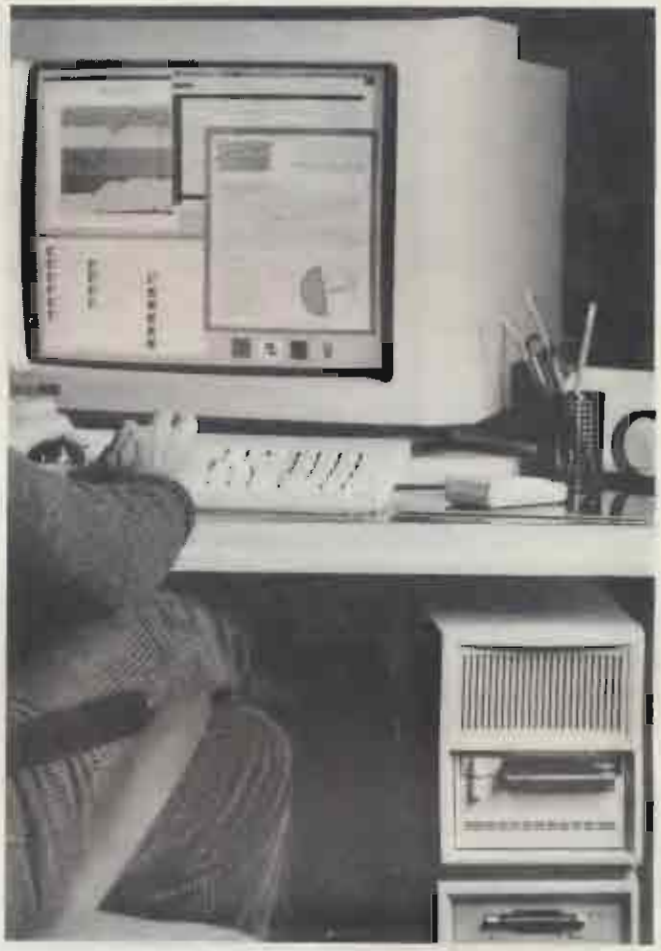
Xerox included. Last month, Apple filed suit against Hewlett-Packard and Microsoft, claiming that they infringed on the Macintosh user interface with Microsoft Windows 2.03 (the current shipping version of Windows) and Hewlett-Packard's New Wave (a Mac-like extension built on top of Windows). *(See Publishing Systems Vol. 17, No. 13, page 35 and Desktop Publishing Vol. 2, No. 8, page 38 for more comment on the Apple suit.)*

In light of this suit, we are particularly intrigued that Sun and AT&T have been able to include Xerox in their user interface consortium. Since everyone acknowledges that the seminal work in this area was done at Xerox PARC in the 1970s, it would be difficult and dangerous for Apple to take offense at the product of a group that includes Xerox. Beyond this, it also appears that Sun (which really has done most of the work on this user interface) has taken pains to avoid being too similar to the Macintosh in a number of areas.

More to come. We will have more on the proposed Unix user interface (including pictures) in an upcoming issue of this Report.

The Sun386i

The new Sun386i is one of the most interesting—and most important—new computers to come along in some time. It provides the MS-DOS user with high performance, a superior operating environment, and a painless bridge to the power and sophistication of the mature networked Unix world. At the same time, it provides the Unix user with good price/performance, first-rate packaging, a user shell that makes Unix easy to use, and access to the huge library of MS-DOS software and PC peripherals—all without any sacrifice in full Unix workstation functionality.



Sun386i Unix/MS-DOS workstation. *The system cabinet is the lower portion of the unit under the desk. The top portion is the optional XP-1 expansion cabinet that accommodates additional disk drives and/or tape drives.*

Note the overlapping windows on the screen. Each window is running a different application program—some Unix, some MS-DOS. The window at the lower left of the screen displays the "Organizer" view of the system file structure.

Hardware

As the name implies, the Sun386i is built around the Intel 80386 processor. There are two models: the *150* (rated at 3 MIPS) uses a 20-MHz processor; the *250* (rated at 5 MIPS) uses a 25-MHz processor, plus high-speed cache memory.

The basic computer—'386 processor, 80387 math coprocessor and input/output peripherals (Ethernet controller, SCSI controller, floppy disk controller, serial and parallel ports)—is packaged onto one large motherboard. Up to four cards containing memory and display frame buffers can be attached to a 32-bit P2 memory bus which runs at the cycle speed of the processor.

In addition, there is a 16-bit PC/AT bus that will accept up to three standard cards and a single-slot, 8-bit PC/XT bus. Since all of the standard peripherals (disk drives, display controllers, mouse, Ethernet interface, serial and parallel ports) are already included, the AT and XT slots can be used for extra peripherals.

Memory. There are two kinds of memory boards: a dynamic RAM board that will accommodate 4 to 8 MB of SIMM memory modules per board, and a more expensive XP (extra performance) memory that will accommodate 4 to 16 MB of SIMM modules on a single card, plus a 25-MHz Intel 82385 controller and 32 KB of high-speed cache memory.

The base Model 150 includes one 4-MB dynamic RAM board. Memory can be expanded to 8 MB on the same card and to 16 MB by adding a second card.

To give it extra performance, the Model 250 comes with an XP card. This can be expanded up to the maximum of 16 MB on the same card. An XP card can also be added to a 150.

Packaging. All of this fits into a compact, floor-standing cabinet, roughly the size of a Compaq 386 chassis. It is a very neat package with everything held together with twist-off connectors. The disk drives are mounted in the top of the cabinet: a 1.44-MB, 3½" floppy drive in the front, a 91-MB or 327-MB SCSI disk in the back. Two additional SCSI drives (or a SCSI drive and a 60-MB tape drive) can be accommodated in an optional EXP-1 expansion box that sits on top of the standard cabinet.

Monitors. There is a wide choice of monitors:

- *Monochrome:* 1152×900 pixels in 15" or 19" sizes.
- *Color (8 bits of color, 256 displayable colors out of a palette of 16.7 million):*
  - 1024×768 pixels, 14".
  - 1152×900 pixels, 16" and 19".

Keyboard and mouse. The key layout pretty much follows the current standard IBM layout, plus an additional 11-key pad on the left that provides single-key commands for frequently used system functions. The mouse is a three-button optical mouse.

Configurations. As mentioned above, there are two basic models:

- *150:* 20-MHz processor, 4 MB of dynamic RAM memory (expandable to 16 MB). Sun rates this machine at 3 MIPS (equivalent to the current Sun-3/60, and twice the claimed performance of a Sun-3/50 or a Macintosh II).
- *250:* 25-MHz processor, 8 MB of XP memory (expandable to 16 MB). Sun rates this machine at 5 MIPS (which positions it neatly between the 150 and 3/60 and the least powerful SPARC machine, the 7-MIPS Sun-4/110).

Pricing. Typical single-unit prices are listed in the box on the facing page. These are not mail-order PCs, but they are competitively priced. A base Sun386i/150 with 4 MB of memory, a 91-MB disk and a 15" monochrome monitor lists for just under $10,000, quantity one. This means that the Sun386i/150 is priced head to head with a comparably equipped (but less powerful) Apple Mac II, IBM PS/2 Model 80, or Compaq 386.

Operating environment

Attractive as it is, the hardware is probably the least interesting aspect to this machine. Sun's real accomplishment is the operating environment. Because it is so much more sophisticated than MS-DOS, Unix has always been regarded as a "user hostile" operating environment for non-technical users. Sun has remedied this with a well-thought-out graphic operating system interface. Beyond this, it has managed to create an essentially seamless interface between Unix and MS-DOS. A user can run a mixture of Unix and MS-DOS programs without much concern about which operating system a particular application program was created for.

Starting up the system. Until now, Unix workstations that have disks have usually included a tape drive as well. The operating system and application software packages are delivered on mag tape. To set up his system, the user has to load the operating system and configure his computer. The Sun386i does not usually include a tape drive. It comes with Unix and the complete Sun operating environment already installed on disk.

Typically Sun workstations are installed as part of a networked system. We presume that at least one node on the network will have a tape drive so that new Unix software releases could be loaded onto this node, then transferred across the net to the other workstations. Loading a new build of Unix from 1.44-MB floppy disks could be a tedious exercise.

There are two levels of operating environments available: a user environment, which includes all of the tools necessary to use the system and run application software, and a developer environment, which includes the additional tools needed by software developers. Even the base-level system includes a lot of program code: the software will occupy a little less than 60 MB of a 91-MB disk, leaving only 35 MB free for application programs and data files—not very much in an environment that encourages multi-megabyte application software.

Sun claims that the user can set up the machine and be doing something useful with it 30 minutes after opening the box. We have no reason to doubt this claim.

SunView. When a user brings up the system, he is confronted with an *application-oriented* view of his computer, rather than the Macintosh-like *data file-oriented* view. Various applications or tasks are arranged as attractive icons on the desktop. Functions available include system management (copy, delete, etc.), file management, and application programs such as electronic mail, database management, editing, opening an MS-DOS window, etc.

For most normal operations, the user never has to know or type Unix commands. If he needs to perform functions that are not supported as SunView functions, he can always open a Unix command window and type commands in the usual fashion.

Organizer. One of the most interesting applications is the file manager. When you open the "Organizer" application, you see a vertical column of icons that represent the data files and/or subdirectories available at the current level of the system directory. If you click on a file (or an application program), you will open that file or program. If you click on a folder (subdirectory), you will open up that folder and the Sun386i will display a vertical array of the items in that subdirectory.

NFS. It is important to emphasize that the Sun386i is a full Sun Unix workstation with all that that implies. This means, for example, that users have full access (subject to security privileges) to files and applications stored anywhere on the Sun

network to which the workstation is attached. Sun's Unix Network File System (NFS) has become an industry standard and is widely supported.

Windows. Each application opens its own window on the screen. Each window is self-contained. What happens inside the window is controlled by the application program, not by the SunView operating environment. As is the custom these days, the windows overlap. The user can size them and move them around in the usual fashion. He selects a window to work on by clicking on the title bar at the top of the window. Windows containing Unix applications can be scrolled using conventional Macintosh-like scroll bars.

MS-DOS windows. The user can launch an MS-DOS session by opening an MS-DOS window, then interacting within the window exactly as he would on a single-user MS-DOS computer. MS-DOS windows may have the full 640-KB address space available under MS-DOS *plus* up to 2 MB additional of Intel/Microsoft EMS 3.2 space. The MS-DOS window is a pixel-for-pixel representation of the PC screen. (The user has a choice of Hercules, CGA or monochrome display modes for each window.) This will obviously look best on a large screen (which has the pixels spread farther apart). A VGA/EGA card that supports one active screen window at a time will cost about $700. A card that will support four concurrent VGA/EGA sessions will cost about $900.

The user cannot scroll an MS-DOS window using the scroll bars. He can resize the window, but the image within the window won't change in size.

Once in an MS-DOS window, the user can act as if each window has its own MS-DOS computer. He can use the normal MS-DOS file commands to view directories and call files. (The system disk will appear as MS-DOS drive "C.") In the MS-DOS directory displays, Unix file names are automatically contracted to be displayed in MS-DOS format.

Scripts. With a simple script, you can also open an MS-DOS window, simply by clicking on an MS-DOS application icon. The script will open the MS-DOS window, then open the application program within it.

Help files. One of the nicest aspects of the SunView environment is extensive support from "help" files. These are accessed in a hypertext-like fashion. They are displayed in either Frame or Interleaf format. If you have purchased Frame or Interleaf software, you can publish these files.

Multi-tasking. Since Unix is a multi-tasking operating system, the user can open a number of MS-DOS and Unix windows and fire up applications in each of them. Within limits, he can also cut and paste data between Unix and MS-DOS applications. To demonstrate the power of this to us, Sun started up Microsoft Flight Simulator in a couple of windows while we were working with the Frame document composition program in another. The Flight Simulator planes flew merrily along in the background while we worked on Frame in the foreground. (Eventually, one of the Flight Simulator planes crashed noisily, so we clicked into the appropriate window to turn it off.)

Application user interfaces

The experience of switching between multiple programs running in different windows dramatically demonstrated why a consistent user interface *within applications* is so important.

Sample Sun386i Pricing

Sun386i/150 (20 MHz, 4 MB of memory)	
Diskless:	
with 19" monochrome monitor	$8,990
With 91-MB disk:	
with 15" monochrome monitor	$9,990
with 19" monochrome monitor	$10,990
with 14" color monitor	$10,990
Sun386i/250 (25 MHz, 8 MB of memory)	
With 91-MB disk:	
with 19" monochrome monitor	$15,990
With 327-MB disk:	
with 19" color monitor	$23,990

SunView provides a graphic user interface at the operating system level. Once you open an application program, the user interface is completely controlled by that application program. Lotus 1-2-3, Word Perfect, Flight Simulator, Frame or whatever runs within the 386i window exactly as it would on its native computer.

The jockey who has mastered 1-2-3 will initially think that this is great. His favorite program runs with no change. But once you start flipping between programs, the dream can turn into a nightmare. You can jump from program to program instantly, but each time you do, you have to reorient yourself to a new user interface. It can be a horrible experience. We think that a lot of people will begin getting confused and mixing up user interface conventions.

The only salvation is a Macintosh-like, consistent user interface *within* each application program. At Seybold Seminars last month, Sun announced that a new, consistent user interface for Unix applications will be announced shortly. This will help a great deal on the Unix side. On the MS-DOS side, it is unlikely that anyone would dare to retrofit the user interface of established programs with huge installed user bases. If you want to run MS-DOS programs in this sort of environment, you are probably going to have to live with the confusion.

What it gives you

All in all, we think that the Sun386i presents a most enticing package. Nicely packaged hardware and excellent performance are the starting points. But the real attraction is the user and systems environment:

- *Built-in Ethernet and a full Sun NFS networking environment.* This is considerably more sophisticated than anything you can get right now from Apple, Microsoft, 3Com or Novell.
- *A mature, multi-tasking operating system.* The usual rule of thumb is that it takes five years to implement and debug a sophisticated operating system. Microsoft is in the third year of development of OS/2. Apple is embarking on the most ambitious of its series of rewrites of the Mac operating system. Unix is well into its second decade.
- *A good messaging/mail system.*
- *Transparent tie-in to existing Unix networks.*
- *An operating system-level graphic user environment.* SunView provides good facilities for coping with the system, managing the screen and launching programs. The operations are simple and help is extensive.
- *Ability to run MS-DOS programs in an environment that is superior to MS-DOS.*
- *Ability to use PC add-in cards and peripherals.*
- *Extended memory and full multi-tasking support for MS-DOS applications.*

- *Ability to run Unix and MS/DOS programs interchangeably without having to master Unix.*
- *Ability to cut and paste between Unix and MS-DOS applications.*

In short, the Sun386i provides a bridge into the mainstream Unix world for MS-DOS users; access to all that MS-DOS application software for Unix users; and a single machine that bridges both environments for those of us who have to deal with both worlds.

The down side. The principal negative considerations are:

- *Not an entry-level computer.* Unix requires at least 4 MB of memory with memory management, an 80-MB disk, and a powerful processor. This is not (yet) an entry-level PC. Even if you can afford a $10,000-plus computer for power users, you may be reluctant to spend that kind of money on every user in your organization.
- *A confusing application environment.* This is not Sun's fault. It is simply trying to give you the ability to run the widest possible range of existing software. However, an integrated multi-tasking operating system environment such as this emphasizes the anarchy in user interface that exists in the MS-DOS and Unix worlds.
- *No OS/2.* The presumption is that you are selecting Unix as your future growth path, rather than OS/2.

Conclusion

We don't think that the Sun386i by itself will start a mass defection to Unix. However, we do think that Sun has made remarkable progress in molding Unix into an increasingly attractive alternative. The vendors that are excluded from the Sun/AT&T alliance are worried that Sun and AT&T are driving the market so forcefully. But to be candid, that is the way things work.

The Unix world has been feeling its way toward a cohesive set of standards for years. Sun and AT&T are trying to apply the final push and are racing to do so before the window of opportunity opened by the transition from MS-DOS to OS/2 closes.

The Sun386i is a clever adjunct to this strategy. It provides an excellent way for Sun to capture the MS-DOS user as he moves up and bring him into the Unix world just as that world is really starting to come together. We have already told Sun we'd like to have some machines. Unfortunately, there is already a sizable waiting list.

Jonathan Seybold

Iris enters computer graphics market

Calcomp to market Iris printer

Iris Graphics and Calcomp announced at the NCGA show in Anaheim that Calcomp will market a CAD/CAM version of the Iris 3024 large-format, ink-jet printer worldwide to the computer graphics market. The agreement makes Calcomp the exclusive distributor of the Iris printer to the CAD/CAM market.

Calcomp expects to have its version ready by the end of 1988. It is developing an integrated controller for the 3024, which will output 24"×24" color hard copy. Traditional D- and E-sized versions will follow. Calcomp will provide training and service of the product.

The deal marks Iris's stepping out of the graphic arts market to widen its customer base. With Calcomp, it has an ally with an established name and dealer network in the CAD/CAM output market. Calcomp, a Lockheed subsidiary, reported revenues in its last fiscal year of $369 million. Calcomp sees a growing need for high-quality color printers in mapping, engineering, scientific, architectural and solid modeling applications.

Also at NCGA, Iris announced software that will enable an AT-compatible PC with a Truevision Targa board and Versatec-compatible green-sheet physical interface to output to an Iris printer. Iris previously had completed a VME-bus driver, which is in use at the General Motors Design Center in Warren, Michigan.

Word processor to SGML converter

Taunton's SGML indexing and retrieval

Taunton Engineering has announced a text retrieval system for SGML-coded long documents. There are two parts to the system: an indexer and a search engine. The software runs in any AT-class computer and can create a database from any ASCII text source. One version of the program, Silversmith/AAP, follows the Association of American Publishers protocol; another, called Silversmith/GS, is for the U.S. Defense Department's CALS Phase I package.

The indexing routines are claimed to be able to invert data at the rate of five megabytes per hour. Up to 16 million unique words can be indexed, and there can be 16 million occurrences of a single word. The user can prepare a list of up to 5,000 words that are not to be indexed, to keep non-significant terms from cluttering up the storage space. Documents are indexed by word, sentence, paragraph and document structure.

Retrieval is by keyword, phrase or document structure. Complex search objects include wildcards, acronyms and multiple keywords connected by boolean operators (AND, OR). Linear browsing is also supported.

Automatic structuring. Taunton has also released an automatic markup program called MarkIt/MarkUp. This is a rule-based system to recognize document structures and insert the appropriate tags. The obvious application is as a front end to the Silversmith indexing system.

Taunton includes several sets of rules to convert:

- Palantir OCR documents to SGML (AAP or DOD);
- WordStar to SGML;
- Ventura and PageMaker to SGML;
- SGML to HP LaserJet II.

The product includes a tutorial on how to generate new rule sets. Taunton claims that constructing rules is no more difficult than running a spreadsheet.

Taunton hastens to point out that MarkIt/MarkUp is not a "conforming" SGML parser. Rather, it is a way to automate the most common (and boring) parts of document conversion; human intervention is still required. Any document that it converts should subsequently be submitted to a verifying parser. The program, which runs on any PC with 128K of memory, is priced at $595.

Contact Taunton Engineering at 505 Middlesex Turnpike, Suite 11, Billerica, MA 01821 or phone (617) 663-3667.

Fax reminder: *Our facsimile numbers are (215) 565-4659 and 565-3261, for news or readers' comments, 24 hours a day.*

Installations

During the past six months, **System Integrators** has signed 15 major contracts valued at more than $32.8 million. (Although we have reported some of these before, many haven't been reported, so we are including them all here as a summary of SII activity.)

International sales were highlighted by an $8.7 million deal with Mail Newspapers of London, which included a complete System/55 with 568 Coyote/22 workstations, and a $1.3 million deal with Reuters Japan, consisting of a System/55 and 55 Coyote/22s. Other international installations were made at TransData and Gruner+Jahr, both in Hamburg, West Germany; The Perth *Western Mail*, Perth, Australia; The Observer Ltd., London; L'Echo de la Bourse, Brussels, Belgium; 24 Heures Societe d'Edition, Lausanne, Switzerland; the Irish Independent, Dublin, Ireland; and Nederlandse Dagbladunie BV (NDU) in The Netherlands.

U.S. contracts included a System/55 and 114 workstations to the News-Journal Co., Wilmington, DE; a System/55 and 116 terminals to The Arkansas *Gazette*, Little Rock, AR; a System 55 with 122 workstations at The Patriot-News Co., Harrisburg, PA; a System/55 and 120 Coyote IV workstations for The Times Herald Printing Co., Dallas, TX; and a System/25 for the Camden *Courier-Post*, Cherry Hill, NJ.

Computer Peripheral Sciences has announced the sale of a PC-based Classad system to the Pennysaver newspaper in Brea, California, a Harte-Hanks property. It will include 10 PCs in the initial testing phase, with the possibility of more later. It will be used to take ads and feed the data to a Hewlett-Packard computer system for production, using proprietary software. The HP computer is used for business functions also, downloading credit data to the Classad system daily.

The Brea property is one of about two dozen papers using the HP system for production and business database maintenance.

Independent Newspapers of Dublin, the largest newspaper group in Ireland, is moving from hot metal to a **Monotype** imagesetting system. The group is installing two Lasercomp Express imagesetters and three LaserProof packages for hard-copy proofing as the final stage in an equipment revamping process that began two years ago. The Monotype equipment will be driven by 130 text input terminals from SII and four Xenotron Admaster make-up terminals. Independent Newspapers, which publishes the broadsheets *Irish Independent* and *Sunday Independent*, the tabloid *Evening Herald*, and other titles, is the last newspaper house of any size in Ireland to switch from hot metal.

The Scott Publishing Company, a division of Amos Press Inc. in Sidney, Ohio, has installed a reference data publishing system from **Datalogics**. It features a DEC VAX-based database, PAGER software for composition and pagination, and WriterStation terminal software that runs on nine AST 286 personal computers and one ITT XTRA. Scott's publications include the *Scott Standard Postage Stamp Catalogue* and the *Scott Stamp Monthly*.

The Detroit *News* has purchased a **Chemco** News-Scan facsimile network system to link the *News'* downtown facility, its Sterling Heights printing plant and its Lansing site. It consists of two News-Scan 1000H high-resolution transmitters and four News-Scan 1500H high-resolution recorders, controlled by Chemco's Master Network Controller. The News-Scan units will be connected through a T-1 phone and microwave link.

Kimberly-Clark Corp., a Fortune 100 company, is installing a **Contex** Design System for computer-based package design.

Xyvision has sold a system valued at about $300,000 to GTE California, a telecommunications company.

People

Ajit Kapoor has been appointed vice president and director of **CAP International**'s Computer Publishing Systems Market Requirements Service. Kapoor was president of A.K. Associates, an electronic imaging consulting firm; before that, he had been vice president and director of electronic publishing market analysis at Dataquest.

Interleaf has named three new vice presidents. **Lawrence Bohn** was promoted from director of product management and planning to vice president of the same. **Michael Mark** was promoted from director of systems integration to vice president of the same. And **Stephen Klann**, formerly director of Western operations, is now vice president of U.S. sales.

William Criego has been appointed vice president of marketing and sales for **Printware**. He had been general manager of corporate marketing for Control Data Corp.

Royal Zenith has named **Dan Shannon** corporate controller. He had been chief financial officer for Future Glass of Plainview, NY.

Royal Zenith Press Division has strengthened its service department by appointing **Dan Quenzer** national service manager, **Chuck Schleifer** eastern regional service manager, **George Wright** southern regional service manager, **Ron Dischley** parts department manager, and **Eugene Thompson** inventory control manager. Quenzer was eastern regional service manager for Rockwell International, Miehle Products; Schleifer was an assistant regional service manager with RZ; Wright has about nine years of mechanical experience with the company; Dischley was RZ's director of technical services; and Thompson has been its parts manager, shipping manager and warehouse manager.

Cybergraphic has announced two management appointments. **Rick Lamb**, formerly a project manager for the company, is now manager of sales administration and support. **Kathy Schaefer**, who has held customer support positions, is the new manager of marketing support.

Raymond Topkis is the new general manager of **Ad/Sat**. He was a group vice president for Drexel Burnham Lambert.

Sun Microsystems has added two members to its board of directors (bringing the total to seven): **William Randolph Hearst III**, the publisher of the San Francisco *Examiner*, and **Bernard Lacroute**, an executive vice president at Sun.

A 1988 Market Study of Technical Documentation Systems

Wending Your Way Through the Land of WYSIWYG

Five years ago, only a handful of companies sold computer systems for producing in-house documentation. Today, the number of companies in the technical documentation market has reached more than two dozen, and there is intense competition among them. As a result, confusion runs rampant among buyers who struggle to wade through an array of products that, on the surface, look increasingly alike.

To help you make sense of the changing technical documentation picture, Seybold Publications has prepared an up-to-date research study of the leading companies in this market.

The study, called **Technical Documentation Systems**, is from the publishers of the electronic prepress industry's "source of record," *The Seybold Report on Publishing Systems*. It features material that originally was presented only to our journal subscribers. Now in book form, and updated to reflect new information, the research study covers in detail the technical documentation systems from the 21 leading suppliers.

Companies Included:

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BESTINFO
COMPUGRAPHIC
CONTEXT
DATALOGICS
DIGITAL EQUIPMENT
DOCUPRO
FRAME TECHNOLOGY
IBM
INTERGRAPH
INTERLEAF
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A 1988 Seybold Study of the technical documentation market, suppliers and products

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437 Coyotes in $6.5 million order

UK's Express picks SII System/55

Express Newspapers plc, publisher of the Daily Express in London, has signed a contract for the purchase of a Tandem-based System/55 system valued at $6.5 million from System Integrators. Installation, scheduled for two phases, will begin on Fleet Street in London this summer with 58 Coyote/22 workstations and software for editorial, classified and ad tracking applications, as well as Xport to link PCs with the system.

Phase two, scheduled for January 1989, will add 379 Coyotes and software for classified zoning, rating, classified pagination, soft typesetting, spelling checking, and the AdMaker display ad make-up software.

Drivers for laser imagers

New Epics software from Varityper

Varityper has announced release 5.0 of Epics software, including support for the 4300 laser imagesetter and VT-600 plain-paper PostScript printer. The new release enables Epics to take advantage of the capabilities of the output engines, including produce round corners, circles and other irregular shapes; select from more than 100 patterns; generate sizes from four to 288 points, and produce global reverses and mirror images. Other additions are formatting of bar codes, automatic fractions, automatic superior and inferior characters, baseline shifting and automatic small caps.

For the WYSIWYG display, two new zoom percentages are offered: 75%, to show an entire 8½" × 11" page, and 87.5%, to show a European A-4 page.

Shipping is scheduled for late in April.

APT's PC program.

APT of UK reports sales

APT Systems of Derby, UK, has reported delivering its system to customers in Sweden, Italy, Greece and the UK. The product was demonstrated in early versions at Type-X and GEC last year. It is aimed at magazines, small newspapers and other layout-driven applications. It provides considerable flexibility to the user in customizing system functions.

APT is located at Sun Alliance House, Curzon St., Derby DE1 1LL, England; phone Derby (0332) 360088.

The Seybold Report on Publishing Systems

Vol. 17, No. 15 ISSN: 0736-7260 April 18, 1988

Mycro-Tek's ad system on a Mac. Mycro-Tek has moved to the Macintosh platform for its display ad system. Called the AdWriter, it was unveiled at the America East newspaper show in Hershey, PA. It supports most Macintosh user interface conventions and adds capabilities developed by Mycro-Tek over the years for its other ad systems. **Page 35**

Art-X in New York. Although small in size, the Art-X show run by the Type-X organizers brought the designers and artists to New York for three days. We thought the hit of the show was a color copier from Canon (built from a 400-dpi scanner and color laser printer), but we also report on Du Pont Design Technologies, Letraset and SlideTek. **Page 39**

Sun announces 386i workstation. Although in our last issue we previewed the announcement by Sun Microsystems of its workstation based on the 80386 chip, we have some more notes on this important development after attending the official launching at a press conference. **Page 38**

Autodesk acquires Xanadu. The publisher of the best-selling AutoCAD program for PCs has agreed to buy an 80% interest in Xanadu, the firm that is developing the Hypertext system. **Page 37**

SEYBOLD SEMINARS '88

Equipment Demonstrations

IN OUR LAST ISSUE, we reported on the first two days of this year's Seybold Seminars in San Francisco. Here we focus on developments in the Seminars' equipment areas:

- PostScript update—high-resolution typesetters from Itek Graphix and Birmy/Ultre.
- Moves to standard hardware—System Integrators' AdMaker on a '386 PC, Linotype's Series 2000 on a PC, Qubix's Designer on a Sun.
- SGML editors—SoftQuad, Texet and Context.
- New software—Texet's FreePage, LaserMaker's layout system, BellSouth Media Technologies' display ad and document processing software, Intergraph's DP/Paint and DP/Manager, Island Graphics' Headliner.
- The first hypermedia product for Unix workstations—Scribe Systems' HyperScribe.
- A unique scanner from Ana Tech.
- Announcements of future products—Unda's deal with Camex for text composition software and CPS's Astrotek 2000 and 3000 newspaper systems.

Index to Coverage

Comments from Our Readers

Waldman on fourth wave

Re your article on the restructuring of our industry and the "Fourth Wave," I could not agree with your logic, observations, or conclusions more.

The conclusions are obvious for both users and vendors—an ever growing set of options and opportunities never before dreamed possible. The growing question, as you astutely assert, is at what point the vendors may come to realize this, especially those bound in tradition, and begin to help us all advance forward.

We are all cognizant of our past. The question here becomes one of how to best use our knowledge of times gone past—as self-imposed boundaries that limit our futures, or as beacons to guide a brighter future.

I have always contended that the traditional suppliers in our market had, for years, literally, the finest word processing systems ever created. But, they stubbornly held to a tunnel vision of the marketplace, allowing new entrants to make inroads in different markets they perceived as unimportant, when in fact it was the markets of greatest use and need (i.e., the office, publishing, and documentation markets) that would evolve to the greatest focus (as we can all agree it has).

While the loyalty of traditional suppliers to their "existing customer base," however misguided in its result, can be commended, it was wrong and of disservice to all parties—their own companies, their customer base, and our industry. Only now are all parties coming to realize how misguided it was.

Rather than embrace the new technological pieces as they fell into place, our traditional vendors did the opposite. As a result, we find ourselves today scurrying to connect to a world our vendors chose to exclude us from (mind you, despite our advice, some would say begging, otherwise).

This is not to belittle their choices. They were certainly difficult and threatened the fabric of their businesses. But, they only succeeded in delaying the inevitable threat to their businesses, to everyone's disservice.

As distasteful as the solution is to all existing users, the traditional vendors should have ignored the "self-imposed obligation" to keep upward migration in place for users. They should have adopted new technologies, embraced them, formed competing companies, spun their knowledge into them (as some newer high-tech companies have learned to do), and moved forward

to provide new solutions we all could have used.

The users have an equal blame in all of this as well. Stubbornly, they refused to pay reasonable costs to assure themselves upward migration. They insisted that these costs be borne by the developers with little regard for their existence forcing the vendors into the closed and proprietary cycle they had to choose to survive.

Today, we find the research and development budgets of single new entrant vendors greater than the combined budgets of all traditional vendors. Yet, it is clear that any one of our traditional vendors, with their head start, their unique knowledge, their demonstrable success, could have become as successful as the new entrants. All they lacked was vision and courage.

It is still not too late. All of the problems, as you observe, have yet to be solved. It is not required that our traditional vendors, nor we as users, cede the future to new players. But, we must move quickly, with a vision of the future, aware of the obvious realities of the marketplace, with the courage to make it happen. Perhaps, one of the traditional vendors will surprise us yet.

In the meantime, we will continue to move forward with the new technologies independent of our traditional vendors, investing, exploring, probing, discovering, a bright new future. Hopefully, we won't have to do it alone.

William A. Hohns, Executive VP
Waldman Graphics
9109 Pennsauken Highway
Pennsauken, NJ 08110

CALS compatibility

Regarding the series, Technical Documentation, in the March 14, 1988, issue in Part Four of this series, you indicate that Datalogics is the only vendor having demonstrated compatibility with the CALS initiative. Not so! STS demonstrated a vastly superior production simulation. This statement is based on hard facts gained from the developments in Avalanche Development Company's Laboratory and the practical expetience gained in STS' production facility.

This system is fully functional, very flexible with regard to the input document, regardless of media (hard copy, microfilm, microfiche, most floppies, aperture cards and hard-copy engineering drawings)...and it has been sucessfully demonstrated several times, most recently at the TechDoc Winter Workshop across the hall from Datalogics.

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Second of three reports

Seybold Seminars: Review of Equipment Demonstrations

EACH YEAR, the Seybold Seminars provide attendees with an opportunity to see, as well as hear about, the latest in publishing technology. The exhibit area is not a trade show—admission is limited to seminar attendees and exhibitors' guests, and there aren't supposed to be any formal sales presentations. Rather, it's a forum where vendors can show off their latest developments, including works in progress, to a small group of industry leaders and highly motivated customers.

And unlike most shows, vaporware is not only tolerated here, but is actively encouraged. Vendors are urged to bring laboratory versions of their products. The vendors benefit from the early market feedback, and the attendees get to see how next year's products are shaping up.

In addition to this coverage, we discussed the developments in desktop publishing equipment in the last issue of our *Report on Desktop Publishing (Vol. 2, No. 8, pp. 20–37)*.

Adobe Systems

In addition to the Display PostScript technology showcase, described in our last issue, Adobe showed off Illustrator '88 (previewed at Macworld Expo—*see The Seybold Report on Desktop Publishing, Vol. 2, No. 5*) with a new *autotrace* facility.

Ever since we first saw a pre-release version of Illustrator, we have been asking Adobe for a facility that would automatically generate a curve to fit the boundary of a scanned image. Tracing straight lines by hand is quick and easy. Tracing curved lines is tedious and requires practice. Why not have the computer assist this process?

This is exactly what Adobe has done. Autotrace is not a completely automated raster-to-vector conversion of the sort demonstrated by T-Maker *(see our last issue, page 19)*, Agfa *(see Vol. 17, No. 13, p. 17)* and Silicon Beach *(see The Seybold Report on Desktop Publishing, Vol. 2, No. 5, p. 24)*. It is, rather, a virtually instantaneous user-directed interactive process. The concept makes a lot of sense to us: the user applies his/her intelligence to interpreting the image, identifying straight lines, corners and the like. He/she then asks the computer to assist by taking the first cut at fitting Bezier curves to particular segments. Naturally, these curves can then be adjusted in the usual fashion. It looks promising; we are anxious to try it.

Illustrator '88 will cost $495. Anyone who bought Illustrator after January 14 can receive the upgrade free.

Ana Tech

Ana Tech has been making large-format CCD scanners for the engineering market for several years, and is the only firm to offer a scanner with raster-to-vector conversion built into the scanner hardware. The company is now using its technology to develop less expensive, smaller products that have the potential for broader market appeal. At the Seminars, it introduced its newest unit, the Eagle 1760 Corporate Scanner.

Eagle 1760. The 1760 is in many respects a scaled-down version of the larger Ana Tech scanners, which use multiple CCD cameras to scan the entire width of E-size (up to 44" wide) rolls of engineering drawings. Because Ana Tech uses cameras that can be adjusted in focal range, all of its scanners feature variable resolution, from 100 to 1,000 or 1,600 lines per inch, depending on the model. Speeds vary according to width and resolution, from 1.6 inches per minute to 21.5 inches per minute. The largest scanner uses 5 CCD cameras. All use quartz halogen lamps as the light source. The software that controls the scanners runs on a variety of computers, including PCs and Unix workstations.

Like the larger models, the Eagle 1760 uses multiple cameras, in this case two CCD cameras, each sensing 5,000 pixels per line. Ana Tech interpolates the overlap between the two cameras to achieve resolutions up to 1,200 lines per inch. Like the other models, the 1760 scans eight bits of continuous-tone data per pixel.

Raster file formats supported include CCITT Group 3 and 4, TIFF, Interleaf raster, Triple-I V-Bit, DEC Sixel, InterCAP raster, Formtek, Impell RLC and Ana Tech's run-length-encoded and 8-bit gray-scale formats.

The new scanner differs in many respects, though, from the large-format designs. First, it is a flatbed, table-top unit designed for scanning smaller reflective copy—up to C-size drawings, or up to 17" by 24." Another distinctive feature is Ana Tech's VANA Document Analyzer, a raster-to-vector and raster compression device that has been miniaturized to a single printed circuit board. Drawings can be vectorized on the fly as they are scanned and sent to the workstation. Workstations can be AT-compatible PCs, PS/2s, and Apollo, DEC and Sun workstations. Ana Tech says it will have a Mac version of its software ready by June.

Vector formats supported include IGES 2.0/3.0, Autotrol, CADAM, AutoCAD DXF, Interleaf, Intergraph ISIF, InterCAP, Calcomp 925, Context and Ana Tech's output format, VSOF.

The scanning software that Ana Tech supplies also includes a raster paint program with which the operator can edit the scanned image.

Targeting the new mid-range. The 1760 fills a unique niche in the industry, which Ana Tech hopes VARs and system integrators will recognize. Certainly, it will succeed in the still-booming CAD marketplace. But the ability to scan into both raster and vector formats is still novel in the PC publishing market. (Microtek is also developing raster-to-vector technology, but it is considerably slower.) The speed and resolution of the 1760 are a distinct notch above the PC scanners, yet its compact design is comparable to that of the 600-dpi scanner from Xerox, and not much larger than the size typical of the PC scanners. Its price is significantly higher than the Xerox Pro-Imager, but well under those of

Ana Tech 1760 Corporate Scanner. *The first tabletop, high-resolution scanner to offer built-in raster-to-vector conversion.*

large-format standalone scanners and graphic arts scanners like the ECRM Autokon. It is slower than the machines in the graphic arts class, but none of those offer vector output.

At the Seminars, Auto-trol imported Ana Tech-scanned images directly from the 1760 into its illustration system. The demonstration samples looked quite clean. Converting engineering drawings from reflective copy into vector-based illustrations in one to two minutes apiece, the system could pay for itself rather quickly.

The raster-only version is priced at $32,000; with the vector option, the package is $45,000.

Apollo

Apollo Computer's Domain/Delphi is an online authoring and document retrieval system. It can be used as a souped-up "help" system for operating the computer itself (an application that Apollo now ships with each computer it sells) but it is equally applicable to any technical documentation.

The program is page-oriented and uses the familiar mechanisms of indexes (keyword search) and hierarchical tables of contents, as well as linear browsing. Unlike bound books, the indexes and cross-references can span many volumes. Delphi doesn't use jazzy features such as hypertext, though. When the program presents information, it looks like a page from a book. A variety of publishing tools, including Interleaf, can be used to create pages.

Apollo also showed an AppleTalk link, called µShare. An interface card in a Domain 3000 or 4000 workstation accepts a LocalTalk connector, and software written by Information Presentation Technologies (a descendant of Lutzky-Baird Associates) lets the workstation disk, running under Unix, behave as a file server for all the Macintoshes that are on the LocalTalk cable.

In fact, the µShare software can treat any Unix disk, anywhere on the Apollo Domain network, as a Mac file server. Other services, such as print spooling and electronic mail, are available as well.

Archetype

Archetype was showing support for scanned artwork for the first time. (It was line art only when we saw it, but scanned halftones were due shortly.) Archetype will import artwork in TIFF, Encapsulated PostScript and PCX (Publisher's Paintbrush) formats. In addition to graphics support, Archetype (whose software runs on IBM-compatible PCs) has been working hard on porting its software from GEM to Microsoft Windows, a task that proved unexpectedly difficult.

Archetype's system is notable for its strong typography. Archetype president Paul Trevithick characterizes its target market as "single, highly-designed pages." This means, above all, ads. But forms, some magazines, and catalogs are also examples of potential applications.

Unlike the usual desktop publishing packages, Archetype supports refinements like user-modifiable pair kerning and ligatures. (Trevithick still wants to add "unhookable" ligatures for situations where a hyphenation point might occur between ligature characters.) Fractions, always a weak point of desktop systems, are not yet properly supported on Archetype's system, either, but they are a high priority.

The Archetype system makes extensive use of "style sheets" and "property sheets." Most typographic features are controlled by these sheets, though local override for exceptions is available, too. Style sheets facilitate global typographic changes, and they make it easy to store and reuse a particular design.

Archetype is sold into the newspaper display ad market by CText (for mid-size papers) and by dealers (for small ones). There are about 180 users now, all of whom bought the GEM version of the software. Archetype is in the process of providing these users with a free upgrade to the Windows version.

Barneyscan

Barneyscan reports that 30 of its high-resolution 35mm slide scanners have been shipped so far. These are mostly going to "sophisticated end users" in the graphic arts, according to the company.

The scanner uses a fiber-optic bundle to deliver a line of light (from a quartz halogen lamp) to the slide. A detector on the other side of the slide senses the intensity at each point in the image. Between the slide and the detector is a filter wheel with red, green, and blue filters. The slide is scanned once for each filter color. The whole process takes about three minutes. (The red and green passes take about half a minute each, but the blue pass takes about two minutes, due to the low blue sensitivity of the CCD-based sensor.) The scanning resolution is 1024 × 1520 pixels across the whole image. That's about 1.5 MB per scan, or 4.5 MB per color image.

Interfaces are available for the Mac II and for AT compatibles. Software is provided for sizing and cropping the image, for changing brightness and contrast, and for edge-sharpening. There is also a facility for converting color slides to monochrome grayscale images.

At $8,700, the scanner is attractively priced, given its capabilities. It does have its limitations, though. The 1024 × 1530 resolution means that image quality will suffer if a slide is reproduced larger than about 4" on a side at 133-line screen. (A smaller maximum would apply if less than the full image area is reproduced.) There is no facility for scan-

ning formats other than 35mm slides (35mm color negatives cannot be scanned). Finally, there is no provision for cocking the slide at an angle during scanning. This is important, because rotation of a scanned image is a problem for many electronic color systems. Either they don't support rotation, or it takes them many minutes to accomplish it. Often, if an image needs to be rotated a few degrees, it is easiest to rescan the image in the proper orientation. This would not be possible with the Barneyscan.

BellSouth Media Technologies

BellSouth Media Technologies, a subsidiary of BellSouth, was showing prototypes of two programs for the Macintosh: Samson, for display ad make-up, and Intelligent Document Processor, a composition program for structured documents.

Samson. Developed to handle the input of display ads for BellSouth's Yellow Pages directories, Samson is a reasonably simple format display ad system designed more for Yellow Page style ads than for newspapers. It can import presized graphics from various Macintosh software packages and place them on the page. The program includes a wide range of premade artwork, such as Visa and Master Charge symbols. The system can handle simple graphic primitives such as boxes and rules, and can also provide shadows for boxes. The program has some very good facilities: one can specify to which side of the box the shadow will fall, and also the size of the shadow.

In text handling, there is a nice "bump key" facility for growing or shrinking text and leading to the required size. One can also group lines of text and collectively bump them. Another nice facility is stair-stepping of lines; each line is stepped (indented) a level from the preceding one, an effect one often finds in Yellow Page ads. This can provide the first line or last line full out. There is a moving ruler for measuring placement of elements. This works in an unusual but clever fashion: as one moves the ruler, it gives a running count of the distance from the inside of each of the ad's borders.

Samson runs on any Macintosh, but only the Mac II version supports spot color. TechSouth plans to sell Samson as a package of a number of units together with networking into a central system. No firm pricing was available.

Intelligent Document Processor. BellSouth also showed a prototype of a unique document processor for the Macintosh. The typical Macintosh product gives the user the means to interactively change the appearance of the document at any time. TechSouth's product takes a programmed design and applies it to the writing and editing process, in concept much like the new SGML editors coming into the market from Context and Texet, but without SGML document and tagging compatibility.

BellSouth's processor is a hierarchical structure document processor in the vein of Texet, Intergraph, Conrext and Lotus Manuscript. It understands the relationship among the elements, so that when the writer restructures a document by moving elements, the program automatically updates section and figure numbering within the affected sections. Automatic table of contents generation and revision bar and reviewer's note facilities are provided. Automatic indexing, redlining edit trace, and automatic cross-referencing were not shown.

The system manager establishes the structure of the document and the style attributes of each element type using the Style Editor module, a series of Macintosh menus that establish the basic definitions. Once these are created, they are virtually transparent to the writers and editors working on documents. Selecting an element (heading, section title, paragraph, etc.) automatically calls the style attributes for that element. The writer (who does not have the Style Editor module) can see the various elements formatted on the screen but cannot change their appearance, apart from changes in emphasis (bold, italics, etc.).

In page layout, the BellSouth program works much like a WYSIWYG word processor (like Microsoft Word on the Mac), but with multiple columns shown while you work. There was justification, but without automatic hyphenation. The system handled basic widow and orphan detection with a limited manual override. In graphics, it imported PICT graphics, but only if anchored to a text reference. The user cannot fix an image to a specified location on a page, and cannot indicate a preference as to where on the page the image will fall. Hyphenation is scheduled to be in the first release, together with spell checking, footnoting, automatic cross-referencing and indexing.

Like Samson, the initial commercial release of the Intelligent Document Processor will undoubtedly be more complete. For now, even though no pricing or availability dates were given and no distribution channel has been disclosed, the program shows promise, both as an end-user text entry tool and as a WYSIWYG front end to a batch-oriented dedicated publishing system.

Compatible Systems Engineering

In an industry dominated by typesetting systems, CSE has found a niche by handling page layout and editorial operations without ever developing an h&j capability. Its systems are always tied in to someone else's typesetting facilities. Generally, it has been Atex systems that CSE has tapped. But CSE can now link up to Magna and Bestinfo as well. Here is how the four CSE products fit into this process:

PC-EditNet. The PC-EditNet editorial network is based on PCs running a customized XyWrite editor, connected by a local network. CSE will modify the keyboard layout and the displayable character set to match your composition system. You can get a dual-disk file server with mirror-writing of files as they are saved (so you are always backed up). Basic newsroom-style copy flow is provided for: stories move from the initial reporter or editor to an "inbox", where they wait for attention from the copy desk. After copy editing, they go to an "outbox" where they are available to a production editor who can add coding if needed and have the file composed. The composition facility could be a separate system, or it could be just another PC on the network running Bestinfo or Magna software.

PageSpec. PageSpec is a precision page-layout package in which the user fills in a series of forms specifing the name, size, and location of each text block on the page. The resulting page is shown diagrammatically on the screen. PageSpec passes the details of the page layout to the composition system, along with the text files that go in the various text regions. The composition system (Atex, Bestinfo, or Magna) can then compose the text to fit the layout.

PageSpec's interface and level of detail make it appropriate for a production layout person. It is not really a designer's tool. But CSE is in the process of developing a package for the designer that would take care of the basic layout process. The final touches could then be handled with PageSpec. PageSpec itself will be made more approachable with the addition of a mouse-and-menu interface.

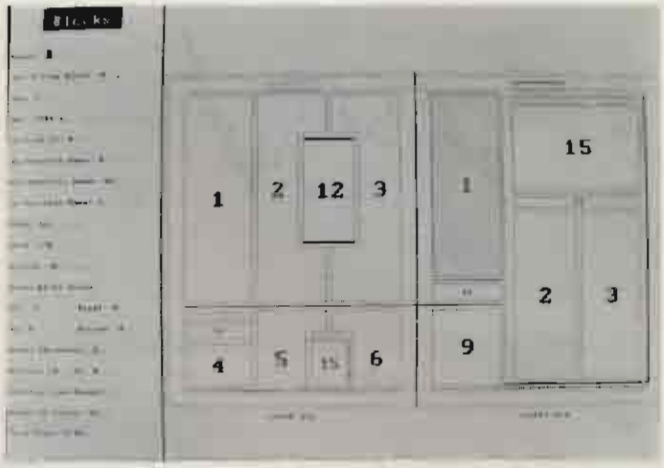
Readers may wonder why someone would add a page-layout package to a system like Bestinfo, which already allows WYSIWYG manipulation of type on the page. There are two reasons. First, PageSpec allows more precision in certain operations than Bestinfo. For example, exact control of white space around a pulled quote and precise placement of an illustration window on a magazine page are difficult with Bestinfo. Second, PageSpec allows total control of page layout with no concerns about typography. This allows a reasonable division of labor in some environments. For example, a magazine might want to buy typesetting outside but have total control over layout. The magazine could be laid out using PageSpec, giving the control and speed benefits of in-house automation, but the magazine staff would not have to worry about setting up fonts and kerning, keeping a film processor clean, and the other day-to-day chores of a typesetting shop.

PC-Page. PC-Page is used to work with pages received back from composition. Lines and blocks of text can be moved around, as long as no line endings are changed. The package can be used as an "electronic pasteup" station for composed galleys, or as a final adjustment tool for pages created through PageSpec. Finished pages can be sent directly to the typesetter, if there is one at the PC-Page site.

PageProof. PageProof allows composed pages ro be displayed on a preview screen or output on a laser printer. This software originated with One-for-One and is a subset of the package sold under that name.

The pricing of the CSE products sets them apart from the desktop crowd. PageSpec costs $4,900. PC-Page for Atex output is an additional $5,000. (For Magna, the two packages combined cost $7,500.) PageProof costs $8,000 for either screen preview or laser proofing, or $10,500 for both. PC-EditNet costs $3,280 per workstation plus $15,000-$25,000 for network server and setup, all hardware included. These prices reflect a certain amount of customization, but not installation and training.

Though they lack the pizzazz of the WYSIWYG composition products, these are practical, well-conceived tools. They fit the way many organizations work. We think, however, that the pricing is high for the functionality provided. CSE can get away with this because no one else offers the same tools. But CSE is running the risk of creating an artificially high price umbrella that will attract lower-priced competition.



PageSpec. *By filling in the menu on the left, you can create precise page layouts for use with Atex, Bestinfo or Magna systems.*

CSE has about 50 customers for PageSpec (mostly through Publisher's Phototype). There are about half a dozen editorial networks feeding Atex systems and two feeding Bestinfo. There are not yet any sites for the Magna interface, which was just announced at the seminar.

Compugraphic

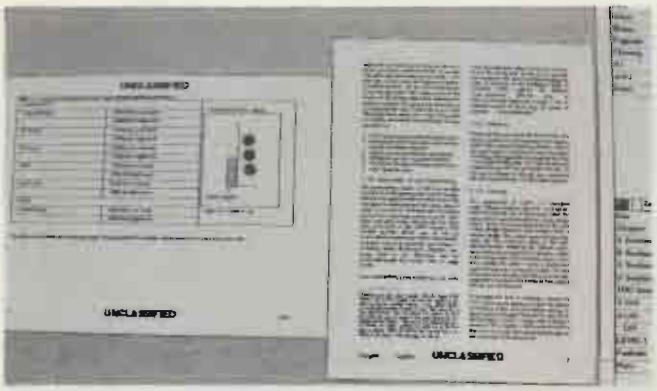
In addition to developments in the font and PostScript arena *(see page 34)*, Compugraphic showed its CAPS technical documentation system in a hotel suite. Although CG didn't demonstrate the newest features being previewed by Texet on the show floor, it did announce lower pricing (reportedly 15–30 percent below previous levels, but a full rundown isn't yet available) and support for the Sun-3 workstation.

CG demonstrated its latest software release, 2.0, which adds the features Texet had recently introduced. These include improved revision tracking and table handling, spanning or straddling items across multiple columns, and PC-NFS, which allows PCs to access and share files on the CAPS NFS server. Also in 2.0 is a translator to import Lotus 1-2-3 business graphics and modify them with CAPS Draw software, and support for a 300-dpi Ricoh scanner in addition to the high-resolution CG Scanner 2000. Another enhancement is faster printing—data is now transferred at 19.2K baud.

Release 2.0 will be available in May, provided free to existing customers.

For most software features, Compugraphic is providing the functionality Texet is making available to its customer base. However, the two companies may be starting to differ in providing input/output options. Compugraphic is expected to develop an interface to its Mosaic system, which could give the product a big boost in its graphics capabilities, and is working on developing translators to import data from other systems, such as Interleaf's TPS.

In view of CG's recent OEM agreement with Omnipage, some people may wonder if there has been a change in the company's view of Texet. From CG's recent developments, though, it appears that the commitment to CAPS and Texet remain strong.



Exception pages with CAPS. *Among the new features available with the CAPS product is the ability to incorporate portrait and landscape pages in the same document. Note also the enhanced table program that makes it possible to include graphics within a table and to straddle text over more than one column.*

Computer Peripheral Sciences

In addition to showing its version of Display PostScript *(see last issue, page 16)* and its AstroScript PostScript clone driving a laser printer *(see "PostScript Update," page 29)*, CPS announced two new versions of its newspaper and commercial systems. The new systems show the direction the company is taking: it is continuing to use its proprietary hardware (based on AMD bit-slice processors) to take advantage of its database management facilities, but it is enhancing the CPUs to provide faster processing and it is using microcomputers as system terminals.

Like the standard system terminals, the micros support editing functions and embedding composition and pagination commands, but composition and pagination take place in the host. Composed files are redisplayed on the PC with true line endings. The system currently supports IBM-compatible PCs and Macintosh IIs emulating PCs, but not Mac Plus or SE machines.

Astrotek 2000. The Astrotek Publishers Copy Processing System is a streamlined, enhanced version of the CPS 1000 system whose roots go back more than 15 years. It is being repackaged to accommodate Winchester disks in desk-height cabinets. (It will no longer be necessary to house the system in a computer room.) Faster processor boards are expected to increase system speed by somewhere between 50% and more than 100% in comparison with the current CPS 1000.

The 2000 will support from one to eight CPUs and up to eight Winchester disk drives totaling up to 2.4 gigabytes of storage. Data will be stored redundantly using two disk controllers to write to both disks. Optional slave processors can handle tasks such as background h&j and soft-copy previewing of pages.

The maximum number of terminals (PCs, Macintosh IIs or CPS units) on one system is 96, although a PC network can be attached to the system as one node. In this case, each PC on the network can access its network file server or the Astrotek system database.

The 2000 runs all of the software of its predecessor: editorial, classified and pagination (positioning based on *x/y* coordinates and previewing with the GDT), plus business (circulation, receivables, payroll, etc.). All software except the business package is included in the base system.

Line art and image scanners will be supported.

Output options include most common typesetters and PostScript devices.

An entry-level 2020 system comprising dual CPUs, dual 300-MB disk drives, four terminals (Mac IIs or PCs), a typesetter driver and software for editorial, classified and pagination applications will sell for $85,000. The system will be shown at ANPA in June. Initial deliveries are expected in the third quarter of this year.

We'll report more from America East in our next issue.

To handle display ad composition, CPS is working with Digital Technology on interfacing its AdBuilder, based on the Macintosh II. The company hopes that by ANPA it will be able to demonstrate a completed interface that enables the text of ads to be created on standard PCs, brought into an ad running AdBuilder, and either output directly to the typesetter or sent to a page to be composed with other elements of the page prior to output.

Astrotek 3000. The new Astrotek 3000 system, aimed at small users and remote bureaus, uses PCs as terminals tied to the existing CPS system hardware. It is priced to compete with networked PC systems. An entry-level configuration including three PCs, 40-MB SCSI disk drive, bit-slice processor, system software, and a driver for a typesetter or a PostScript printer is priced at $19,950. A system with six PCs will cost $26,000. Further expansion to 24 terminals and up to two 300-MB disk drives is possible.

The 3000 supports editorial, classified and pagination software (pagination is based on *x/y* coordinate positioning with the aid of the GDT preview screen).

Shipments are expected to start in the first quarter of 1989.

Context

Two years ago, Context debuted its system at the Seybold Seminars with an innovative approach to creating and producing technical documentation. Last year, it introduced Change Control software which we predicted would become the model to emulate for tracking documents through long revision cycles.

This year, Context showed an improved version of Change Control that is now part of a complete publishing package for Apollo workstations. Its package, DOC, has indeed emerged as the model for others in the field to follow, and largely because of it, Context is gaining recognition as a serious competitor to Texet, Interleaf and Xyvision, which have dominated the market for the last several years.

But the innovations that Context previewed this year dealt with the problems of integrating disparate systems in the real world. Its new products use the premise of the fourth wave as the starting point for constructing a sound theoretical framework to integrate various architectures from a publishing perspective.

Gateway to graphic subsystems. Most of the publishing vendors have been working hard on integrating graphic capabilities into their systems, so that the publisher can produce and maintain all of the document in electronic form. But in Context's market, graphics are almost always produced on a variety of CAD/CAM and other graphic subsystems that are usually distinct from the publishing workstation. The traditional answer to this problem has been filters for converting the graphics into a format the publishing system can interpret and place on the page.

Context's new approach is to build a gateway through which graphics can be transferred to the page created by the publishing system *without bringing the graphic into the publishing system's database.* The publishing user initiates a call to get a graphic at a particular point in the document, and the Graphic Gateway provides the means to look into the external database and access the requested file, wherever it may be on the network.

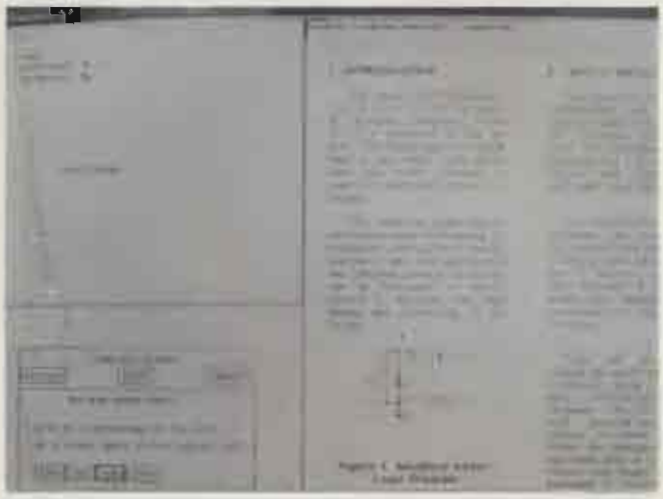
There are significant benefits to this approach. First, it ensures that the published document will use the current version of the graphic: because it is referenced directly from the external source, the graphic is not frozen in time (unless the operator chooses to do so). In this respect, Context is like Datalogics, which also pulls graphic files directly from the source as output. But Datalogics' system remains a batch text system—the graphic can be neither annotated within the Datalogics environment nor viewed before the entire document is composed for output. In Context's Graphic Gateway, graphics can be accessed from external databases and viewed on the screen, while the user is building the document. Vector layers can be added to the document from within the Context PicEd graphics editor. These layers can be assigned to different versions of a document, so that a single document can be printed in different variations, as is common in foreign languages.

Second, the Gateway approach alleviates the storage problems associated with keeping multiple versions of graphics. The publishing user keeps only those graphics created within its system, or annotations that are layered on top of graphics that reside on an external database.

Of course, there are drawbacks. By referencing the file from another source, rather than importing it directly into the system, the Context user sacrifices control: you can't make changes to a graphic pulled in from the gateway. Interleaf and Texet, for example, have implemented two-way converters with Auto-trol that allow the publishing user to import the file, make edits, and then return the file to the source database. The primary difference boils down to control: the Context approach allows graphics and publishing departments to each retain security control over their respective databases.

Another drawback is that consistency of appearance may be hard to maintain when documents are merely assembled from external sources, rather than created on a single system. Illustration labels, for instance, may differ in font and size from those prepared on another system. If such a consistency is desired, the burden rests on management to institute guidelines across all relevant departments.

At the Seminars, Context demonstrated the Gateway by bringing InterCAP vector files and Macintosh TIFF files directly from those systems, which were on the Apollo network but not connected directly to the Context system. Context says the system is already in use by Messerschmitt, a German aircraft manufacturer.



Spacing control. *The maximum spacebands throughout the document are adjusted in percentages of the normal space for any given font. Unfortunately, the minimum is not adjustable as well.*

The Graphic Gateway will be included with release 6.1 of DOC, which is scheduled to ship in May. File formats initially supported include InterCAP and Apollo GMF. Others to follow include Encapsulated PostScript vector and TIFF, PICT and Apollo GPR raster formats. Auto-trol stated its intention to support the Gateway shortly.

Release 6.1 In addition to the Graphic Gateway, enhancements that will be included in the May release are in the areas of composition and revision control.

Context has added automatic hyphenation using a ranked 87,000-word dictionary from Houghton-Mifflin. While the addition of hyphenation significantly enhances the composition quality, we found its spacing controls (in degrees of ½ em) and use of the ranked dictionary (apply first, second or all hyphens but no means to balance rankings against word space adjustments) still too coarse for our liking.

Headers and footers can now contain tables, which allows the user to build practically any header or footer imaginable. Tables (whether in headers/footers or in the body) can include raster or vector graphics.

Change Control has been extended to include access privileges. File locking can be applied to a routing scheme, whereby different users have different levels of access privileges, depending on the location of the document in the revision cycle. It can also be applied to documents that stay in one place but still have multiple revision levels: access privileges can be assigned to any "named change," Context's term for a particular revision level.

Raster graphics. Context also previewed a working prototype of its raster graphics editor, ScanEd, which is scheduled to undergo beta testing in June, with shipments tentatively set for August.

ScanEd software operates both image and OCR scanners. It is unique in that it uses the scanner as a network resource—scanning can be initiated from any Context work-

station on the network. Anyone who has seen graphic workstations become nothing more than graphic file servers can appreciate this approach. It assumes, of course, that each workstation has the horsepower to handle graphic images, but in the Context environment, each user has an Apollo Domain workstation.

The OCR scanner is the "black-box" version of the Palantir Compound Document Processor (CDP), which reads only text. Like several other vendors that use this scanner, Context has extended the Palantir software with its own pattern recognition algorithm so that incoming files are automatically converted to Context documents, with full tagging imposed according to parameters the user establishes. In its demonstration example, Context took an ATA100 format document and specified the level of heads according to indents and delimiters, such as parentheses and brackets. The document was scanned and automatically converted into a Context document with the same hierarchy of heads.

The image scanner is the new Datacopy 840i with a built-in graphics processing board that delivers 20 MIPS of processing power. The 400-dpi, 8-bit gray-scale scanner reads sufficient data to produce high-quality images on a PostScript typesetter.

Context said that back at the lab it is using the ScanEd software to scan particularly poor-quality originals on the Datacopy and clean them up in ScanEd, so that a new original can be scanned by the Palantir with minor errors.

ScanEd costs $18,000 for both scanner and software. Additional ScanEd applications are $4,000 for photo and line art capability. Adding the Palantir and Context document recognition brings the total to $55,000 for a complete system.

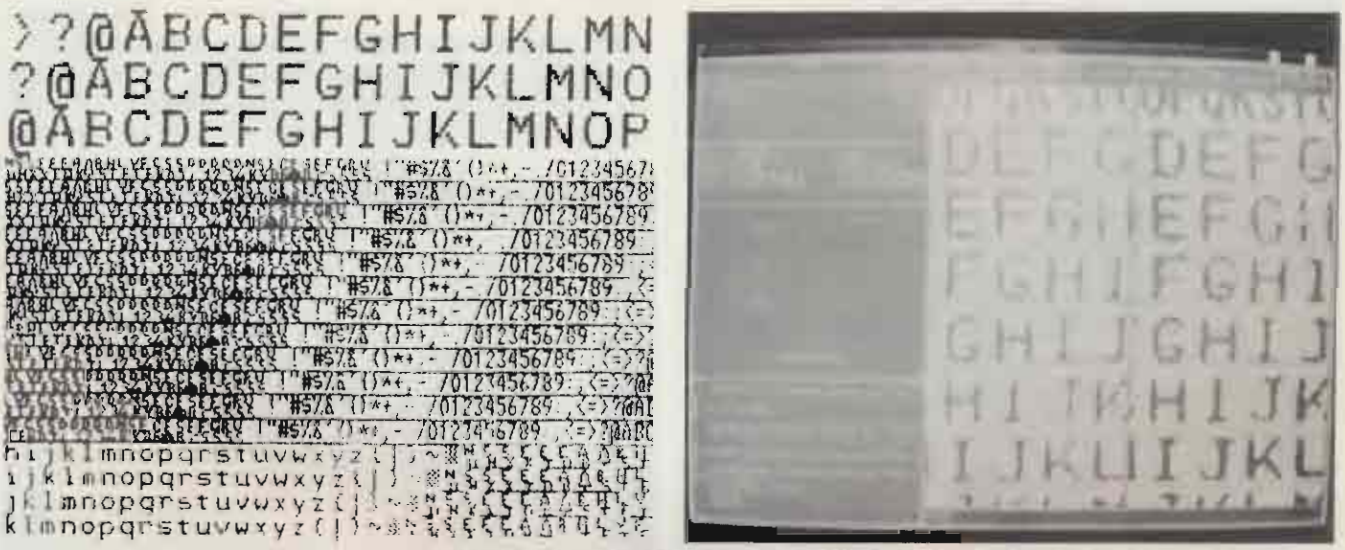
SGML and CALS. SGML is near the top of every tech-doc vendor's priority list for 1988, and Context used the Seminars to preview its method for implementing CALS compatibility for General Electric's facility in Huntsville, Alabama. Unlike many vendors, which must develop their software in the lab and then find a buyer, Context is developing its

WYSIWYG SGML editor. *When SGML editing is invoked, the system automatically limits the available style tags to those that conform to the specified document definition type.*

SGML editor with plenty of input from GE. From what we saw, it is a pioneering effort.

Context SGML editor takes a specific document type definition (DTD), in this case Mil-Spec 1840A, and defines the tags and hierarchy of that document type. When SGML mode is invoked, the writer is only able to access tags appropriate to the context of the document. Other tags are grayed out, much like Macintosh menus are grayed out when they're not applicable. As a text element is keyed in, it is shown formatted on the page: the user gets a WYSIWYG page on the screen without worrying about actually creating the formats. Using SGML mode to create an entire document virtually assures an SGML-compliant document. But because SGML mode can be turned on and off, Context has licensed the Sobemap parser to ensure that documents emerging from its system do indeed conform to the proper structure, whether they were created in SGML mode or not.

Catching up quickly. A year ago, Context was a newcomer whose system showed promise. The strides it has made in a



Scanning the worst samples. *Context is wrestling with original output of the quality shown on the left, scanning it and improving the characters through intelligent raster image processing (right), then outputting a new original that is clean enough to be read and interpreted by the Palantir document processor.*

year are startling. It is now close to offering a full publishing system, with both raster and vector graphics. More importantly, its unique approaches to implementing the new features—providing a two-way gateway to external databases, using scanners as a network resource and adding a WYSIWYG SGML editor—are quickly establishing the company as a new leader in the technical documentation field.

Datalogics

Datalogics brought its PC-based WriterStation for technical documentation authors and editors. It has a good set of characteristics for that environment: fast editing, relatively painless support of SGML, and integration with a VAX host.

The user interface has a XyWrite feel to it. It may take a little longer to learn than some word processing packages, but this time is likely to be paid back in editing speed and powerful features. For example, there are a flexible pattern-matching facility for search-and-replace operations and a programming language (WriterStation Basic) for user-developed programs that must run in the editorial environment.

WriterStation offers several forms of on-screen prompting. Across the top of the screen is a list of the assignments of the PC's function keys. At the bottom are three lines of information about where you are in the SGML document structure. You get to see the nesting of the SGML tags at your cursor location (*e.g.*, "body.chapter.section"), as well as a list of the tags that are legal at this point in the document. If you select a tag that needs attributes (*e.g.*, the tag for a figure must include its dimensions), a menu comes up requesting the attributes and disappears when they are provided.

The document itself can be edited in "exploded" view (unformatted, with SGML tags shown) or in "formatted" view (tags suppressed, but document structure shown via video attributes, spacing and color).

With an editor of this type, you don't need a separate parser to check for SGML compliance. A noncompliant document can't be created. But Datalogics offers a separate batch parser to process incoming text from other sources.

You don't have to have Datalogics composition to get WriterStation. (Datalogics has, however, modified its pagination to work directly with SGML files—no conversion necessary.) But the pricing is steep for just a few copies: in addition to the per-workstation cost of $1,500, you must also pay for a one-time customizing process that costs $16,000, which makes sense only when it can be spread across dozens of users.

The main market for this product is technical documentation, of course, but Datalogics sees applications in looseleaf publishing, financial printing, legal publishing, pharmaceutical publications and reference books as well.

DocuPro

DocuPro demonstrated its software (reviewed in our technical documentation series, *Vol. 17, No. 6*), with one new feature—a first stab at an SGML implementation.

Using a standard PC word processor (Microsoft Word in its demo), DocuPro imported the text file and automatically converted it to a DocuPro document. The document was not checked in any way to ensure that it was compliant with any SGML tags or definitions. After the document was edited within the DocuPro system, it was then run out as an ASCII text file, with the DocuPro formats written into tags delimited by angle brackets. The PC word processor was able to read and edit this file, but no formatting information (including changing formats by inserting new tags within angle brackets) was retained.

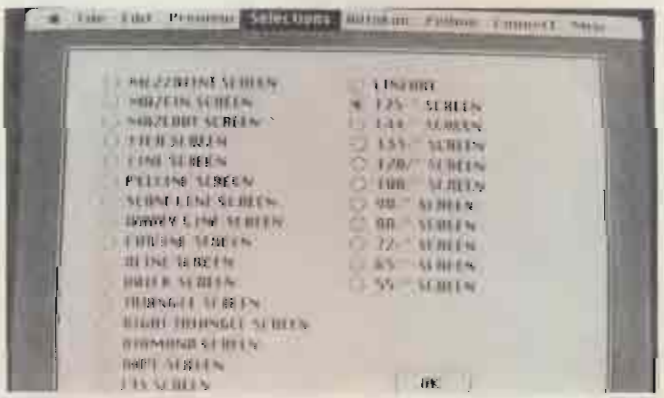
Although the two-way filter does allow a word processor user to manipulate DocuPro files, it does little to ensure that the document conforms to any SGML definitions, and DocuPro has not integrated a parser that would detect and flag errors. Indeed, in the demonstration sample, neither the tags nor the document conformed to SGML definitions. If it seriously intends to add such capability to its product, we hope DocuPro will take the time to look at the WYSIWYG and non-WYSIWYG SGML editors being developed by its competitors.

ECRM

ECRM showed its buffered SCSI interface for micros *(see Vol. 17, No. 5, p. 9)*, but not the new Autokon enhancements unveiled at Imprinta. The newest feature for the micro market was two-way conversion of TIFF files. The company has completed a driver for the Macintosh family of systems and demonstrated an SE on-line to an Autokon camera. Images were being scanned, converted to TIFF format and imported into Macintosh application programs. Full control of the Autokon was at the Mac, using Macintosh user-interface conventions. The decision to develop the Macintosh driver first was based on market demands. We presume that the IBM market, which hasn't shown the same initiative in the area of high-resolution graphics, might be supported later.

The SCSI interface (with 320 MB of disk to buffer scanned data) costs $12,600. The driver software and TIFF converter will be available in June, but pricing hasn't been set yet.

ECRM announced that it has a VME interface card for Sun-3 workstations, available for $2,500, with a TIFF converter for the Sun expected in June (price to be announced).



Mac/Autokon setup. *The entire Autokon setup can be handled from the Macintosh through pull-down menus and the mouse. The user will be able to store the setup for future use.*

Electronic Publisher

Beginning two years ago as a reseller of LaserWriters, Macintoshes and PageMaker, Electronic Publisher has slowly expanded its newspaper software product line. Last summer, at ANPA, it introduced a very-low-end classified-ad entry and database program called The Profitable Newspaper. *(See Vol. 16, No. 21.)* At the Seminars, the company announced that it will begin to market Publication Technologies' page specification program for the Macintosh, UltraSpec.

UltraSpec is a space planning and page dummying tool. With it, you can graphically lay out the pages of your newspaper on the Mac screen. As you place the ads, features and stories that will make up an edition, the program shows you the shape of the page and the remaining available space. At any point, you can print a page dummy with a text description of the contents of each reserved block of space. The page dummy is then used as a guide for actually laying out the page (using Quark XPress or another desktop publishing program).

This program bears no relation to high-end automatic ad-dummying programs like Layout 8000. Rather, UltraSpec is the electronic equivalent of a paper page dummy; it remembers the sizes and positions you have assigned, but it cannot take any initiatives. It will be priced accordingly: EPI expects to charge about $250 for the software. First shipments are scheduled for May.

Frame Technology

Frame had two workstations, one demonstrating a new international version of Frame Maker software and the other running under X Window for the first time.

The international version supports French and English screen options, user manual and sample documents. All system functionality is the same as for the standard English product.

Hyphenation and spelling checking options are available for French, UK English, U.S. English and German, although these options weren't demonstrated in San Francisco.

The international version is available immediately. It is sold through existing dealer channels.

A Tektronix workstation showed the ability to run under the X Window standard without any apparent difference in performance. Frame Maker has been running under Sun's windowing system.

Imapro

Imapro, whose PC-based color system was initially envisioned as a means for creating "second-original" transparencies, has come to see itself more as a supplier of add-on workstations to Scitex users. The company has now developed a high-speed on-line interface to Scitex (using the Hewlett-Packard General-Purpose Interface Bus—GPIB). This allows the transfer of high-resolution images at a speed of 6 or 7 MB per minute.

At the Seminars, Imapro introduced a 600-dpi flatbed color scanner which handles reflection or transmission copy up to 5" × 7". The reflection-only scanner costs $12,000. Add $2,000 for the transparency-scanning version.

Imapro uses a two-scan approach to handling images. The initial scan is used to get a screen-resolution image into the computer. This is used for cropping and masking. Then the image is scanned again at full resolution. The art is taped to a carrier sheet which is pin-registered to the scanner. This makes it possible to rescan accurately.

Masking is used to get rid of unwanted background when one image is collaged onto another. But because, in this system, the masking is done with the low-resolution view file, the mask will have rough edges when applied to the rescanned high-res image. This is cured by zooming in on the collage at high magnification and "blending out" the rough edges with an edge-softening tool.

The system has a full complement of image-manipulation and tint facilities, but no edge-enhancement ("unsharp masking") software yet. There is some text capability, too, but it is primarily intended for headlines.

Imapro says it can prepare output separation files in CMYK, ready for recording on the Scitex Raystar. Gray-component replacement is supported. Alternatively, separations could be made on the Scitex system. Imapro goes through a "balancing" process to get its system properly calibrated with a given Scitex facility. The process can take four days.

Imapro's 80386-based system, with a scanner, costs about $70,000. That includes 185 MB of disk storage with cartridge tape backup. A thermal proof printer adds about $10,000.

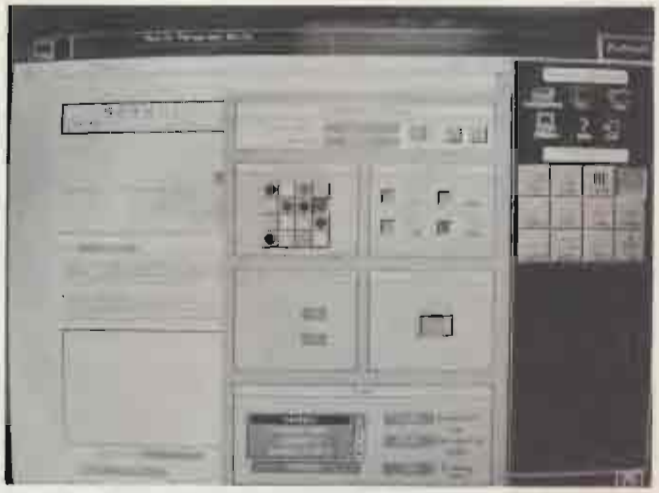
Information International

Although it demonstrated the Motris system and the Layout Advisor, Information International didn't have any major developments to show. It has added the ability to perform calculations on cell data in sports forms and a new wrinkle to its classified scheduling. The system now displays a calendar showing the dates that an ad will run, although the calendar isn't used to schedule the run dates initially; it merely displays dates specified on a line in the ad form.

We were told that Triple-I would demonstrate a new editorial archiving facility at America East in Hershey, April 6–8. Also new is support for the IBM PS/2. The first PS/2 system is to be installed this spring.

Intergraph

Intergraph is becoming a closely watched player in the computer graphics arena, and this year's Seminars exhibit marked the successful transition of its publishing software to the new Clipper platform. Its Distributed Publishing (DP) environment now includes a full suite of products with a consistent



DP/Publisher. *Intergraph has completed the initial release of its structured document processor.*

user interface and hardware platform. Through its object-based programming environment, Intergraph will be able to extend the produet family to include other modules as well.

DP/Publisher. As we reported in our March 14 profile of the Intergraph system, the core module of the Intergraph system, DP/Publisher, is now ready for the field. The product has been in production use for several months at over a dozen beta sites, but this was the first public showing. Intergraph recently completed its sales training for the U.S. sales force, and the trainers for the European sales force recently departed for home after over a yeat of intensive work on the product here in the States.

DP/Publisher is a solid first release. Although it doesn't challenge the tech-doc composition leaders, it is an excellent adjunct to Intergraph's bread-and-butter products—vector graphics applications. In accounts that do not have Intergtaph, their primary selling point will be that DP/Publisher serves as a foundation for futnre expansion, particularly for sites that intend to eventually computerize their drafting, drawing, presentations and other graphic departments.

DP/Paint. A new prodnct in the DP series, DP/Paint is a raster-based paint program that supplements DP/Publisher in the creation of presentation graphics. It generates RGB output at screen resolution (100 dpi) to 35mm film recorders or Versatec or Calcomp plotters for draft prints.

In most respects, the program is similar to freehand paint packages available for PCs or Macintoshes. It does offer some exceptional features, though:

- Up to 32 levels of gtay (depending on the capability of the workstation);
- Pixel cloning, such as you find on color prepress design and retouching workstations;
- Scaling, rotating in any degree and mirroring of images;
- Thtesholding—a function for changing the overall gray values of an image or part of an image;
- Level slice—a function for converting to black or white all areas above or below a user-specified threshold of gray or color; and
- Reverse—a function for making a negative of any image.

Because it was developed from a current Intergraph product, DP/Paint was completed much more quickly than the previous products, which were developed from scratch. DP/Paint is available for $800 in single copies, starting this month.

DP/Presenter. The cousin to DP/Paint, DP/Presenter creates resolution-independent presentation charts and graphs from spreadsheet files. It generates PostScript output. At this time, image from DP/Paint and DP/Presenter cannot be mixed, but Presenter files can be included in Publisher documents.

DP/Presenter is scheduled to be shipped in July. Single copies will cost $2,000.

Scanning accessories. Intergraph showed several useful programs that work in conjunction with its E/Scan engineering scanner. E/Scan operates the scanner from the workstation (rather than from the unit itself) and saves the resulting images as run-length encoding. Intergraph said other data compression techniques may also be applied.

I/Draft is a raster editor for cleaning up scanned images, merging them with other vector images and generating output. With it, 2-D and 3-D drawings can be laid on top of raster images. A variety of editing tools are provided, including rotation and the ability to fill and erase bounded areas. The program automatically extrapolates the 200-dpi file into 300 dpi for ontput on an Apple LaserWriter.

I/Scan provides batch and interactive speckle removal on line art. It also provides tools for replacing raster text labels with vector fonts provided by Bitstream. Twenty to thirty fonts will be in the first release. All are scaled on the fly to the screen and the output device.

I/Vec is the newest of the utilities. It provides a batch or interactive raster-to-vector converter. From the demonstration, it appeared to do an acceptable job of handling the jaggies of scanned lines, but it was much slower than the more expensive Ana Tech device.

All four programs are being shipped this month.

DP/Manager. The foundation for future work in revision control, job tracking and database management of publications, DP/Manager is an object-based hierarchical database manager still not formally introduced (although it is mentioned in our Tech-Doc profile of Intergraph in Vol. 17, No. 11, p. 16).

Although the software shown at the Seminars was still pre-alpha, it is clear that the final product will be oriented toward publishing production managers, not MIS managers. If so, it has the potential to be a nnique product in the tech-doc market, where document database management is becoming a critical issue.

We will report on DP/Manager's progress as the product nears completion.

Interleaf

As usual, Interleaf showed up at the Seminars with a large contingent of people and equipment—and a host of product improvements as well.

First on the list was VTE: text processing software for the DEC VT220 terminal. The software, which is compatible with DEC's All-in-1 office automation system, lets writers with non-WYSIWYG terminals share Interleaf documents and still preserve formatting and graphics information.

VTE is scheduled to be shipped in September with a suggested list price of $695.

In conjunction with VTE, Interleaf announced at the Digital Equipment press conference that its WPS and TPS products will be integrated with Digital's All-in-1 office automation system. Interleaf is developing a means to read and write files in DDIF format, which will also be supported by all DEC All-in-1 text processing software. The integration will be offered by DEC as customized software and installation and support in May of this year.

TPS 4.0 at last. Last year at the Seminars we got our first look at Interleaf's release 4.0. It still hasn't been delivered, but it certainly has been expanded. Being shown was 4.0 as it will be released in June on three platforms: Sun, Apollo and DEC.

Feature improvements since we last reported included a new desktop command language, based on LISP, that gives a slightly different look (and functionality) to the desktop. The user can create modifiable routines, modify parameter definitions (such as what the mouse buttons do) and run special programs. For example, the software can be set up to run filtering programs automatically, or allow the user to interact with the process. One of the filters that is now complete is a full IGES implementation. This makes all IGES graphics fully editable within Interleaf's programs.

There have been many additions to the style sheets, reflecting the additions to other functional areas. Table setting has been improved. It is now possible to select portions of straddle headers and have them repeat automatically on a second page along with table data that automatically breaks across pages. There is still some work to be done in this area, though.

It would be nice if the user could easily move column boundaries interactively instead of having to redefine columns via numbers. Tables currently support automatic vertical sizing, but horizontal sizing has not been added to the program yet.

In general, we found the tables implementation to be good as a first pass, with "ease of use features" needing to be added in subsequent releases.

A-page features have been improved, and Interleaf has added the ability to mix laudscape pages within a document (via the book concept). Pages can be created in portrait mode and rotated entirely. Headers and footers are handled automatically. Another feature that has been added is the rotation of text strings. Graphic text could always be rotated, but not normal text strings. Now it is possible to rotate entire "strings" of text (but not paragraphs of h&j'ed text). This makes it convenient to add rotated text along the side of a table, for example. It is also possible to edit the rotated text at any angle.

Interleaf has also added three new frame types: underlay, overlay and side frames. It is also possible to mix frames side by side. Underlays and overlays can be used to add a background (or foreground) effect to a page. The side frames are convenient to add fixed graphic elements anywhere along the side of a page. This was rather difficult in previous releases of the product.

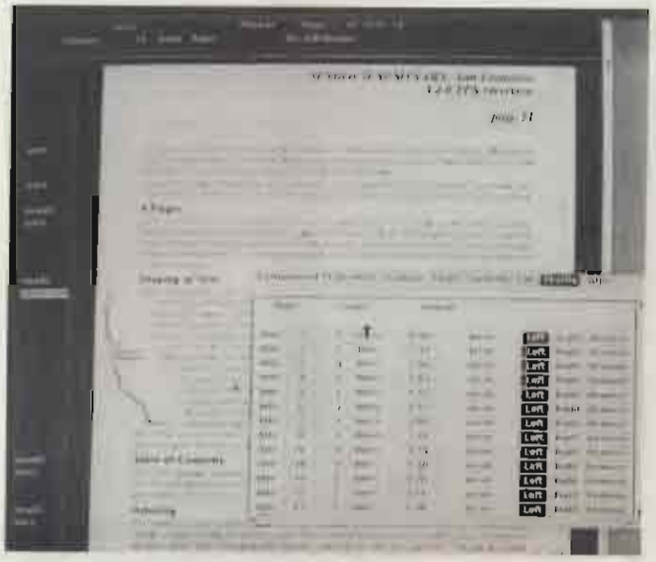
Interleaf has also added the ability to annotate document text with notes, embedded in the text string. The notes can be hidden or viewed under user control.

Another feature is a concept of inheritance. This allows parameters of certain tagged elements to be set "relative" to another tagged group. For example, a set of copy can be set one point larger than its parent. As the parent grows in size, so does the related copy, automatically.

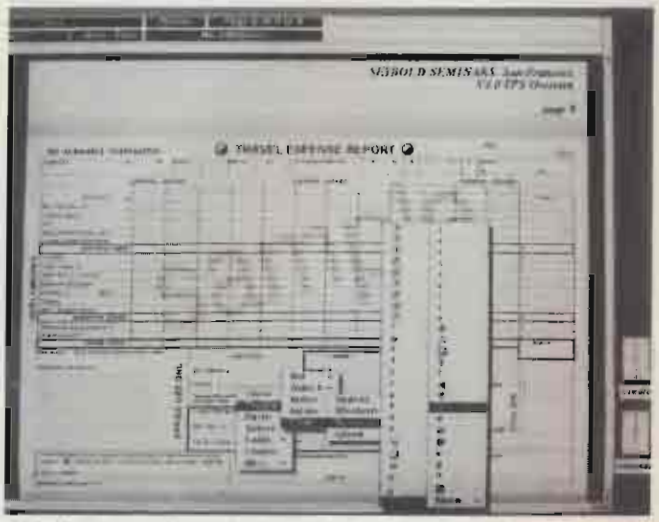
Interleaf has always been very strong on the graphic side of the house. It has improved its handling of spot color with editable patterns and assignable colors and color mixing. There are now three color models: RGB, HSV and CYM. In general, we found it very convenient to use color in a variety of ways and apply spot color to nearly any drawing or created shape. It still lacks support for full process color and an appropriate color output device, outside of the Kodak environment. It provides the ability to output colored images as monochrome images (ignore color) or as a hue sample (output everything that is in the same hue, regardless of saturation level), or simply everything that gives you a separate output for each tint pattern.

H&j quality. We were glad to see that Interleaf has added to user controls over the quality of text composition. Instead of the previous feature, which provided only a one-to-ten sliding scale for specifying how much hyphenation is desired, it is now possible to specify independent minimum, maximum and nominal interword space values.

After much effort to determine how the algorithm works, we finally deduced that it targets the minimum interword space on justified lines and the nominal on quadded or ragged lines. When asked what we thought of that approach, we expressed a preference for targeting the optimum. Interleaf said it wanted to produce the highest quality, but didn't make a commitment to change its current routine.



Irregular runaround control. *The amount of space between the graphic and the text can be adjusted line by line in the profile of the component's property sheet.*



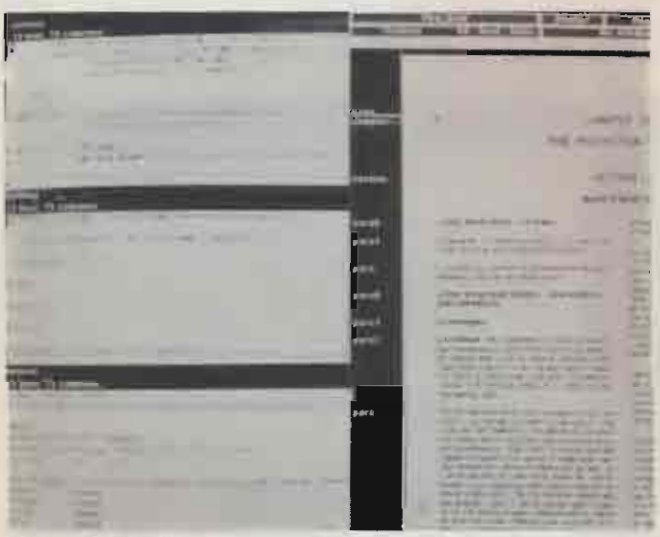
Rotated text. *If you look closely, text within the form is rotated 90.° ("Sample" is a graphic.) The pop-up menu picks pi characters.*

With the current routine, the user specifies three spacing values as percentages of the spacing associated with the font.

CALS support. Interleaf demonstrated its first level of compatibility with SGML by importing SGML files into a TPS document *(see photo)*. So far, Interleaf is working on a single definition, Mil-Spec 387784B, which is specified by the DoD as part of CALS.

In the commercial release of the product, which will be a follow-on to TPS 4.0, Interleaf will extend the SGML support to operate within the TPS environment. SGML tags, shown as attributes of components, will automatically be created as the writer adds components. The system does not restrict the user from using noncompliant components, but by establishing SGML-compliant style sheets, the administrator can exert control over the types of documents writers can create. Individual users will be able to choose between seeing the SGML coding on top of the WYSIWYG display or suppressing the SGML codes to see just the formatted page. When finished, users will be able to output an ASCII file that could be checked against the parser and delivered CALS-compatible to the recipient.

In version 4.0 of TPS, Interleaf has added looseleaf pagination and freeze pagination, additional revision controls that bring TPS in line with MIL-M 38784B and ATA100 specifications. It already has IGES and CCITT Group 4 facsimile support. When the SGML features are ready later this year, Interleaf plans to offer CALS compatibility on Sun, DEC and Apollo workstations.



Accepting SGML input. *At left, the three screens show the original ASCII file being imported and run against the Sobemap parser, which flagged any errors and inconsistencies that compromised compliance with the document type definition. The resulting file was then run through a specific Interleaf ASCII filter, converting the tags to TPS components with specific formatting attributes applied. The resulting document can be seen in the foreground.*

Island Graphics

Because this is one of the few events Island Graphics attends, it provides a rare opportunity to see the development efforts that may appear later through OEM deals. (Customers to date include Compugraphic, Berthold, Texet, Sun Microsystems, A.B. Dick, Hallmark, and a few others.)

This year the focus was on three products: the Berthold Headlinet introduced at Imprinta and scheduled for release this summer, a free-form page composition program resembling the one provided to Texet, and the Giant Paint product that was developed for Hallmark.

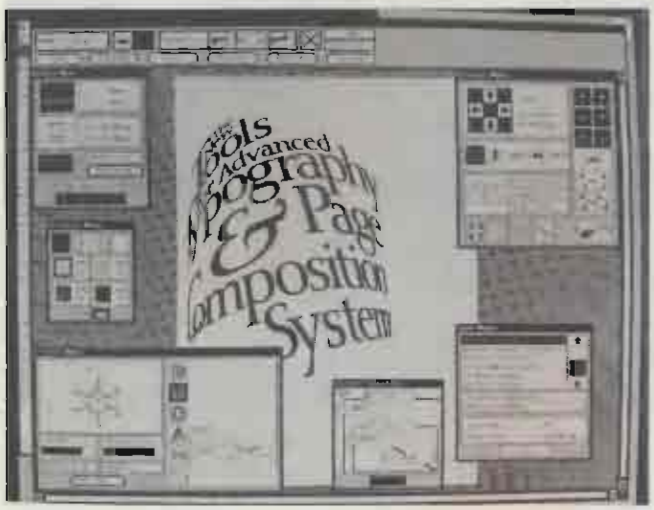
Headliner. The Berthold Headliner is to the electronic age what the old Visual Graphics Typositor was to days gone by—with the appropriate (and enormous) benefits of computerization. It was developed to enhance the features of the M Series workstation, running on the Sun Microsystems platform, which was how Island demonstrated it.

The Headliner uses convenient, graphic windows to perform operations. Multiple windows can be displayed, moved, or suppressed on the screen. Text is created and displayed in the central area, using an assortment of fonts generated from Bezier curves. Operations that can be performed on a block of text (a headline or other element) include shaping it like a cone, cylinder, sphere, etc.; rotating it on any of its three axes; creating a mirror image; and so on. Not yet functional is a feature for setting type along a wavy line.

Alignment of elements is comprehensive. Items can be aligned left, center or right with respect to another item on the screen. They can be grouped or layered. Areas can be filled with tints or patterns.

SolarWrite. This composition package, which runs on Sun Microsystems workstations, doesn't really have a name because it isn't a real product, but it is available to OEM customers. At the Seminars it was going under the name SolarWrite. It resembles the package Texet is using as its FreePage program, except that FreePage has a Texet user interface. It also resembles the A.B. Dick InPrint program except that InPrint runs under MS-DOS on a PC.

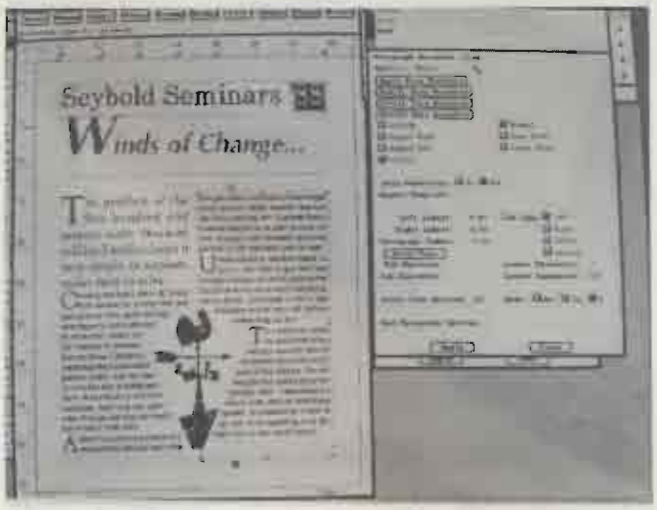
SolarWrite offers a combination of word processing, page layout, free-form layout and structured document for-



Headliner. *This OEM product from Island Graphics facilitates setting headlines with nearly any special effect possible, all initiated through menu and window selections. For example, the large window in the lower-left corner enables rotation on any of the three axes and distortion of blocks to fit the shapes illustrated. The window in the lower central area tells us the current position. Fonts are selected from the window in the lower right. Type size can be specified by number or by incremental changes. The window in the upper-right corner aligns and groups items. The large arrows are used for moving elements in minute increments (e.g., kerning). Note the graphic nature of the window selections.*

Below: *This is sample output (reduced) of a similar headline.*

The New Tools for Advanced Typography & Page Composition Systems



SolarWrite. *This OEM product from Island Graphics resembles the A.B. Dick InPrint program, except it runs on the Sun Microsystems platform. Note text flowing around an irregular shape. On the right, from the list of available resources, we have selected the one called "head" and are setting up indents, tabs, leading, dropped initials, etc. We can apply that resource to the selected text on the page.*

matting. It is based on free-form creation of frames to hold graphics or text. Frames can be stretched, shrunk or formed into irregular shapes to accommodate text. Text can even jump *over* a shape and continue justifying on the other side.

SolarWrite has most of the capabilities of common page layout programs, plus some that are less common: automatic creation of running headers and footers, master page layouts, automatic numbering, rulers, grids (with a "snap to" function), creation of dropped capital letters, support for portrait and landscape pages in the same document, insertion of new pages, etc.

It supports multiple windows for specifying commands, inserting special characters, and so on. Keyboard shortcuts are available for performing most functions.

As with the A.B. Dick product, the page display is quite accurate. It shows true fonts, scaled on the fly, in sizes from 1 point to 72 points. Text can be "colored" by giving it a percentage of gray. A page can be displayed in actual size, in double size, scaled to fit on the page, or in two-page format.

Text formatting is done through a "resource"—a set of attributes governing current text. Resources include font, size, word and letterspacing, paragraph leading, indents, etc. When text is imported, it takes on the properties of the resource in effect at the time. Text on a page can be changed by selecting it and accessing a new resource.

But once the attributes have been applied to a text block, they can't be changed globally by changing the definition of the resource. Each block to be changed would have to be selected again to apply the new resource. So this isn't as easy to use as some systems with true tagging and style sheet capabilities.

H&j is based on a 100,000-word dictionary with three levels of preferential values. Control over word and character spacing is limited to specifying the percentage of the fixed optimum to be permitted. The justification routine uses a penalty scheme that we haven't had a chance to evaluate. But we were told that it applies penalties if, for example, the previous line was hyphenated, if a line break would result in excessive word space, or if it would result in an orphan condition. This sounds interesting, but we don't know yet how valuable it is. The basic algorithm first tries to break the line within the word spacing limits, then goes to letterspacing, followed by hyphenation.

Text can be input and edited on the page in WYSIWYG mode. When changes are made to text, the system reflows the entire page. Word processing features include an updatable, interactive spelling checker and a comprehensive search/replace routine (case sensitive or insensitive, wildcards, forward or backward, discretionary or global, and the ability to find a "hit" that wraps from one line to the next).

The program supports the Island Graphics paint and draw programs, which are much like those in the A.B. Dick

Island's color paint system. *This is the main menu. From the entire canvas, we can select a portion to edit. Colors are selected from the bottom of the screen.*

product. They can run in windows on the screen while the page program is running in another window. But SolarWrite also includes its own facilities for creating rules, borders and polygons.

Scanned graphics can be imported, cropped, scaled and stretched. Graphics can be anchored to the page or to the text.

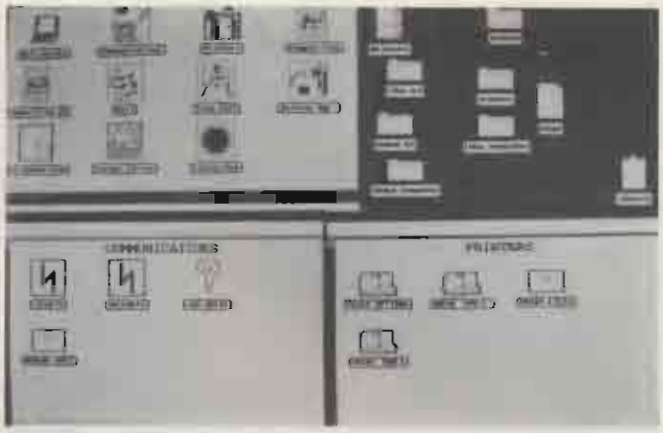
Giant Paint. The other Island product was a 32-bit virtual canvas color paint program developed for Hallmark's internal use. It isn't commercially available, but could be developed into a product for another OEM customer. It divides the canvas, mosaic style, into sections that can be edited. Each section displayed shows a certain overlap for operaror convenience.

Tools are provided in layers of menus that bring the most recently used ones to the first level.

Kodak

In the true spirit of the Seminars, Kodak demonstrated several "statements of technologies" its engineers are developing in the lab, technologies that may become future enhancements to KEEPS, its Interleaf-based publishing system—but then again may not.

Unix shell. We found the most interesting of the four demonstrations to be a general-purpose user interface for Sun Microsystems technical workstations. It is written as a "shell," that is, a layer of software between the operating system and the application software. Traditionally, the Unix interface is a command prompt (for example, the dollar sign of the Bourne Shell), much like the C> prompt of MS-DOS. The Kodak shell is a contemporary Unix implementation that grew out of Kodak's efforts to make it possible to perform as many functions as possible on the KEEPS product from icons. Interleaf, with its folder, file drawer, and cabinet icons, was the application software. Kodak extended this to



Kodak Unix shell. *The general-purpose user interface runs within SunView windows.*

include other applications related to publishing—electronic mail, communications, system administration, and so forth.

In the prototype shown at the Seminars, Kodak has taken the KEEPS user interface and lifted it out of the KEEPS environment, creating a general-purpose user interface running within Sun Windows. KEEPS is just one application within the desktop, and Kodak demonstrated several software utilities it had written outside of KEEPS just to show the concept worked.

What is interesting is that with such a shell, Kodak could add value to virtually any Sun-compatible software, whether it is Interleaf or another application. Kodak's value would be ro provide the glue tying the applications together at the user interface—once you log on, yon would work within a command-free environment.

We have always admired the design of the KEEPS interface. The issue in bringing such a shell to the general market is whether it would be compatible with the new Unix that AT&T and Sun are developing. Kodak emphasized that it is building the new shell on top of Sun's 4.0 operating system and avoiding hardware calls within its shell. That approach, combined with Kodak's financial stake in Sun, is sufficient grounds for believing that any Kodak shell will be fully compatible with the new Sun-AT&T Unix.

We wonder, though, how different the user interface shell might be from the new standard developed by Sun, AT&T and Xerox. Kodak officials suggested that it will ensure that its shell will be software compatible and functionally equivalent, but it is likely to continue developing its own so that it can offer Kodak style and value in its products.

Thus, the Kodak shell is likely to differ in appearance from every other in the market. (This may be a distinct plus, considering HP's and Microsoft's troubles.) Whatever applications it chooses will have different icons and different ways of performing similar functions, but presumably the same functions will be present.

Demand for command-free Unix shells is quite recent. It used to be that the only people who had Unix machines were engineers, programmers and other computer types who preferred the language of commands. With the rise in popularity of Unix as a general-purpose environment has come a demand for interfaces with icons and menus. AT&T perfected one for its Unix PC, which made Unix more intuitive than

Windows, yet the product failed in the marketplace. Now, together with Sun Microsystems, it is resurrecting the idea, with the right timing. Our guess is it will be the hottest product of the summer.

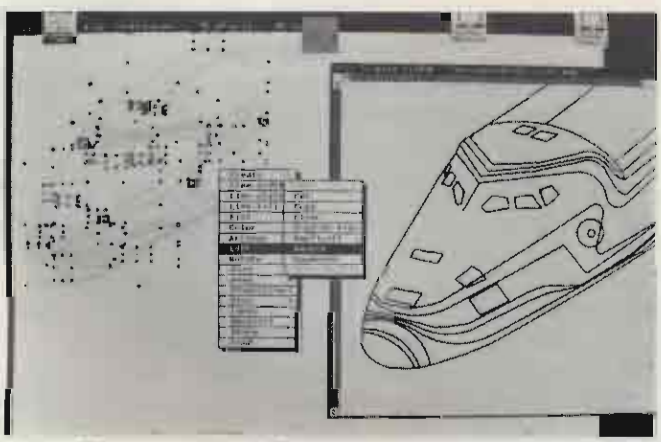
With its contract with Interleaf due to expire in 1990, Kodak must protect its investment in publishing. With the shell, whether or nor it srays with Interleaf, Kodak will be able ro add any number of Sun-based applications to its ever-more-complete system.

Raster-to-vector conversion. A second rechnology demonstration was prototype raster-ro-vecror conversion software, which vectorized gray-scale images in near real time.

The software had difficulty with the jaggies of straight lines—they ended up as many vectors that had to be consolidated inro one—but rhe speed of the vectorization process (less than a second per image) was far ahead of most systems. It also showed considerable distance to go to achieve the consistency of ANA Tech, which has combined the vectorization process onto firmware that is now as small as a single computer chip.

Software development. In conjunction with the black-and-white scanning software, Kodak showed a color scanning control panel very similar to that developed for the 1530 scanner (a 300-dpi flatbed scanner). Using the Sharp color scanner, Kodak scanned and displayed 300-dpi 8-bit color images. It was not yet able to output color halftones on the high-speed color printer, presumably because the 1392 does not halftone itself, and Interleaf does not yet handle color halftones either.

Printer technologies. The third and fourth technologies were both related to Kodak's high-speed printer, the 1392. In black and white, the merging on demand of variable data from a mainframe with a document prepared on the workstation is in production at several test sites and was shown in a canned demo. The printer utility from the Kodak user shell was used to switch between 1392 or LaserWriter, much like invoking the Chooser of a Macintosh.



Vectorizing a scanned image. *Kodak's demonstration was the fastest shown at the Seminars. The raster version of the shuttle nose scanned on the 1530 scanner (right) compared to the vectorized version, with all vector points displayed. Menu-driven monochrome and color vector editors were developed for working on images.*

The prototype unit of rhe color version of the 1392 was also shown. *(For the article on the first showing of the color printer in January, see Vol. 17, No. 9, p. 19.)* The quality of color from this machine continues to impress analysts and draw interesr among large corporations.

Seeking color standards. Outside the exhibirion area, Kodak held a meeting Wednesday night at the Seminars to present irs views on standards for color definirion on electronic displays *(see page 24)*.

Until such standards are adopted, Kodak will move forward in applying its technology to the problems at hand, one of which is outputting color halfrones on the high-speed color printer. The unit is currently using process color ro produce color business graphics.

Together, the windowing, vector, color and printing technologies were an impressive demonstration of Kodak's commitment to develop a "total publishing solution," one that looks increasingly like those developed by its rival, Xerox. They also point out Kodak's desire to become a broader solutions supplier.

LaserMaker

One of the hits of the exposition was the new LaserMaker program for laying out publications. As yet unnamed, it is really the next logical extension of the previous program, which provided a good composition program with a soft-copy preview supporting cursor tracking. Now it is possible to lay out pages graphically and flow text into areas, jumping stories from one page to another, with imported graphics in a variety of common formats.

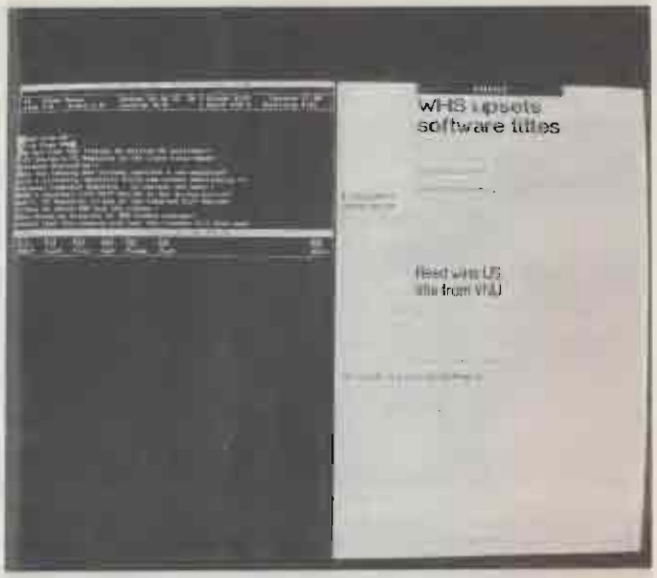
Text is still edited in monospaced mode in a fixed-size window. The screen can be divided in half, with the monospaced text window on one side and either one-page or four-page layouts on the other. Or the entire screen can be dedicated to a view of eight or 16 pages simultaneously.

Page layout is done with a mouse (or keyboard commands) and a page grid, to which elements can snap. Space can be reserved for photographs or ads. Stories can be given multiple legs of differing depths.

When a story is assigned to an area, it flows onto the page, filling whatever space has been allocated. If it fills the area before all the text is used, the balance is held to be run on another page. Continuation messages are generated automatically when the story is assigned to another page. If text is later edited, changing the page break, it automatically reflows accordingly.

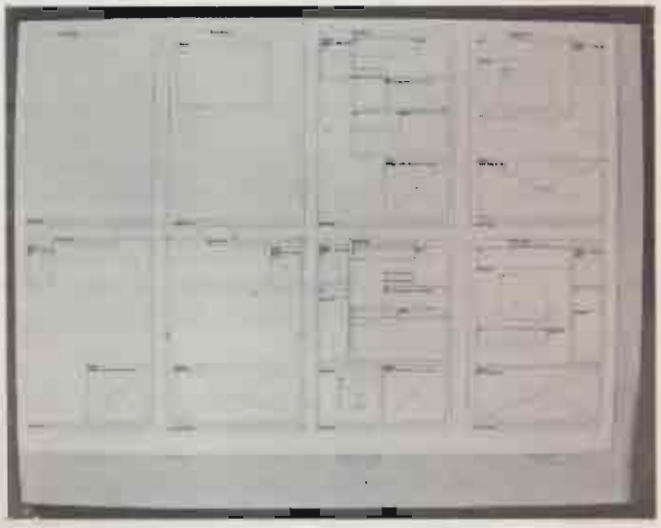
After text has been flowed into an area, the shape of the area can be changed interactively, in depth or in width, after which the text can be re-h&j'ed and reflowed to the new boundaries.

Editing changes are made in the text window, with the cursor tracking the two windows. (That is, as the cursor moves in the layout window, the text window cursor follows, character by character, and vice versa.) But the preview isn't updated automatically with each editorial change; it is updated only by command. We found the speed of updating the preview to be reasonable, although we don't know how it



***Above:* LaserMaker on the 24" Viking.** *Text is edited in the monospaced window on the left. The page preview is on the right, showing text, graphics and ads. Areas can be changed dynamically. We asked what the lower-left space would be used for and were told that nothing had been decided. We suggested a story list of items available for the page. The response was that this might be possible.*

***Below:* A view of eight page layouts.** *Some of these pages have been fully laid out, others are incomplete. Two diagonal rules reserve space for ads; one diagonal for graphics. Empty rectangles have been assigned to stories.*



will change between our demonstration and the formal product release scheduled for about four months later.

Text representation in the layout area has been improved since last fall, but it still isn't true WYSIWYG. It uses generic fonts.

Graphics formats supported include GEM, TIFF, PC Paintbrush and PCT.

The program supports the Moniterm Viking and Micro Display Systems Genius high-resolution monitors, including the new 24" Viking. It runs on an IBM-compatible PC with extended memory (required for the preview).

LaserWare

LaserWare showed its LaserPaint package in the RasterOps booth. The software was running on RasterOps color hardware board for the Mac II. RasterOps is the first of several vendors to make it to the market with a 24-bit-per-pixel color capability for the Mac II. The package includes display hardware and a ser of QuickDraw extensions that permit the use of 24-bit color (native QuickDraw is limited to 8 bits).

LaserPaint can work with either 8-bit or 24-bit color setups. (It can work in monochrome gray-scale as well.) When working with only 8 bits of color (256 possible colors per image), LaserPaint sets up a custom palette containing only those colors needed for the image. If the image is being scanned, there is a two-pass scanning process. The first, quick scan selects the best palette colors, given the image. The second (full-resolution) scan assigns each of the pixels of the image to one of the palette colors.

LaserPaint has a full selection of "paint" tools for retouching a scanned image, and it has "draw" tools (resolution-independent vectors) as well. Masks can be created for working on restricted image areas or for cut-and-paste image assembly. For flat-tint areas, the user can specify color using the PMS system.

There are text tools, too. PostScript fonts are supported, and lines of text can be rotated in 1° increments. There are tools for placing text on a curved path.

Output is to PostScript devices. LaserWare will handle color separations. The output is four gray-level files which are screened by the PostScript RIP. This is the same method that Unda uses; but unlike Unda, LaserWare doesn't yet have a plan for calibrating its color processing to the final printed result. This means that, for the moment, the company will focus on markets where color fidelity is not critical. An example is real-estate listings booklets, which are now generally done in black and white because conventional color takes too long and costs too much. LaserPaint can provide a low-budget color capability for this kind of product.

Lightspeed

Lightspeed, which had recently developed a magnetic tape interface with Scitex systems, showed an on-line connection. Image position and cropping information can be sent over the link. If the Lightspeed operator has been working with the actual text, compressed bit maps of the text (composed from Birstream fonts) can be sent, too. A similar on-line capability should be available for Hell systems in a few months.

Color images would be rescanned at full resolution on the color system. These would be registered to the layout provided by the Lightspeed system by having the operator indicate a reference point—the same spot in the picture that the Lightspeed operator had indicated. In the case of an image requiring sizing or rotation, two reference points would be selected.

Lightspeed has always focused on the design process, and the end product of the system in the design environment

has typically been a comprehensive layout. For that purpose, neither sophisticated composition nor high-resolution color is required. But Lightspeed has gradually been adding production-oriented faciliies, especially on the composition side. For example, irregular runarounds (available only wirh greeked text up to now) will soon be supported.

Some designers, of course, will not want to deal with typographic details. And for some projects it would be inappropriate to saddle the designer with handling the type, even if the design system itself could handle it. But in those cases where the designer wants complete typographic control, Lightspeed is planning to provide the tools.

Linotype

The Seybold Seminars provided the occasion for the first public U.S. showing of the Seties 2000, a PC-based professional publishing system that Linotype is unabashedly touting as its entry into the Fourth Wave sweepstakes. We have described the system design philosophy and functions *(see Vol. 17, Nos. 10 and 13)*. But the product is still evolving rapidly.

Interactive composition. At this evenr, Linotype showed an interactive composition feature for the first time. This version of the program, while still based on XyWrire for text entry and editing, is always in counting mode and displays actual line endings at all times. It includes:

- ***Licol hyphenation.*** Although XyWrite is counting the lines using irs own algorithm, it gets hyphenation points by calling the hyphenation routines in Licol, the Linotype composition program. Licol returns rhe word to XyWrite wirh the hyphenation points that may be used.
- ***Manual and semi-automatic modes.*** In addition to the fully automatic mode (with automatic hyphenation), a manual mode tells the operator when he is in the justification zone, but depends on the operator to decide where to break the line. There will also be a semi-automatic mode, in which line-ending decisions will be automaric unless hyphenation is required; the user will supply hyphen points.
- ***Fast justification.*** Linotype claims rhe program composes lines at 3,750-10,000 characters per second.
- ***Status line.*** The XyWrite prompt line maintains a running display of several composition parameters in effect at the cursor location. The parameters to be displayed are customizable. Upon command, a list of additional parameters (also customizable) can be displayed in a popup window.

The effects of some of the composition commands, such as indenrs and cenrering, can be displayed on the monospaced screen. But Linotype is still working on what the ratio should be between a given value of indenring and the number of screen spaces that XyWrite shows. Other composition functions, such as copy-fitting and vertical justification, are not interpreted in the interactive mode because they require reprocessing the text until some condition is satisfied, which could slow the computer unacceptably. Linotype feels such functions should be done as background batch jobs.

Gray-scale graphics. Linotype showed its ability to perform interactive adjustment of tonal ranges for scanned graphics. It works this way: the system displays a transfer-function curve superimposed on the image you are adjusting. Using a mouse, you can move the transfer function curve to any position, and as you do this, the screen contrast changes to show the effect of your adjustments. The change to the screen is instantaneous and reversible, because the software is simply changing a lookup table in the display controller hardware. When you save the image, your adjustments are recorded with the file as permanent changes.

MegaVision

MegaVision, new to the graphic arts, showed its innovative system for color image scanning and manipulation. (Up to now, it has sold image-processing equipment for applications like electron microscopy, medical imaging, and automatic inspection.) The system consists of an extraordinarily high-resolution video camera (2000 pixels in each dimension, per image) and a high-speed image-processing computer with a versatile image-manipulation software package.

The camera, a monochrome Westinghouse device, can be used as a studio camera for product shors or as a slide scanner. In either case, a color filter wheel is mounted in front of the camera. Three scans (red, green, blue) are made.

Once the image is captured, many image-alteration functions are available: softening, sharpening, local color adjustment, cloning, painting, ghosting, and several special-effect screens. Multiple images can be collaged (composited). There is no "airbrush" capability, but that will be added. You can also rotate images to any angle, and this process is very fast: about 80 seconds for a full-resolution 4-MB color image. Like all processes on this system, rotarion works with the full image resolution, not just the displayable screen image.

Saving an image is quick. Since rhere is always enough RAM for two copies of an image, the active image buffer is saved to the inactive one. Switching back and forth between the "before" and "after" versions of the image is equally fast, as is reverting to the saved version, abandoning the changes.

MegaVision is targeting catalog and phoro-retouching applications initially. For catalog production operarions that do theit own product photography and feed an electronic prepress system, rhe system seems a good fit. It might also be sold to photography studios whose work is used by color

Megavision. *On the right is the high-resolution video camera with its slide holder and filter wheel. The image-processing computer is under the desk to the right of the chair.*

houses with prepress systems. For retouching, the focus would be on creating a color "second original" by driving a Celco film recorder. There might be applications in commercial portrait photography and in consumer photo finishing and reprinting services, for example.

MegaVision plans to add headline text facilities and tint-and-border capabilities. Full text capabilities have been part of the plan from the beginning, but nothing was ready to be shown at the Seminars.

We are impressed with MegaVision's image-processing capabilities, and we look forward to hearing about their progress in getting the equipment into the field.

Moniterm

Moniterm showed several of its large Viking monitors—two running on '386 clones and one on a Mac II. The contrast between a Viking equipped with an optional OCLI (Optical Coating Laboratory Inc.) anti-glare filter and one without it was striking. This filter costs $199 for a 19" display; it is not yet available for the 24" models.

Although we did not see a demonstration, the company claims that the 19", landscape-orientation Viking I can, using a Windows 2.0 driver, show three pages side-by-side. The company plans to release its Windows/386 driver this month.

With a new version of VBIOS, the Vikings can now display programs such as WordPerfect, Microsoft Word, Lotus 1-2-3 and dBase at a resolution of 60 lines by 80 lines, in addition to the familiar 25 × 80.

Networked Picture Systems

We recently covered NPS at Imprinta, where the company showed the latest iteration of its desktop color prepress software and announced the signing of Rahmann as an authorized reseller of NPS products in the European market *(see Vol. 17, No. 13)*. At the Seminars, we took a fresh look at the software and gleaned a few details about the next release of Page Express.

Perhaps the most significant news was that NPS has "dissolved" its relationship with Publishing Technology, which had the rights to sell NPS products under the name Colorstone to the publishing and printing markets. The different product names and market overlap proved confusing, and the inability to penetrate the graphic arts market with its own brand-name product has hindered NPS in its efforts to establish a presence in the field. By dissolving this relationship and pursuing direct sales and authorized resellers, NPS now has a much more cogent marketing strategy.

At the same time, he company lowered the price of Page Express from $78,500 to $69,500. The price includes a fully configured 80386-based wotkstation with 19" color monitor and 13" text monitor, digitizing tablet and puck, 240-MB hard disk and 60-MB SCSI streaming tape drive.

Page Express 1.X? Page Express is the first color prepress production system (text, graphics and page layout of high-res, four-color pages) based on an 80386 PC. Apart from its price, which is considerably lower than those of traditional prepress systems built on minicomputers and specialized high-performance workstarions, Page Express is intriguing because it includes a variety of text composition capabilities that are an integral part of the program. However, its composition and page layout functionality and performance have lagged well behind Image Express, the NPS high-resolution paint and tetouching software. The latest version improves both functionality and performance, but not to the degree some people had hoped.

Composition improvements. Page Express is designed for layout-intensive pages where high-quality typography is required. NPS is working to make the tools available to provide this quality, although it can be a fairly time-consuming process. One new featute is the ability to adjust interchar-acter spacing manually over selected areas of text in order to achieve a better fit, either for asthetics or for better h&j. NPS was distributing samples of a brochure it had produced using the system. We were impressed by the quality of the text composition, although we didn't know how much manual effort went into producing it.

Othet new features include automatic dropped initials, a user exception hyphenation dictionary, mixed dimension rulers (*e.g.*, points across and inches down), and Bitstream tracking (with three tracks of spacing adjustments for each font NPS offers).

The ability to use stored formats has been improved with the ability to record and play back the formats. Formats are still written into command-riddled ASCII text files that are edited by a DOS line editor, but these files can now be easily applied to more than one document. Previously, Page Express saved the formats, geometry and text of each document as a single file. Now it breaks the docnment into three files (formats, geometry and text), saved within one directory. The text, formats and geometry can then be copied separately into the directory of other documents that might share one of those components.

NPS has improved the speed of the page display by offering different levels of WYSIWYG. The first improvement


The Seybold Report

The selection of the type when designing a job requires the serious attention of the graphic designer. Following are some ideas the designer uses in selecting type.

Pick a typeface that matches the mood of the layout. A thin, light face gives a different image than a thick, boldface type.

Headlines in color should be a little larger and have wider elements than those in black. Headlines are the major captions set above a newspaper or magazine article.

Generally, the same type family is used for any one job. Variety is obtained by changes in type size and blackness. The

Seldom will headlines two different faces. Do consider how different fa regardless of when they Just because two typef were designed in the ei eenth century does not m they can work together job. Old style roman modern roman do not together well. Type mix a matter of taste.

Sans serifs are a ma type. They go well with al any other type. However

Page Express dropped initials. *The program automatically sets body type around the block of the initial.*

turns off the graphic display, showing just the image windows. A second method displays a low-res version of the text. Unfortunately, even with both of these "speedup" features enabled, the program still crawls when repainting a composed page. The difference in speed of the low-res text file was so minimal, and its display so much less readable, that we found it impractical for anything but crude layout judgments.

A more useful improvement is the ability to limit recomposition to a single column. Were this narrowed to single lines (for headlines) and paragraphs, the speed of everyday corrections could be further improved.

The speed of page design is quite adeqnate, becanse layouts are drawn as geometrical areas, using a puck and graphics tablet. The coordinates of the puck are tracked in a numerical display at the rop of the screen. Text and graphics blocks can be specified by coordinares from the keyboard as well.

In its next release, NPS plans to add another processor to increase further the speed of composition operations. It plans to add vertical justification, better on-screen grids and rulers and automatic alignment of table columns.

File format compatibility with Hell and Crosfield are due for release rhis year. Page Express and Image Express cnrrently interface to Scitex systems rhrough the Handshake protocol. Shinko and Iris proof printer drivers are available.

European versions are under development for Rahmann. By the end of the second quarter of 1988, NPS hopes to have English, German, French, Italian and UK English hyphenation dictionaries implemented. Conversion of the nser interface to foreign languages will follow.

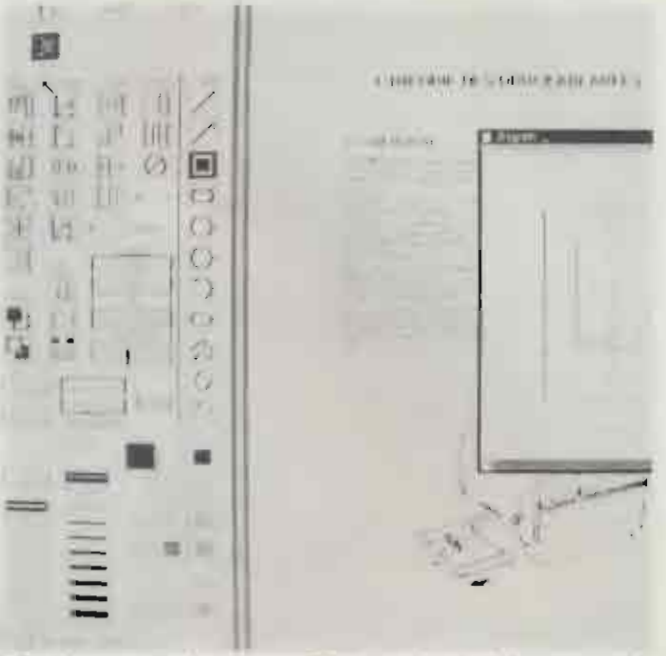
Image Express. NPS also stated that Image Express has been ported to the Microsoft 4.0 "C" compiler, which NPS says doubles the speed of certain drawing functions. The port was not demonstrated at the Seminars, but we understand NPS plans to exhibit it at Graph Expo East this week in New York.

Omnipage

There was exuberant optimism at the Omnipage exhibit, as officials clucked over the multimillion-dollar OEM agreement signed that week with Agfa and Compugraphic *(see The Latest Word of our previous issue)*. The agreement gives Omnipage a much-needed boost at a time when the company's luck appeared to be petering out.

Significant software developments since we reported on the product in our Tech-Doc review (Vol. 17, No. 12) include a new graphical user interface. Many functions have been put into modules of graphical palettes, which can be left open and manipnlated as Sunview windows. This is particularly nice for the vector drawing package, in which tools are frequently used over and over again.

Omnipage also showed the software interface for operating the new Agfa scanners from within The Page Processor. This nnique combination of software and peripherals will be a useful marketing and demonstration tool, even if most Omnipage customers have little use for halftone scanners.



Omnipage goes to Europe. *The deal with Agfa has spurred the development of foreign language versions of the Omnipage software. At the Seminars, Omnipage showed support for German hyphenation. Agfa introduced The Agfa Press, which included the Omnipage software with German user interface, at the Hannover Fair last month. With the new graphical interface shown here, Omnipage hopes to streamline the process of converting the user interface to foreign languages.*

A final nore is that the Page Processor now runs much more smoothly in demonstrations rhan as recently as last fall. As Omnipage works with Agfa (and potentially CG and Hewlett-Packard) in further developing its product, we look forward to seeing conrinued progress.

Prepress Technologies

Most of the systems setting out to offer color separation on a PC try to emulate the functionality of the high-end Scitex/Crosfield/Hell products. Not Prepress Technologies. This system has more the feel of a drum-scanner approach. It works with one image at a time, and aside from global color adjustments, you don't get to make any changes to the image.

Although you do get to see the image on the screen, the company doesn't promote the screen image as a basis for color judgement. Rather, through experience with transparencies and separations, the operator would get a sense of what settings will achieve a given effect. This is, of course, exactly what conventional drum scanner operators now do.

The software rnns on an AT-class PC equipped with a Targa board and a megabyte of EMS memory. The color-separation software is in test ar three sites and was expected to be ready for shipment within a few weeks.

Prepress Technologies also sells a tint-separation package for cartoons, newspaper advertising inserts, and similar applications. This software is in test at six sites and is currently being rewritten.

At the Seminars, the company had many examples of work done with its tint software, but only one with the continuous-tone software: a Barneyscan brochure. The brochure credits the separation to Pixelcraft, a now-defunct firm whose principals were hired by Prepress Technology.

Qubix

Over the years, one of Qubix's trademarks has been a massive, tiltable "electronic drafting table" complete with sonic pen that tells the system the precise location where the operator is working. Qubix had moved to Sun for its CPU (housed in a separate box) but resolutely kept the expensive drafting-table packaging and very high-resolution screen.

At the Seminars, Qubix announced that it had modified its software to run on standard Sun/3 workstations. Qubix's CEO, Neal Dempsey, stated that the company was "considering" moving to other standard platforms as well, although he didn't elaborate.

Another company official also disclosed to us that Qubix plans to develop higher-end applications.

Running on the standard Sun platform, Qubix's software loses support for the sonic pen. It also is restricted to a lower-resolution screen (72 dpi, compared to 144 dpi on the Designer system). Mid- and upper-range Sun/3 workstations can use a Qubix interface card that enables them to be connected to laser printers and scanners; the 3/50 and 3/60, which have no expansion slots, must both output files to be printed and input scanned data via Ethernet, or else use the serial port to output to PostScript printers and some typesetters.

Sun Microsystems is setting up VAR channels to market the new configuration.

The software alone will sell for $10,000, with quantity pricing available. Complete systems start at $20,400; this figure includes a Sun 3/50 workstation with 4 MB of RAM, floating-point coprocessor, 19" monochrome monitor, keyboard, mouse, 170-MB unformatted disk, Ethernet interface, and two RS-423 serial ports, along with the Qubix illustration software.

Qubix is also OEM'ing Trivector's 3-D drawing software. The company forecast that it would have the capabilities of this software fully integrated into its system within a month. Users will be able to create 3-D illustrations (in Qubix format) and edit 3-D CAD work.

Following the Seminars, Qubix announced that it has added the capability to interface to the Xyvision system and to drive Monotype and Information International typesetters. Qubix currently interfaces to systems from Texet, Datalogics, Interleaf, Scribe and Kodak. It outputs to Autologic and Compugraphic typesetters as well as PostScript devices.

On the sales front, Qubix reported that Motoya Ltd., its Japanese distributor, has already delivered 21 Qubix systems. These sales are greatly needed by the company. In its most recent fiscal year it recorded a loss of nearly a million dollars on revenues of only $352,000.

Fax reminder: *Our facsimile numbers are (215) 565-4659 and 565-3261, for news or readers' comments, 24 hours a day.*

Ricoh

Ricoh used the seminar to introduce a new facsimile system for linking prepress sites to dispersed printing plants. The company has been a leader in this field, having installed systems for *USA Today* (now with 31 domestic and two overseas printing sites), *Figaro* (France), *Expressen* (Sweden), and *China Daily* and the *People's Daily*, among others.

The new system, called Telepress 35/108, offers a number of refinements and new features. As its output device, it uses the Linotype L500 wide-measure laser imagesetter. Output resolution is either 850 or 1700 dots per inch.

Data transmissions at speeds up to 2 million bits per second are supported. This is a big jump from the maximum of 150,000 bits per second with the previous model. Customers began asking for the higher rate as T-1 transmission lines began to become available. (T-1 lines run at about 1.5 million bits per second in the U.S., 2 million bits per second in Europe.)

One interesting and unexpected aspect of the new machine is PostScript support. PostScript is a very compact format for transmitting text and vector graphics. By sending as much as possible in PostScript format, and leaving for facsimile transmission only items that have to be scanned in any case, the transmission times for some jobs could be drastically reduced. And the recording device, when not in use for receiving remote transmissions, can act as a local PostScript typesetter.

Ricoh sees the new machine having applications well beyond its traditional newspaper markets. In commercial markets, there are printers with prepress services in one place, printing in another, and customer service offices (with the need for high-resolution proofing) in still others. There would be potential in-plant users, too. For example, a far-flung demand-printing operation, based on originals kept at a central site, could be set up with this technology.

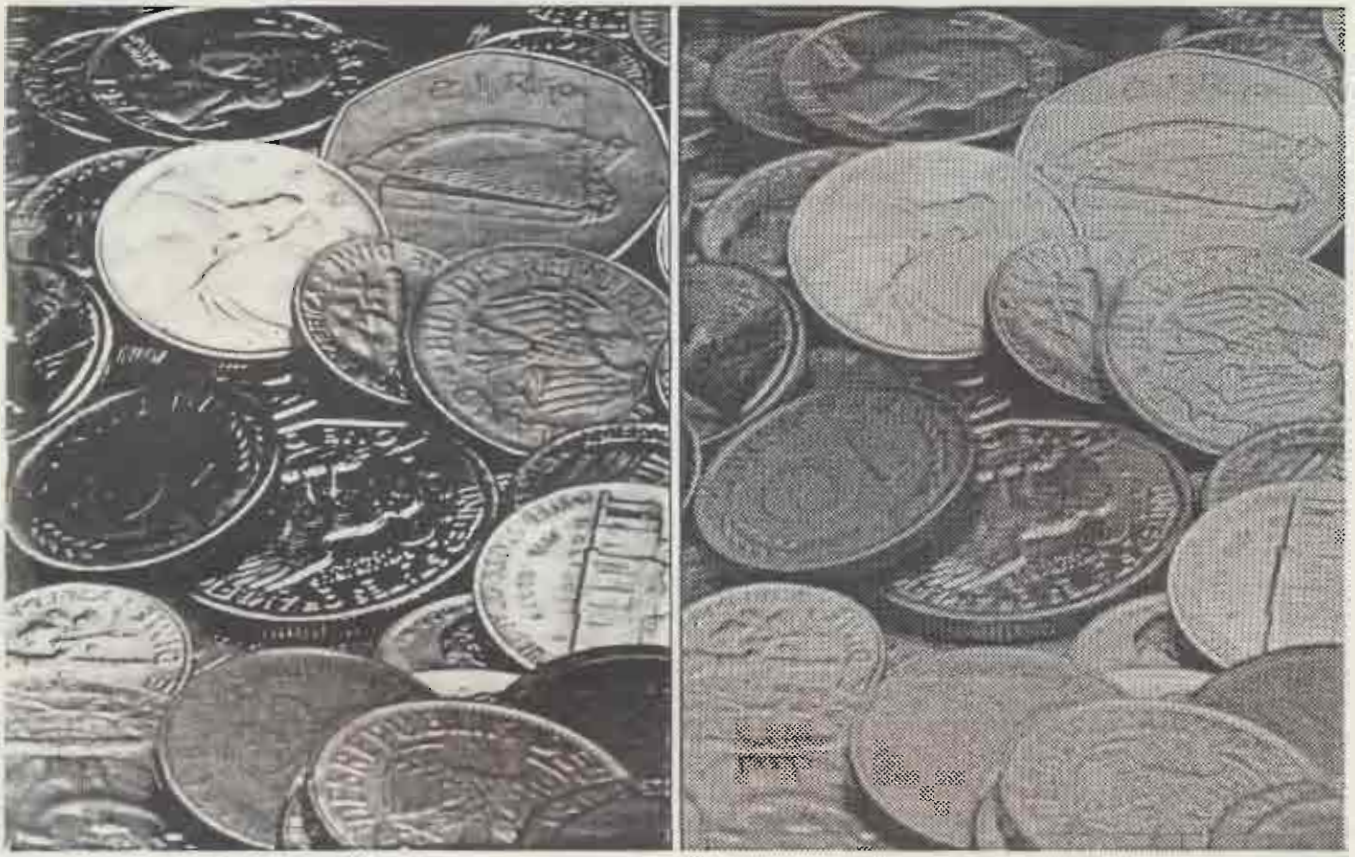
Though the Telepress 35/108 is less expensive than previous Ricoh models, it isn't cheap. A minimum setup, with one transmitting and one recording site, would cost $400,000-$500,000.

Rise

Rise unbundled the "photo-printing" capability of its turnkey system to demonstrate Rise graphics output, in conjunction with PostScript from an Apple LaserWriter. Rise's technology, which would be used to bypass PostScript's or another page description language's halftoning to improve speed and quality, is being offered to the OEM printer manufacturer market.

Scitex

Although there were no new color system products on display, Scitex made its mark at the Seminars through its joint



Rise vs PostScript halftones. *The Rise technology **(left)** not only produces better quality images than PostScript **(right)**, it outputs the same image in roughly 10% of the time. Both images were produced from a LaserWriter engine.*

announcements with Adobe and Quark. Scitex system prices are typically around the million-dollar level, while Quark and Adobe are known for desktop publishing products; nonetheless, most observers felt that each announcement was quite significant.

Quark announced it had developed a version of Xpress that supports the Scitex Handshake two-way data transfer protocol. Scitex is quite enthusiastic about this, and has signed on as the exclusive international distributor for Handshake Xpress. The product is now being tested by a few Scitex users. This will help determine what level of product support is required, which in turn will govern the price that Scitex and Quark charge for the software.

Handshake is a transmission protocol for transferring page geometry, text and screen-resolution images between systems. An artist can make up pages on a Macintosh using the Xpress desktop publishing software, composing the text and precisely indicating the cropping, scaling and position of photos. The photos are used here as position-only stats; they may have been scanned into the Mac with a 300-dpi scanner, or they might be a low-resolution version of high-res pictures that were scanned and retouched in the Scitex system. When the artist has completed the page make-up (perhaps after examining proofs from a LaserWriter), he sends the file via Handshake to the Scitex system. The Scitex operator then merges in the high-resolution photos, performs any special effects (blends, ghosts, blurring or sharpening) that may be required, and exposes the color separation films.

Quark's forthcoming Xpress 2.0 software release, while not in a class with Scitex, has respectable facilities for dealing with color—not just geometric art such as tint backgrounds or colorizing type, but full continuous-tone color. One can make adjustments to tonal values and see their effect on the screen.

Scitex and Quark, however, are not alone. Elsewhere, in a private confidential demo, we were shown a color system on the Macintosh from another vendor (not Quark). This was a full high-quality color retouching system that left us in no doubt that in the not-too-distant future, the Macintosh will be a player in the color market for prepress. It will not be a replacement for Scitex, Crosfield and Hell, but it will certainly supplement them, particularly in the design field.

Adobe and Scitex announced a joint development effort in the area of Color PostScript and Display PostScript. For Scitex, the project will result in a PostScript RIP for the Raystar film recorder and Display PostScript on the screens of Response systems. This opens up a potentially large market of desktop publishers who will be able to buy high-res color output from their local Scitex shop.

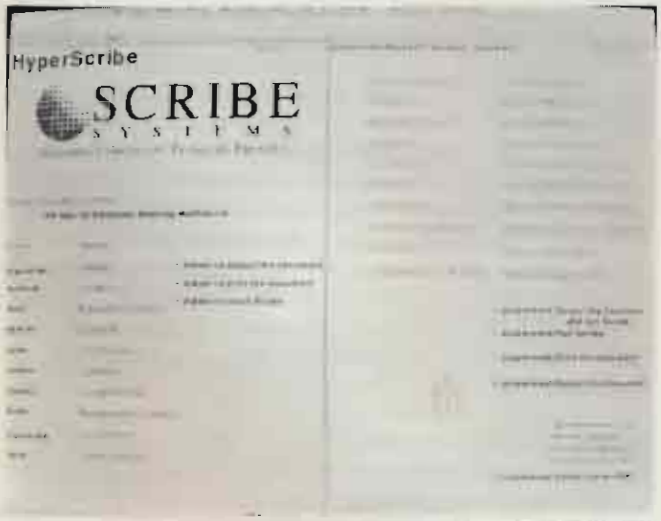
For Adobe, the access to Scitex's halftoning technology should be a boon. Current PostScript RIPs are fairly unsubtle in forming halftone cells near sharp edges, and they don't offer the range of dot shapes that color professionals expect. Adobe continues to show an unerring instinct for picking key technology partners and OEMs.

Scribe Systems

Sometimes surprises come from the most unlikely sonrces. Kuown as a systems integrator that pulls together off-the-shelf subsystems and customized software into aetospace publishing system, Scribe Systems introduced at the Seminars HyperScribe, the first hypermedia product for a Unix workstation.

In the ttne sense that Ted Nelson intended, HyperScribe provides a free-form database managemeut tool for Sun Microsystems and Apollo Domain workstations. Scribe Systems is the first vendor to offer such a facility in any publishing system, but the product has such potential in the broad Unix marketplace that it is pursuing the possibility of offering it as an off-the-shelf product to the general marketplace.

HyperScribe. Based on the KMS hypermedia technology developed by Knowledge Management Systems, HyperScribe is a documeut and management facility. The database is made up of frames (in appearance much like the cards of HyperCard), each of which may contain text, graphics or commands that initiate actions. Each card, and any discrete element within a frame, may be linked to another frame in the database—even if that frame tesides somewhere else on the distributed database. Frames can contain peripheral information, including nonprinting editorial comments and processing information such as when they will be used in a particular application. Each frame has access privileges associated with it, and the system manager can limit the access to individual or groups of frames.



HyperScribe. *The first hypermedia product to be integrated with a publishing system, HyperScribe is shown here as the means for pulling together a document created on a distributed database. On the right, the Table of Contents is actually a HyperScribe frame that tells the system which files to pull in what order, and what filtering routines to run on files coming from other sources. In this example, text files came from MacWrite and SoftQuad from a Macintosh, Ventura on a PC, and Scribe on a Sun workstation; graphics came from Qubix and HyperScribe. They were filtered, merged, formatted and output as a single document on a PostScript printer using the Scribe composition engine. The left-hand frame is a HyperScribe frame with text and graphics.*

The frames themselves can be used to create documents. Although it does not inclnde its own composition capabilities, HyperScribe does have a variety of typographical attributes that may be applied to any text elements. Fonts are scaled interactively the same as graphic objects. The program includes vector drawing primitives for creating simple drawings.

The linear command linearizes the frames into a text file that can be printed directly or automatically routed ro another routine, such as geuerating Scribe formatting markup.

HyperScribe in STEPS. As one might expect, Scribe Systems demonstrated HyperScribe in an aerospace publishing application nsing its STEPS publishing configuration *(see photo)*. The product worked smoothly thronghout the week, despite the fact that it was still pre-beta software.

At the Seminars, Scribe Systems said it was working with Lexeme, its sister company, in developing generic text and graphics converters for HyperScribe. An intermediate graphic interchange format that will exchange files between the sonrce database and the Scribe composition engine has been established. It was demonstrated using MacWrite as the source format. The company also demonstrated the use of a MicroVAX as a "system integration servet," runniug all of the converters and filteriug toutines and routing files on to the next station in the process.

While Scribe Systems has always encouraged a multi-system approach, the HyperScribe product gives it a means of managing the process—pulling files from myriad databases, automatically running filtering routines and then merging the pulled files with others into a document that is formatted and output using the Scribe composition engine. All of the source files stay intact on their respective databases, but the structure, sequence and placement are controlled from HyperScribe. Previously, the publishing manager had no interactive tool for managing the files being merged with Scribe documents. With HyperScribe, Scribe Systems has an intuitive front-end database manager for composition, and with it, the management process just become an order of magnitude easier to set up and control.

HyperScribe is scheduled to begin beta testing this month, with a commercial release planned for June 1, 1988. It will cost $8,400 for Sun-3/50 and Apollo DN 3000 workstations.

TyRego OEMs Xerox scanner. Tucked away in a corner of the Scribe Systems booth, TyRego showed PC software for Xerox's 600-dpi Pro-Imager scanner. TyRego is marketing the product as the Digityzer, a complete scanner subsystem that includes an AT clone with a large-screen Moniterm display (1280 × 1024 resolution with 2 levels of gray), graphics board, scanner, software and output driver. PostScript, Ace, APS 5 ICL, IBM AFP and Xerox native formats for the 8700/9700 are offered; a Lasercomp driver is under development. The complete Digityzer package is available from TyRego in the U.S. for $22,995.

In the UK, it is available from Archetype Ltd. Distributors are signed for France, Germany and Holland as well.

When Xerox introduced the Pro-Imager last July, it stated its intention to OEM the product, rather than develop its own PC interface. Steve Miles, OEM manager for Xerox,

stated that TyRego was the first and so far most successful OEM for the Pro-Imager. He declined to comment on whether or not Xerox would ever offer a PC interface to its own scanner.

SlideTek

SlideTek, which has a powerful product in the slide-making market, is looking for opportunities in the print world. At the Seminars, the company showed its first color-separated proofs of high-resolution halftoned output. These were done on an Ultre recorder at 1200 dpi.

We are impressed with what SlideTek can do with its existing slide system. There are good drawing facilities, many ways of doing special effects with text, and unusually strong tools for data-driven charts and graphs (pie charts, bar charts, etc.). The system has a fluid "feel" we think an illustrator or designer would like. The company is porting the slide-making software to the Macintosh II, and expects to release this package in the third quatter of 1988.

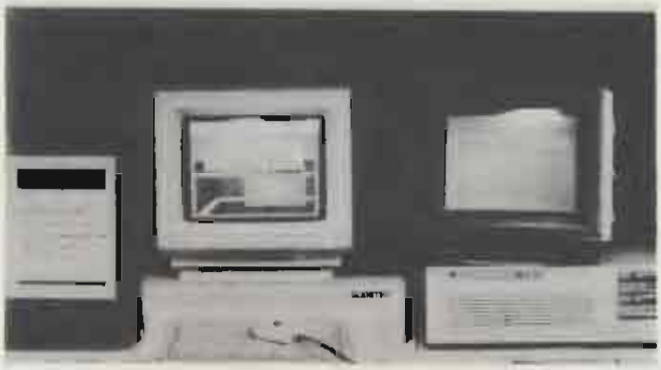
SlideTek is still in the process of deciding what print markets to focus on. One obvious one is designing logos and producing overall corporate ID programs. SlideTek has the right tools for this application: a design-oriented interface, good type-modification tools, and drawing tools to allow a logo to be shown on a building, truck, or envelope. Other design-related markets might be a good fit as well.

But significant enhancements are required if SlideTek is to address production tasks: make-up of real ads, catalog pages, magazine pages, and so on. These are areas SlideTek is interested in. But there is a lot of work to do first.

On the text side, SlideTek must implement h&j. It currently offers only ragged right, left, and center—adequate for slides, but obviously just the bare beginnings of a commercial typesetting facility. SlideTek uses its own type library (about 40 families cnrrently), and even if it could be expanded and imptoved to meet ad typographers' requirements, many potential customers would still want faces from a standard supplier.

On the graphics side, SlideTek must develop the ability ro work with high-resolution scanned color. At the moment, image size and resolution is limited to the capacity of the AT&T Targa or Vista image-processing hardware, and though the beginnings of color-separation facilities were shown at the seminar, there is as yet no way to calibrate the system to the printing process (and thus no way to be sure what colors you will get on the printed page).

Addressing these areas seems to us an enormous task for a relatively small company, though perhaps not an impossible one. And SlideTek has shown, with its slide-making product, that it can generate good solutions for difficult tasks. We look forward to seeing this product as it continues to evolve.



The SlideTek system. *The operator works mostly with the digitizing tablet, shown here between the keyboard and the workstation. At the left is a video camera for image acquisition, and at the right is a monochrome screen for system information and for viewing schematic page layouts.*

Sobemap

Sobemap, which provides software for working with SGML, came to the seminar with news of new parser sales to Scribe Systems, Context, and Texet. The company had also ported its parser (which already ran on MS-DOS computers) onto the Macintosh.

Sobemap offers two parsing programs. One is Check-It, a simple validation parser that flags coding errors it discovers in a file. If there are no errors, there is no output. It is oriented toward the Defense Department's CALS standard. This parser would be used to make sure a CALS document was correctly coded. It runs on a PC and costs $300.

Sobemap also offers a much more sophisticated product called Mark-It. Mark-It includes a parser (which can handle any document type, including CALS), a character-set conversion package, a string-substitution package, and a mechanism for invoking user-written routines when a specific tag is encountered.

The tools are general enough to handle all kinds of document conversions, including ones that don't involve SGML files on either the input or the output side. As an example, Sobemap likes to show how NROFF formatting commands can be generated as a byproduct of parsing a document. Another example involves extracting the name, subject, date, and affiliation of the speakers in a transcript of Common Market debates. The output is a dBase-compatible file. This file can then be used for retrieving information about who said what when.

Mark-It costs from $5,000 to $50,000 for a single copy, depending on how big a computer you want to run it on. There are discounts for multiple copies.

Sobemap is working on related products, including Ed-It, an SGML-based document editor. Document type definitions would need to be compiled using Mark-It, and these would then be used to drive Ed-It. Ed-It will run under MS-DOS and will cost about $1,000. It is expected to be available "before mid-1988."

SGML-based typesetting software is planned later.

SoftQuad

SoftQuad, which was in the Apple booth, brought an enhanced version of its Author/Editor package for the Mac. First introduced at last year's Seminars (under the code name

"Fred"), the program is a Macintosh word processor for SGML documents.

We think of SoftQuad's package as the least painful approach to SGML. To the user, it looks like any style-sheet-driven WYSIWYG word processor. The markup coding (which usually litters an SGML file) is hidden from the user, and most coding mistakes are eliminated by a menu approach to tagging: only elements permitted by the document type definition can be selected from the menu. Of course, since structure and form are fully separated in the SGML world, the WYSIWYG is strictly an illusion. Furthermore, unlike a conventional word processor, Author/Editor enforces the structure of the document. The program won't let you cut and paste across tag boundaries if that would result in a non-conforming document.

Over the past months, SoftQuad has added some useful features to the program. For example, you can now turn off the rule-checking functions, which means that you can violate SGML tagging rules during editing. This may be useful for some authors who might feel their creativity stifled by the document structure. When you turn rule checking back on, the program parses the text and shows you where any violations remain.

Another example: There are situations where the full range of options permitted by the document type definition would never be used. In this case, many menu items would appear but never be selected. SoftQuad now provides tools for eliminating unneeded options from the menus, a useful simplification.

Other new features included tools for version control, for embedded comments, for figure callouts, and for subdocuments. A subdocument can be included by name in the file, without having to incorporate its full text. It can have a document type definition of its own.

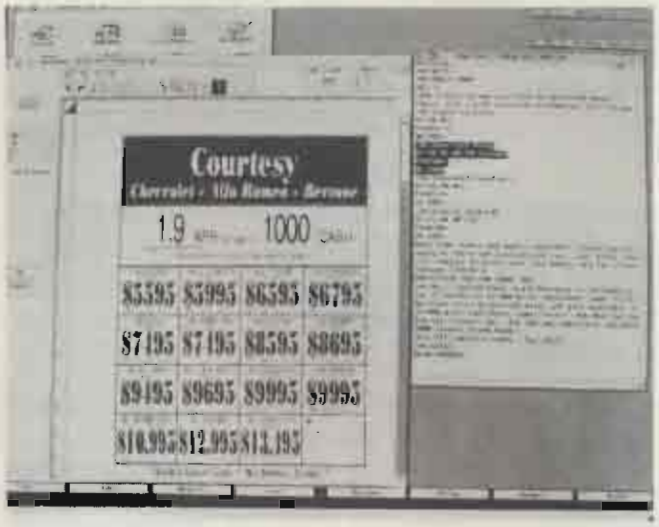
SoftQuad expected to be shipping the production version of this package within a few weeks after the seminar. It will cost $495 and will run on any Macintosh. A special CALS version for military technical documentation will be available "by the end of June" and will cost $995.

System Integrators

Demonstrating consistency in its product development and its statement of direction, System Integrators showed its AdMaker display ad software running on an 80386 PC. The company emphasized that it hadn't decided exactly which platforms it would support over the long run, but that it would include its proprietary Tahoe workstation as well as at least one standard platform from among the '386, the Macintosh II and the Sun.

We were impressed with the functionality the system now provides, although a few key items were still being completed prior to inirial shipments targeted for June. One of the most notable positive changes is in speed, which has improved significantly with the '386 machine.

The display is nearly the same as we have seen and reported on before, with minor changes. It includes an ad work area displaying true fonts and sizes, a raw text window, tool icons across the top, a menu of operations across the borrom,



AdMaker. *System Integrators demonstrated composing from a model. Here raw text is highlighted in the window on the right, to be brought into the vacant space in the ad and formatted according to the model. The current typographic parameters (font, size, etc.) are shown in the rectangles on the left. In the middle of the top area we can see the current x/y location.*

See our last issue, page 3, for another photo of the screen.

a small area at the lefr ro report current typographic parameters (font, size, leading, etc.) and a place at the top for the currenr *x/y* position. *(See photo.)*

Windows are used to set up the ad size, rule weights, and so on. Blocks of raw rext can be brought freely into the ad work area in any sizes or from any place within the window. As text is input, it is h&j'ed to the parameters in the typographic area or to a specified format. Highlights of the ad functionality include:

- The data structure is flexible in permitting a single line to be broken into multiple lines by inserting hard returns.
- "Compose from model" enables text that had been input with the proper delimiters to be formatted automatically *(as in the accompanying photo)*. The first item is formatted manually, after which the rest follow suit automatically. The model can be saved as a temporary model to be used for that ad only or as a permanent one for later use.
- The size and width of text can be bumped up or down in user-defined increments.
- The system can be asked to change the point size automatically to fill a given space.
- Items can be aligned horizontally or vertically by selecting them and specifying the type of alignment (left, center, right). The version on display used the top or bottom baseline to align text, but we were told that the released product would allow the operator to specify *any* baseline and align it with any other baseline in another block.
- Graphics creation capabilities are good. *(See our last issue, page 3, for a picture of the SII logo created on the screen.)* For pixel editing, SII will use its ArtMaker program shown at last year's ANPA show.

Pricing hasn't been set. It will be announced closer to initial shipping dates.

For the future, SII is planning optional support for CD-ROM for clip art, software distribution, etc.

Tektronix

Tektronix showed its 4993D 300-dpi thermal transfer printer interfaced to the Macintosh II via a NuBus card. The 4993D can produce full color or monochtome (256-grey-level) images in four passes. Tektronix supplies its own driver software conforming to Apple's QuickDraw. There is an additional option, Option 44, that enables the unit to produce full-color screen dumps in as little as 5 seconds.

The unit has its own onboard image processor, using a Motorola 68020. For a color printer it is very fast, with a one minute per page print speed. However, one should not confuse this with production speed, since before printing can take place the image has to be built up in the printer's bit map memory first, just like a laser printer. The interface from the Macintosh runs at 800 KB per second. To run the system, one needs a minimum of 2 MB of memory in the Macintosh. In the printer a total of 8 MB is used as a bit map for output at 300 dpi. If only screen dumps are required, then a 4-MB unit can be used. The system comes with its own fonts. The image processor handles dithering to covert the primary shades to the required color on output. Output is to either paper or transparency material.

Texet

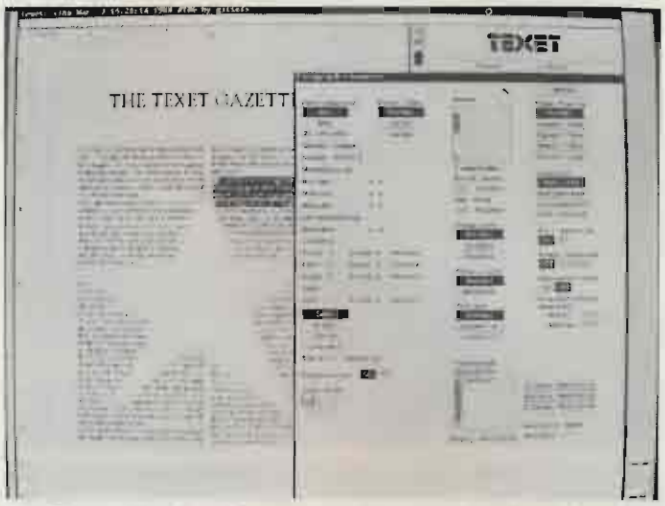
Texet used the Seminars to showcase two products announced last fall and covered in our tech-doc profile of the Live Image Publishing System *(Vol. 17, No. 8)*. The company also announced substantial price reductions and a plan to further unbundle its software into different modules in the future.

FreePage. The free-form make-up program developed by Island Graphics was shown in prototype form for the first time. In functionality, it is much like the other variations Island Graphics has OEM'ed to A.B. Dick and Sun. However, Island modified the user interface specifically for Texet so that FreePage, while not entirely consistent with Live Image, does have a Texet feel to it.

FreePage is a separate module that is used to create and produce unstructured or short documents that Live Image can't handle or short documents with unique formatting requirements that might be time-consuming to design with Texet's Designer.

In its first release, FreePage will create pages that can be merged as output files with a Live Image document. The user can cut and paste text between the two modules, but not all layout and formatting information is interchangeable. As the product matures, Texet intends to integrate FreePage documents more closely with Live Image documents, so that, for example, a page designed in FreePage could be included in a Live Image document, with headers and footers generated from Live Image.

One concern we have with the product is the quality of composition, which is considerably less than that offered by Texet's own composition software. Texet recognizes this discrepancy and plans to integrate its own typographic database and hyphenation package with FreePage in the initial release of the product, due out in August. However, this integration was not demonstrable at the time of the Seminars, and it was unclear just how it might occur. We will follow up as the product nears completion.



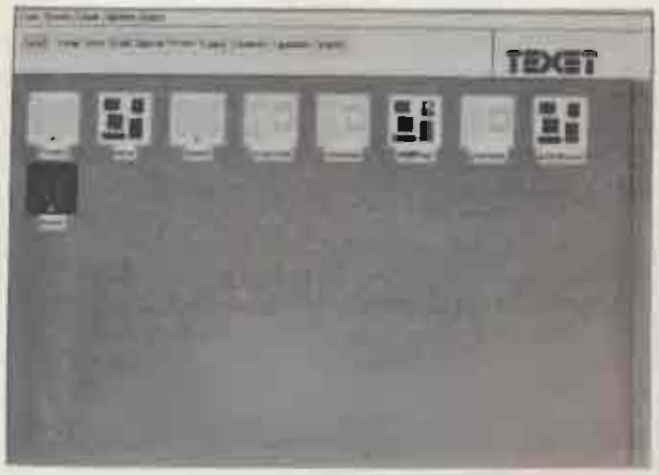
FreePage. *The free-form composition module flows text into containers that can be columns, rectangles or irregular polygons. It automatically flows text around irregular shapes and handles virtually any page layout by providing tools to manipulate the containers as graphic objects.*

LiveWrite. Feeling vulnerable to Interleaf's and Frame's WYSIWYG document processors that give authors accessible, powerful writing tools without the sophistication of a production composition system, Texet is shoring up its position by developing a WYSIWYG authoring tool of its own: LiveWrite. The product is still early in the development cycle, but it is consistent with the trend toward structured WYSIWYG authoring and competitive with similar products being developed by Texet's competitors.

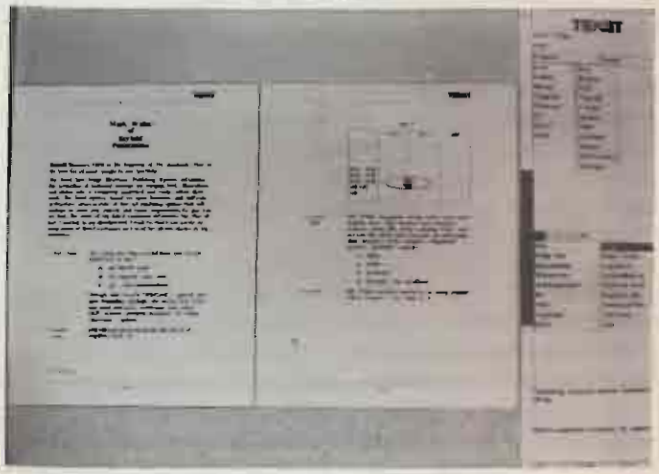
In concept, the software enables the writer to create and modify documents, using templates created in the Design or FreePage modules of a Live Image system. When the writer creates a document, the system automatically formats the keyed-in text according to the outline structure defined in the template. Text is formatted and composed on screen (without full batch pagination) the way it will appear at final output. At any time, new components may be added from a menu that is context-sensitive, meaning that it only allows the writer to pick components that conform to the defined structure.

Texet intends to provide all of the cross-referencing, automatic numbering, sidenote and other editorial functions within LiveWrite. All document management will be the same as in the rest of the system.

Texet's approach is comparable to Concept's new SGML editing mode, and both strike us as sensible methods of presenting a WYSIWYG page yet at the same time restricting design changes in the dedicated author environments both companies serve. (Texet's system already has SGML support; thus an SGML DTD could be set up as a design template.) What we'd like to see is a version that runs on a workstation less expensive than a Sun or Apollo.



LiveWrite. *Opening Texet's WYSIWYG authoring tool from the Texet desktop* ***(top)*** *brings the document to the screen in single-page or dual-page views* ***(bottom)****. LiveWrite uses templates created in the Design or FreePage modules and applies them on the fly to documents created in LiveWrite.*



Price reductions. The Live Image Publishing Software, with PostScript driver, has been reduced from $28,500 to $17,500. In addition, the Layout software is now available separately from the Design module, for $7,500 per license. With the Layout software, writers and editors have access to all editing functions, enabling them to create and modify documents according to designs established by authorized users who have the Designer module. This separation of the two modules will serve as the foundation for LiveWrite. Although it appears to be a useful product for any Texet customer, it should be of particular benefit to those in the mil-spec environment, where it ensures that writers and editors will adhere to the standard formats.

FreePage is expected to be shipped in August for a price of $2,500; LiveWrite is scheduled for release in the fourth quarter of 1988. Pricing has not been finalized, but officials predicted that it would cost under $2,500.

Unda

We looked at Unda's Sun-based color system recently at Imprinta *(see Vol. 17, No. 13)*. At the Seminars, Unda announced the addition of a text handling facility. To do this, the firm made an agreement with Camex to acquire software for handling composition. This is the same h&j package that Camex uses in its Breeze workstations. It does not, however, include Camex's screen drivers. Unda will use its own screen drivers to display and edit text on the screen. The addition of this software moves the Unda system closer to being a very full-specification color system that straddles the design and production prepress markets. The addition of text handling to Unda's headline handling puts the text processing functionality of Unda ahead of companies like Crosfield, Hell, Scitex and Dainippon.

The Camex agreement lets Unda avoid the time and trouble of developing its own complete h&j software package. The Camex origins of the new composition software will not be evident to the Unda user. Fonts and text display software on the Unda system remain the same, and Unda will continue to use its own data structures.

Camex, when it eventually moves into color applications, will inevitably compete with Unda in some markets (though Camex targets mostly high-volume production-oriented markets and Unda targets mostly design-oriented ones). But Camex decided the benefits of the agreement outweighed the potential liability of competing against another product with the same composition facilities.

For Unda, the agreement provides a fast, proven h&j capability. That, combined with Unda's image-manipulation and drawing tools, is likely to make Unda's Graphic Design Workstation a standard-setter in the sub-$100,000 color workstation market.

Unda also announced an OEM agreement with Linotype, allowing Unda to sell the L300 and L500 PostScript typesetters as part of the Unda system. The system produces its color separations only via PostScript. Since PostScript does not (at present) support continuous-tone color directly, Unda's software creates four gray-scale files, one for each separation. These are then screened in the PostScript RIP.

Unda has been building a distribution network. Overseas arrangements should be basically in place by May. In the U.S., Unda is currently recruiting distributors. It is selling systems directly from its New York office for now.

The Unda system. *At the operator's left are the design workstation and the thermal proof printer. At the right are the image-acquisition computer and its color display, and a flat-bed scanner.*

PostScript Update

The level of quality you can get from any publishing system is governed by three factors: the platform, the program and the printer. In a traditional publishing environment (well, traditional for the past ten years) we have viewed the platform (the computer and its operating system) and the program as one entity: the system. We have taken for granted that users will mix and match output devices—back ends—with various front-end systems, and that the system vendor will put up with the headaches that result from that mixing.

To a system integrator (which increasingly means the user himself), the promise of PostScript is that the integration will be easy; ideally, it will amount to plugging in a cable between the front end and the back end. That promise has been largely realized in desktop publishing products, for the simple reason that nothing other than utter simplicity can be sold in the mass market. In many respects, the fourth wave is going to be a process of applying the successful aspects of desktop publishing to the high-pressure environments of professional publishing. One of the most successful aspects has been the PostScript page description language.

The printer governs the ultimate quality of appearance you can get from any program. Two years ago, a 300-dpi laser printer was a state-of-the-art device, especially if it was equipped with a PostScript controller. But that's not good enough for serious work any longer. The level of quality obtainable with plain-paper printers has been rising steadily. At the first Seybold Desktop Publishing Conference 18 months ago, Agfa showed a 400-dpi PostScript printer. Twelve months ago, Varityper brought out a 600-dpi printer. Last fall, at the second Desktop Publishing Conference, Printware showed preliminary output from its own Printscript controller driving its 600 × 1200-dpi marking engine. We fully expect to see data recording systems' 1000-dpi plain-paper printer hooked to a PostScript controller in the near future.

High resolution. At this year's Seybold Seminars, the only notable development on the plain-paper front was the Dataproducts LZR 1260. Instead, the focus of product introductions was on high-resolution PostScript typesetters marking on photographic paper. Itek Graphix and Birmy Graphics showed developmental versions of their machines; Knowledge Engineering announced (but did not show) an ambitious Macintosh-based system.

Linotype has had the high-resolution field to itself until now, and has behaved just the way the economic theory of monopoly would predict: it has kept its prices high. The arrival of competition probably won't precipitate drastic price reductions right away, but the writing is on the wall. Publishers who want typeset-quality pages will shortly have a choice.

There are, however, a few problems still to be worked out before the competitors are ready to invade Linotype's turf. Image quality is one; Birmy's machine showed white streaks across the page caused by having to stop the marking engine when the RIP got behind in processing.

Manufacturing delays pose another problem; Itek wants to package its controller in a box similar to its existing ACE-controller, requiring board design and manufacturing time. These problems are clearly on the way to being fixed.

Font issues. Right now, no one is sure what degree of similarity to Adobe's fonts will be necessary for the newly arrived competitors to gain market acceptance. At one extreme, a clone maker could simply trace each character in each of Adobe's fonts, thus furnishing an exact duplicate of Adobe's designs. That's illegal in Europe, and may soon become illegal in the U.S.

The trouble is, if you don't match the shape of each character, then when you use a large character as a clipping boundary for a graphic the results will depend on whose fonts are installed in the printer. If the market really needs this level of compatibility, then all the clone makers are in trouble.

The other extreme would be to offer fonts that are more-or-less similar in spirit, but make no attempt to match Adobe's shapes or character widths. Instead, each application is expected to read the width table file (AFM file) for a font before using it.

This is what Varityper attempted in the original VT-600: its Varitimes and Aristocrat faces are superficially similar to Times and Helvetica, but the widths (particularly in the bold and italic weights) are substantially different. That approach seems to have failed, since Varityper has recently begun including Times and Helvetica in its base-level machines. The trouble seems to be that there are a lot of popular applications on the market that depend on those particular fonts and don't look for AFM files.

Most clone makers seem to be steering a middle course: offer a basic set of fonts that match the Adobe widths, then sell your own designs as add-on products. The question then is, what constitutes a basic set? Is it the thirteen fonts in the original LaserWriter or the thirty-five fonts in the LaserWriter Plus? IBM bundles 43 fonts with its Solution Pac printer. Agfa puts 73 faces into its P400-PS (and will do likewise with the newly announced P3400-PS table-top printer). Will those define the market standard?

Our expectation is that the major font houses will quickly make width-compatible versions of the 35 fonts of the LaserWriter Plus available. Applications like page make-up programs that expect to access a large number of fonts will simply have to be able to read AFM files for any fonts outside that set.

A large number of additional fonts can be licensed on the open market (from URW, International Typeface Corp., World Typeface Corp., Bitstream and so on), and these will be nearly identical in every respect across brands. That will leave a group of proprietary designs for which there are no direct equivalents. Page designers who want both high-res final output and proof-quality laser prints will have to check that the font is in fact available on all the machines that will be running the job. This will probably limit the demand for proprietary fonts.

The remaining problem has to do with whether different brands of fonts will work in different brands of printers. Adobe, for example, distributes its fonts in encrypted form, and has stated that the faces are only licensed for use with Adobe controllers. In other words, it does not *want* its fonts to work on non-Adobe machines. Bitstream's Fontware fonts, on the

other hand, can readily be downloaded to Adobe controllers. Since Bitstream does not use Adobe's scaling hints, such a font may not look good at small sizes on low-resolution machines. But it will work, and with the faces we've tried on 300- and 400-dpi printers the results have not been bad. We see no reason to expect that fonts from Compugraphic or URW will perform any worse.

To extrapolate a bit, this means that soon a user will be able to download fonts from any font house *except Adobe* into his clone 300-dpi printer and get a tolerable proof print. Even though the absence of sealing hints means that the small rype is not as well rendered as it might be, it will be readable. He can then rake his document and print it at high resolution on a clone typesetter, using the same fonts, confident that all the line endings and page breaks, and even the kerning of display type, will be the same.

The owner of an Adobe-based printer will have the ability to use Adobe's fonts as well as competing libraries. As long as Adobe has the lion's share of the PostScript controller market, it will have an advantage in the font business as well.

PostScript-clone typesetters

Progress continues apace in the PostScript clone business. The most inreresting news comes on the high resolution front: Raster Image Processing Systems (RIPS) will be supplying its conrroller to hoth Itek Graphix, to drive the 1600-dpi IGX 7000, and Birmy Graphics, to drive the UltreSetter at 2400 dpi.

Alphatype. Alphatype had hoped to have its high-resolution, PostScript-compatible typesetter at the Seminars, but wasn't able to get it ready in time. We were told to expect a first showing around the end of the month instead. The PostScript-compatible interpreter, being provided by Media Net, was demonstrated in the CPS booth displaying PostScript files on the screen of an Apollo Domain workstation. But in the Alphatype booth the only equipment on exhibit was the same AlphaComposer system we had seen before.

Birmy. Birmy Graphics (Ted Birmingham, president) will market a 2400-dpi typesetter using the RIPS PC-based PostScript controller driving the UltreSetter. The basie machine comprises an AT clone (with 40-MB disk and monochrome display, the Tops local area network and a mouse), a 72-pica-wide UltreSetter with single-facet mirror, and the RIPS controller with 8 MB of memory and the basic 35 LaserWriter Plus-compatible Bitstream fonts. It will cost $34,600, which is not far from what Linotype charges for the 1270-dpi L100P ($32,000 with a 20-MB disk, $36,000 with an 80-MB disk).

Birmy will offer a number of UltreSetter options. A 94-pica version will be priced at $54,000. A high-speed version, using a double-facet mirror in the UltreSetter, will add approximately $3,000 to $4,000 to the price tag, depending mainly on what the extra memory in the controller costs. A 3000-dpi version of the imagesetter is $6,000 additional. But you can't get both a high-speed option and 3000 dpi in the same machine.

The UltreSetter's recording speed and resolution are inversely related, and they can be controlled by software. The recording engine's full speed is about 87 rasters per second (175 rasters per second with a double-facet mirror). The resolution in the horizontal direction is determined by the data rate from the controller; in the vertical direction, by the speed of the paper feed motor. The RIPS controller will offer selectable resolutions of 2400, 1600, 1200, 800 and 600 dpi, so output speed will tange from 8″ per minute at 600 dpi down to 2″ per minute at 2400 dpi.

BirmySetter. *Using the UltreSetter marking engine and the RIPS controller, Birmy Graphics is marketing a complete 2400-dpi PostScript typesetter.*

The UltreSetter can output to RC paper, film, dry silver and 3M Onyx plates. (We don't like the results you get with dry-silver media, but they have the advantage that they don't need wet-chemistry developing.)

At the Seminars, Birmy was demonstrating the system using a controller with just 3 MB of memory installed. Every so often, the controller would get behind and would have to stop the Ultre recorder, leaving a visible white streak in the iinage. Apparently when the recorder stops, the photo paper goes slack by just a bit, and so it doesn't start at exactly the same position it stopped at.

We were told that this problem would be attacked in several ways: by making the standard memory in the RIP at least 8 MB (so the controller won't get behind so often), and by adopting a more efficient loading, parsing, and RIP'ing process.

Other than that problem, the samples we obtained from the BirmySetter look quite good. Birmy's show configuration took 9 minutes to produce a page of rotated type and between 3 and 4 minutes to output a 1200 × 1200-dpi graphic.

BirmySetter output on RC paper. *The graphic samples we got from Birmy looked quite good overall, though they are not yet defect-free. Some white stripes are visible in the original. Their frequency could be reduced by expanding the buffer memory in the controller.*

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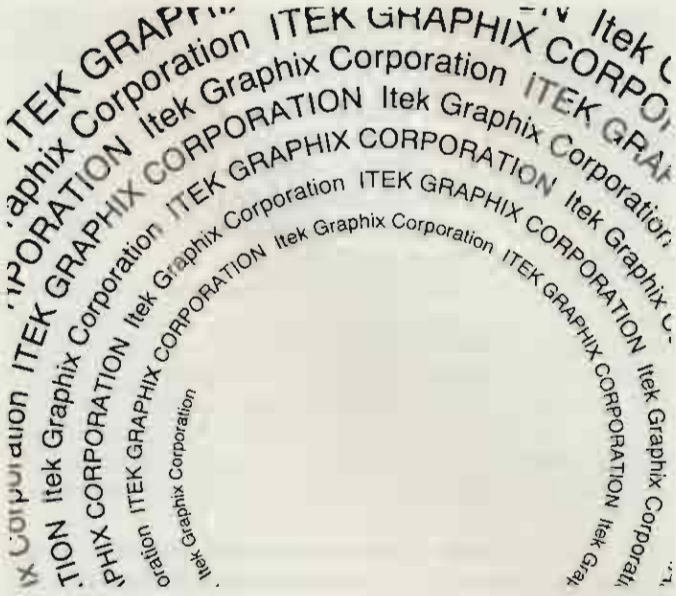
CG Script. Though we had hoped to see it, Compugraphic elected not to bring its CG Script-equipped typesetter to the Seminars show floor. CG says it has begun shipping systems to customers, though, and did demonstrate its product at the Imprinta exhibition in Germany this February. As we have reported, it currently doesn't provide a full implementation of PostScript.

Itek Graphix. Itek Graphix first showed the 1600-dpi IGX 7000 typesetter at Graph Expo last November using a Chelgraph ACE raster image processor. Instead of sweeping a laser beam across the photographic paper, the IGX 7000 uses a moving array of light-emitting diodes to expose the image. The result is a typesetter that is compact enough to fit on a table, taking no more space than an office laser printer.

Itek has now signed an OEM agreement with RIPS to furnish a PostScript controller, and will call the PostScript version the IGX 7000 PS. The controller board will be built to fit into an Itek-designed card cage that attaches to the side of the 7000 the way the Chelgraph controller does now. However, that board is still in the design stages, so for demonstration purposes at the Seminars, RIPS used its PC-card version of the controller.

The finished product, due in June, will use a 10-MIPS RISC chip set to obtain reasonable speed, along with 6 MB of RAM. It will offer RS-232, RS-422, AppleTalk and Centronics parallel interfaces. The standard font complement will be width-compatible Bitstream versions of the 35 LaserWriter Plus fonts.

The processor will not have the PostScript controller code in ROM. Rather, it will read the code into RAM from a 1.4-MB, 3½" floppy disk. The floppy can also hold up to 50 extra fonts on line. An 80-MB hard disk for font storage will be optional.



Sample output from the IGX 7000 PS.

We didn't have a chance to test the speed of the 7000 PS, but the Chelgraph version is extremely fast, outputting at 24" per minute at standard resolution (1600×800) and 12" per minute at high resolution (1600×1600 dpi), across an 80-pica line measure. (We recently tested the machine and found it to be slightly faster than spec at 1600×1600 and slightly below spec at 1600×800.)

It images on RC paper or directly on plate material, which means that two rotated, 8½"×11" pages imaged side by side on a plate can be taken straight to a printing press.

The RIPS controller will also be able to drive Itek's IGX 400 laser printer as a proofing device, using the RIPS multidrop video interface.

Pricing for the IGX 7000 PS hasn't been announced, but the earlier ACE version costs $33,000.

Plain-paper PostScript-clone printers

Conographic. Conographic was printing Adobe Illustrator files at 300 dpi, which looked reasonably good. But we only saw limited font samples, not composed pages of text. We have yet to see any live demos with Ventura or PageMaker.

CPS. Computer Peripheral Sciences, which is working with a company called Media Net on several fronts, gave the first demonstration of its version of Media Net's PostScript clone, named AstroScript. (This is not to be confused with the PSClone product Media Net is supplying to Alphatype.

CPS AstroScript output. *These samples, including 2-point type, were printed at the Seminars on a Canon CX engine.*

which is basically the same interpreter used to drive a different device.) AstroScript was developed for Media Net by Pipeline Associates, Inc.

AstroScript uses Alphatype fonts obtained through a deal between Alphatype and Media Net.

CPS's point in appearing at the Seminars was to demonstrate that AstroScript can display PostScript on the screen as well as drive low-resolution printers. Its effort to display PostScript is discussed later.

CPS was distributing copies of PostScript files printed on a Canon CX engine, including some two-point type that was readable (barely). CPS's plan initially is to use the PostScript-compatible RIP to support its existing Astrotek and PCtype customers by providing a screen preview and proof output. The target for initial deliveries is sometime this spring. The company also expects to make the RIP available as an OEM product possibly as early as June of this year.

CSS. CSS Labs has a goal: to offer the cheapest 300-dpi PostScript printer on the market, with a target price of $3,500. It thinks it can have beta test versions in the hands of users by the end of May; the only holdup is the final arrangements for a font license from Bitstream.

Although it can't show much PostScript without fonts, CSS did show its ability to drive the Mitsubishi G650 color printer. We saw a couple of static demos of its HPGL emulation using the color printer. The company also offers emulations of PCL (since it has scalable fonts, it will be able to handle level-5 PCL whenever HP publishes the definition of PCL Level 5) as well as CalComp and Versatec plotters.

The CSS controller is built on a PC plug-in card, and is based on a 10-MIPS T414 Transputer chip. (It may bring out a Mac version of the card late in 1988.) Although the Transputer is designed for multi-chip parallel processing, CSS is simply treating it as a single, fast RISC chip with 8 MB of memory, using none of its parallel-processing features. The controller can be adapted to most of the laser printers now on the market through a personality card that interfaces the control and status signals.

CSS's product plans include selling the PostScript emulation with the Transputer card in upgrade kits for various engines.

Beyond that, the firm has lots of ideas. For example, since running PostScript emulation at 300 dpi and 8 pages per minute doesn't use all the computing power of the controller, CSS has thought of supporting various PC popup programs in the controller. Apparently, it is also possible to allocate portions of the Transputer's memory and I/O channels to the PC. Another product might be a cluster controller that would allow up to 32 PCs to share a printer; it would cost about $50-70 per node.

Nissho. It may be PostScript, but it sure is ugly! That was our first reaction on seeing samples from Nissho's PostScript mimeograph machine. But after considering the economics, we have changed our minds. It's not ugly, it's *cheap*.

We first saw this machine at Comdex in November. The print engine is made by Riso Kagaku; it uses a wax-coated screen (just like a mimeo master) to block or pass a water-based ink. The master is imaged by a 400-dpi thermal print head designed for use in a Group IV facsimile machine. The image to be printed could come from a scanner (and Nissho makes such a model), but in the version we saw, it comes from Control-C's PostScript clone, called CCS Page.

Financial Flexibility

By combining digital and print technologies, NISSHO has developed the LN-7040, a new economical alternative to the escalating costs associated with high-volume printing applications. The NISSHO LN-7040 produces prints for as little as 1/3 cent each. That's likely an 80% or greater savings over the cost for each print produced on

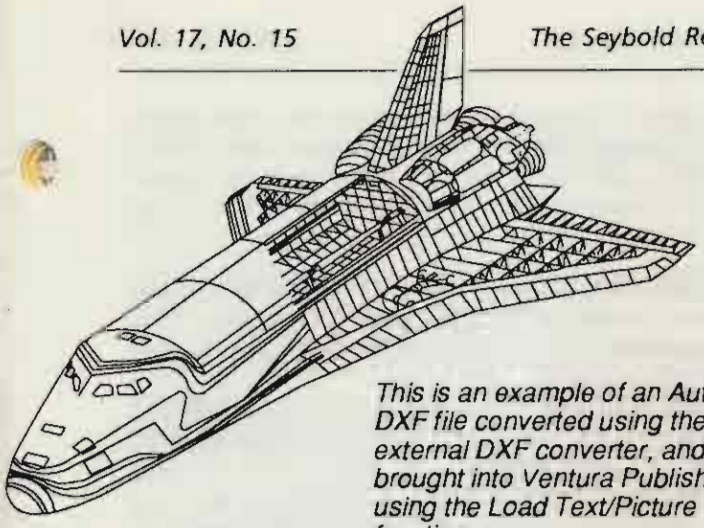
Nissho PostScript mimeo. *With speeds up to 120 ppm and per-copy costs well under half a cent, there are applications where it wouldn't matter how bad the image quality looks.*

The economics are simple. A master costs about 25 cents. Once a master has been made, the machine can print up to 120 pages per minute for little more than the price of paper, well under half a cent per sheet. The master lasts for at least 3,000 copies. The machine itself is priced at $18,000 in the U.S. It is rated at 100,000 copies a month, with a total lifetime of 5 million copies. In other words, amortization of the hardware won't add much to your per-copy costs.

Anyone who needs complex graphics and text, who typically runs off more than a dozen copies at a time, and who doesn't care about image quality but does need rock-bottom costs, is a target user. We expect that schools are in that category, along with some non-profit organizations.

RIPS. In addition to the two high-resolution typesetters described above, RIPS was driving an ordinary 300-dpi laser printer and a 150-dpi Princeton gray-scale monitor. The purpose was to show true resolution independence, but in fact one of RIPS' customers intends to use the PostScript controller as a display driver.

RIPS on screen. *Although nowhere near as fast as Adobe's demonstrations of Display PostScript, the RIPS controller can operate a screen. At the Seminars, RIPS was driving a 150-dpi Princeton monitor.*



This is an example of an AutoCAD DXF file converted using the external DXF converter, and then brought into Ventura Publisher using the Load Text/Picture function.

LZR 1260 output. ***Above:*** *The familiar Ventura shuttle.* ***Below:*** *An addressed envelope.*

Dave Mack
6200 Canoga Ave.
Woodland Hills, CA 91365

So far, RIPS says, it has signed contracts with three OEMs in addition to Itek and Birmy, though it can't say who they are, and has letters of intent from four more. Look for announcements at Comdex/Spring. It is also experimenting with color software, and is working on a new, faster controller design.

Plain-paper Adobe PostScript printers

Dataproducts. The Seminars gave the first public exposure to Dataproducts' new $7,995, Adobe Atlas PostScript RIP-based, 400-dpi LZR 1260 laser printer. Running pages that mixed text and graphics, it lived up to its Toshiba engine's rated speed of 12 ppm.

Paper handling is a strength of this nnit. The customer can use three 250-sheet cassettes (an $895 option), an envelope feeder ($995) and a manual feed port. We watched envelopes being addressed; the print was occasionally spotty *(see sample)*, but more than adequate to get the letter to its destination and to convey a professional appearance.

The company told us that it is working on bar code production capability for the LZR 1260.

Font news

As we mentioned earlier, font compatibility is really going to become the key issue in the PostScript clone wars that are about to start. The clone makers have so far lined up behind Bitstream or Compugraphic to obtain fonts. Adobe, holding the high ground for now, says that it licenses fonts only for use in Adobe controllers. URW, whose product won't be really ready till early summer, says that it will publish its font format (including the scaling hint information) and that it offers royalty-free font licensing. And Folio, a newcomer to the business, has just made its debut. It will be very interesting to see how these issues get resolved.

Folio. Folio announced its entry into the font business at the Seminars, introducing an OEM product called The Font Department. Folio advanced several claims for the product:

- ***Font vendor independence.*** The program accepts all major font formats: Bezier curves, conics, Ikarus IK and DI, and several line-and-arc formats. Folio says it supports type from Linotype (except for PostScript), Monotype, ITC, URW and Bigelow & Holmes.
- ***Real-time rasterization.*** It rasterizes "in real time" to printers, typesetters, and screens, including gray-scale and color monitors.
- ***TypeMaker is a one-hour font analyzer.*** That is, it takes a raw outline (whether converted from a scanned bit map or purchased from another font house) and turns it into Folio's internal format, called F-Cube.
- ***Scaling and rotation.*** A module called TypeScaler handles the scaling and rotation of F-Cube outlines, returning an outline that has been optimized for a given pixel grid and spot size, with controlled round-off error.
- ***Options.*** Software source code and royalty-free pricing options are available.

Folio is promoting its F-Cube format as a standard open format, a neutral alternative to the formats offered by other manufacturers. The software products will be available in June; prices were not immediately disclosed.

URW. As promised at the 1987 Desktop Publishing Conference, URW is preparing to release its own PostScript-compatible font scaling system, Nimbus. A C-language source-code license, plus training at URW's Hamburg facility and follow-up consultations, will cost about $40,000. The license does not require payment of royalties on the printers that incorporate Nimbus (though URW is willing to write a contract for royalties in lieu of the flat fee). Software houses that develop RIPs but don't manufacture printers themselves can buy the font technology for only $10,000, but then any OEMs that use their software would need their own URW licenses. Essentially, URW is in the toolmaking bnsiness.

Right now, Nimbus is still in the final phases of development; a salable version is due out by the end of April. On an ordinary 6-MHz IBM AT, the program converts characters from the URW VS outline format (the VC line-and-arc format plus scaling hints) into bitmaps at about 80 characters per second. (URW says that Nimbus will soon be extended to use Bezier curves as well.) The program can also run with the Weitek coprocessor chip set, where it hums along at 200 characters per second. URW thinks that further optimizations will push that to 500 cps by this summer.

To use Nimbus, you need fonts in the proper format. URW bas so far prepared its own line-and-arc versions of the basic 13 LaserWriter fonts, adapted to the Adobe widths. By June, it expects to have the standard 35 LaserWriter Plus font set, adjusted to Adobe widths, in Bezier/line/arc format. Other fonts will follow. URW has over 2,000 fonts for sale, including the entire ITC collection, many non-Roman alphabets and pi fonts. You can buy them for a flat fee of $12 per character ($14 each if you get them with scaling intelligence added) and use them in products without further royalty payments.

If you'd rather roll your own, you can buy Ikarus, the industry-standard tool that adapts fonts and embeds scaling

hints. Ikarus runs on VAX and Sun workstations. (A Macintosh II version is under development.) A minimum set of object code modules costs about $60,000; the complete system is $135,000. Ikarus includes tools that generate outlines from scanned images, modify existing outlines and rasterize outlines to bit maps.

CG Font Technologies. Compugraphic introduced a PC program called Type Director, a font compiler program that turns CG outlines into downloadable HP soft fonts. While it will give best results with Intellifont outlines (since those have scaling constraints or hints added to the font data), it will work with any face in the CG font library.

Type Director creates both a screen font and printer font from each outline, letting you specify the size from 4 to 200 points in half-point increments. As it generates the screen font, it displays the characters. You can queue up a list of faces and sizes, then let the machine cogitate in batch mode. The program runs fairly fast—about half a minute per face/size combination—but for long lists that could still add up.

For the Macintosh user community, CG made two significant product announcements. First, it will provide a line of 300-dpi fonts for the QuickDraw-based LaserWriter IIsc. Second, it is entering the PostScript font business. In each case, it is going to bundle a set of screen fonts with the printer fonts. The PostScript printer fonts will begin appearing this summer, while the QuickDraw printer fonts will not be released until late in the fall, according to the current schedule. Prices and selection of fonts in the initial offering have not been released.

Bitstream. Though its presence on the show floor was overshadowed by the Itek Graphix and RIPS presence in its booth, Bitstream made a number of announcements of its own at the Seminars:

- ***Windows 2.0 support.*** It will release a Fontware Installation Kit for Windows 2.0 in April. The new version of the Kit supports both write-white (*e.g.,* Ricoh) and write-black (Canon) laser printers, can generate fractional point sizes over the entire 2- to 144-point range (though specific devices will have narrower limitations) and can generate both portrait and landscape fonts in a single run. The new version still works with Windows 1.03.
- ***Kanji.*** A Kanji font, Iwata Gothic, is now available to printer manufacturers in several Fontware smart-outline formats.
- ***QuickDraw.*** Fonts for Apple's 300-dpi QuickDraw printer, the LaserWriter IIsc, will be released late in 1988.
- ***Library format.*** The entire Bitstream font library, over 1000 fonts strong, is now available to OEMs in PostScript-compatible Bezier format.

The Latest Word

Mac II, software and big screen for $9,900

Mycro-Tek unveils Mac display ad system

At the America East newspaper equipment show in Hershey, PA, on April 6, Mycro-Tek introduced the latest in its series of display ad workstations: the AdWriter, based on a Macintosh. Officially the AdWriter joins the AimTouch in the product line, but we expect that once the AdWriter becomes fully functional and readily available, the AimTouch will be discontinued. The AdWriter is a much more impressive machine at a lower price. It is based on the general functionality and approach of Mycro-Tek's predecessor ad systems (AdComp, AdTouch and AimTouch), but it follows Macintosh operating conventions where possible and adds some features not found on other Mycro-Tek systems (more windows, a second level of menus).

The AdWriter can function as a standalone workstation driving a PostScript output device, or as part of a Mycro-Comp system. (The Macintosh is being integrated into the Mycro-Comp.) Text can be input on a Mycro-Comp terminal and brought into an ad on the Macintosh.

At the show, Mycro-Tek demonstrated the system on two Mac IIs—one with a Sigma Designs LaserView monitor and the other with Apple's standard color monitor. It was driving the LaserView in low-resolution mode (72 dpi), but Mycro-Tek said it later will support high resolution, which offers the advantage of being able to differentiate half-point sizes and leading.

Since it only requires 1 MB of memory, the AdWriter also runs on other Macintoshes suitably equipped, including an SE with a large monitor. (We saw only the Mac II version.)

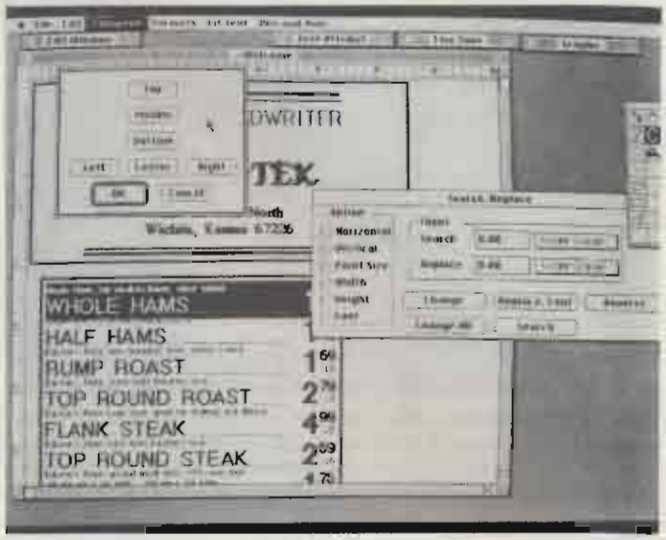
Display. The AdWriter uses the Macintosh concepts for pull-down menus from the top menu bar and the toolbox. *File* is used to open and close files. *Edit* is accessed to cut, copy and paste, and so on. A file can be opened by clicking the mouse or by typing the first letter of the name. If two file names have the same first letter, typing the first two letters opens the appropriate one. File directories can be filtered to display only text files, only ad files, or only style files.

Seven windows can be accessed from menu selections. Windows can be moved freely on the screen. When closing a window, the operator has two alternatives: make the window disappear completely or leave behind its title bar for quick access. This reminds us of the Xerox practice of shrinking a window into an icon and leaving that on the screen. The title bars can be placed anywhere on the screen (*e.g.*, in a horizontal row below the top menu bar or in a vertical row on the right). Windows always reappear at the same place they were closed.

The display can appear at 50%, 100%, 150% or 200% of actual size by keyboard or mouse command.

The screen currently displays PostScript fonts with attributes (bold, italic, etc.) in actual sizes and positions, but it doesn't show condensed or expanded characters (although it does adjust their spacing).

Ad styles. A job style menu controls the characteristics of the ad: dimensions (within a maximum ad size of 22" × 17"), border, inside and outside margins around the border, number of columns and their depth, hyphenation and justification parameters, and so on. Each block of text that becomes part of the ad gets its typographic parameters from the ad style.



AdWriter windows. *AdWriter supports most of the Macintosh conventions, including the use of a menu bar at the top of the screen and a toolbox on the right. Here two ads are displayed in windows, with two other windows evident. The top-left window is being used to align the selected item in the lower ad. The other window shows the search/replace capabilities. The second row from the top shows windows that have been closed, leaving their title bar on the screen.*

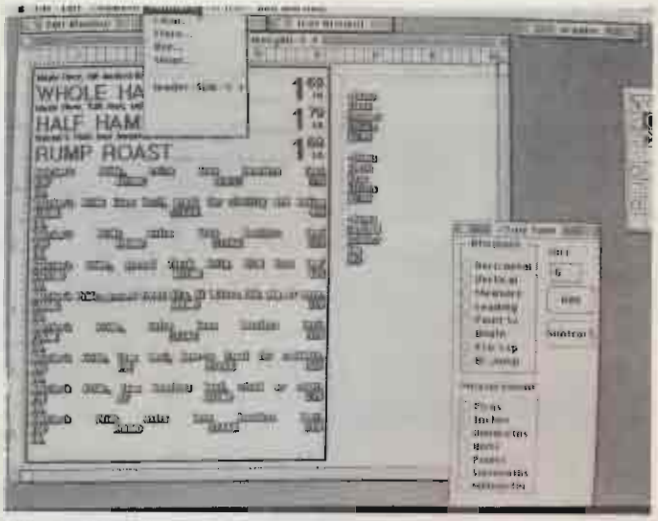
Inputting text. Raw text can be input on the Mac or brought in from a system terminal. If it is keyed at a terminal, delimiters can be embedded to divide the ad into segments for formatting. But, as with the AimTouch, the entire ad is brought to the screen at one time. It isn't possible to bring in the beginning of the ad, work on its design, and then ask for the next segment, or, obviously, to bring in pieces of an ad in a different order from which they were input.

Mycro-Tek suggested that long ads could be divided into multiple files to allow the operator to work with less than the full ad, but that sounds like a cumbersome workaround that isn't likely to be used. We wonder if a second window could be used for text, allowing the operator to bring the file into one window, from where blocks of text could be cut and pasted into the window in which the ad is made up.

Text is composed based on the ad style in effect at the time. This means that text entering the ad window gets its parameters, including line measure, from the style in effect at the time—either a default or one specified by name.

There are no containers to accommodate incoming text. If the text is longer than the border that has been created for it, the text runs right past the bottom and is displayed. If it extends beyond the screen, it can be scrolled.

The system supports an unlimited number of stored style files, which can be accessed by name. Individual blocks within an ad can be highlighted and given the attributes of any of these styles on the system. A block can be selected by clicking the mouse once and dragging it, or by a series of multiple clicks (two clicks highlights a word, three clicks a line, four clicks a paragraph, five clicks a predefined region, and six clicks the entire ad). Unconnected blocks can be selected and acted on in this way.



Composing an ad. *The text of this ad was brought in from a Mycro-Comp system in the default format. We have composed the first three parts based on a model. The format menu item is pulled down at the top to allow us to clear, store, use or show a format. At the lower right is the "fine tuning" window that can be used to adjust leading, size, kerning, baseline jumps, and so on, in the units specified at the bottom. The user can move through items in a window sequentially by striking the TAB key.*

Other formatting features include:

- ***Compose from model (formats).*** Multiple elements of an ad can be composed in like manner by creating a model from the first part and assigning the same attributes to the rest of the elements. This feature, which Mycro-Tek calls its stored format capability, is based on embedding delimiters in the raw text file. Any number of these formats can be stored on the system and accessed by name. A format can be tested with the "show format" command, after which it can be implemented or rejected (with the text returning to its previous format).
- ***Guides and rulers.*** Horizontal and vertical guides and rulers are user-definable, with "snap-to-guide" functions.
- ***Moving blocks.*** The OPTION key turns the cursor into a hand for picking up a selected element and moving it.
- ***"Bumping" sizes.*** Bumping (of point sizes, leading, and so on) is done from within the "fine tuning" window. It allows the user to specify the incremental bump value (in points, millimeters, etc.) and then click successively on "add" or "subtract" to cause the desired changes. It is also possible to bump from the keyboard.
- ***Alignment.*** Multiple items can be aligned horizontally (top, middle or bottom) or vertically (left, center or right) with respect to columns or with respect to a guideline drawn by the operator. Alignment is based on the line length in effect for the item, which may not necessarily correspond to its actual width (as in a centered headline). When we tried to top-align two items of greatly differing type sizes, we had a difficult time, probably because the system was using the leading as the basis for its alignment, rather than the actual point size in effect. Mycro-Tek says it is working on making this operation smoother.

  In aligning horizontal items, the current program uses only the top baseline for top-aligning the items (and the bottom baseline for bottom-alignment), but Mycro-Tek said it will support selecting any baseline and aligning it to any other baseline.
- ***Automatic or user-selectable leading.***
- ***Baseline jumps.***
- ***Automatic superior and inferior characters.***
- ***White space reduction or expansion.*** Space is adjusted by highlighting a text block and applying a value.
- ***Kerning.*** Manual kerning is available but awkward. It uses the white space modification feature, so two characters have to be selected and the value applied to them, rather than merely hitting a key to move one character incrementally. The effects of kerning are displayed, but how useful the display is depends on how close the screen widths are to actual output. As we noted earlier, expanded characters appear to be narrower than they really are, with extra space added between them to make their left side bearing appear in its correct position.
- ***Automatic sizing.*** A line of text can be sized automatically to fill the measure, or the measure can be sized to fit the text.

Graphics and special effects. Graphics capabilities available now include composing circles, boxes, boxes with round corners (by specifying the radius of a circle and expanding it), wedges, rules (which can be drawn freely or constrained to run horizontally, vertically or at a 45° angle), and filling areas with tints specified by percents.

Boxes can be divided into smaller boxes, with or without gutters between them, as on the AimTouch.

Not yet in the program are support for rotation, importing graphics from other Macintosh programs, and interfaces to scanners. These are planned for future releases.

Editing. As demonstrated in Hershey, editing can be done in WYSIWYG mode within the ad or on a system editing terminal. Editing features within the AdWriter program are basic: inserting and deleting text, as well as selecting blocks and applying formats to them. But Mycro-Tek said before the product is released it will add an editing window (which sounds like the Digital Technology approach). We haven't had a chance to do enough WYSIWYG editing to judge how much editing one would want to do that way.

Pricing and availability. AdWriter software alone sells for $2,000. A package including a Mac II, 1 MB of RAM, 40-MB hard disk and 19" LaserView monitor costs $9,900. With a 12" monitor the price is $8,100.

This pricing looks extremely competitive. The software alone costs $500 less than Digital Technology charges for its Macintosh ad system and $1,000 less than Concept Publishing's AdWorks. The package costs slightly less than Digital Technology's $10,495 system, but Mycro-Tek equips the Mac II with less RAM (1 MB versus 5 MB).

Mycro-Tek says it expects shipments to begin by June. A software enhancement is currently targeted for the fall.

Windows for drawing and setting text attributes.

Hypermedia products within 18 months

Autodesk acquires Xanadu

Autodesk, Inc., the publisher of the best-selling AutoCAD program for PCs (it claims over 140,000 users), announced that it has agreed to buy an 80% interest in Xanadu Operating Company, the Palo Alto firm that is developing the Xanadu Hypertext System. Autodesk will operate the Xanadu company as an independent subsidiary.

Autodesk will take three of the five seats on the Xanadu board of directors. It has named Alvar Green, Autodesk's president, Dan Drake, Autodesk's executive vice-president, and Chris Record, Autodesk's VP for corporate and business development, to take those seats. Roger Gregory (a Xanadu founder) will chair the board; Phillip Salin will be the fifth member. In addition, Chris Record will take over as president of Xanadu Operating Company.

At the Seybold Seminars in March, Ted Nelson (the originator of the hypermedia concept and the guru of Project Xanadu) pointed out that because forests are shrinking and oil is getting scarcer (which will make paper and inks more expensive over time) while electronic storage is getting cheaper and more efficient, there will be pressure on future publishers to switch to all-electronic forms of publishing. *(For more information on Ted Nelson's presentation, see Vol. 17, No. 14.)* To this end, Project Xanadu has come up with a mathematical system for cataloging an unlimited number of documents by computer.

Nelson said that a preliminary version of Xanadu would be available by the end of 1988. But this will be essentially beta-test software, and will require a well-configured Sun 3/160 workstation to run. With the funds injected into it by this acquisition, the Xanadu company will be able to bring a finished product to market within 18 months, according to Roger Gregory.

Installations

Xyvision has won an order for a system valued at more than $600,000 from the Maryland General Assembly. It will be used to publish bills that come before the state legislature as well as transcripts of legislative proceedings.

Information Engineering reports having installed PC News Layout systems at 10 sites during December and January, including three that are serving as distributors in Europe. The ten sites are the Washington *Post*, Murdoch Magazines, CMP Publications, Orlando *Sentinel*, PC Week, Le Provencal (France), Larousse Editions (France), Sociedad Espanola de Fomento Informatico (Spanish distributor), GB Techniques (UK distributor), and Unisys (Italian distributor). We'll have a report on the company's exhibit at America East in our next issue.

La Journada, a Mexican daily, has installed a **Crosfield** 2330 pagination system that is integrated with a Novell PC network. After writing stories in XyWrite on the network, reporters and editors send them to the 2330 system via Crosstalk for final editing and incorporation into pages. Page make-up is done on three Page Magician workstations; copy editors use Magician Plus terminals to copyfit text at deadline.

The Grand Haven (MI) Publishing Corporation has installed two networked Crosfield 2330 systems at the *Grand Haven Tribune*, replacing older Harris Microstor systems. Its front-end configuration comprises the two 2330 systems with 13 Magician Plus terminals, running both editorial and classified applications, including CopyView software for soft copy previewing and Crosfield's TOPS version 3.0 software with cross-network file backup and enhanced quality composition.

The *Tribune*, a 10,000-circulation daily, has opted to output to two Apple LaserWriter Pluses via PostScript rather than to a traditional typesetter. A third LaserWriter Plus is driven by Macintoshes used for display ad make-up.

Dewar Information Systems Corporation (DISC) has installed its first Discovery-PC/386 system at Northwest Newspapers in Crystal Lake, IL. Within the next several months, it will install PC networks in Europe, including at the Paris and London offices of the *International Herald Tribune*. Dewar's PC-based classified ad pagination system is currently in beta testing at the Lafayette (IN) *Journal and Courier*.

The color systems division of **Royal Zenith** announces the following installations during the first three months of 1988:

- RZ 200-S color scanners with RZ 210-CM color monitors: *The Desert Sun*, Palm Springs, CA; *The Olympian*, Olympia, WA; The Rockford (IL) *Register; The Clarion Ledger*, Jackson, MS; and *The Democrat & Chronicle*, Rochester, NY.
- RZ 210-L Laser Scanners with 210-CM color monitors: The Phoenix Offset, Chandler, AZ; The St. Cloud (MN) *Daily Times;* Woodruff Printing Co., Salt Lake City, UT; *The News Journal*, Wilmington, DE; and The Naples (FL) *Daily News*.
- RZ Scan-Tint, with Scan Line Artwork for comic strips, advertising, graphs and charts: *The Record*, Hackensack, NJ.

Compugraphic has taken five orders in the UK for its newspaper system:

- Morecombe and Lancaster Newspapers—a 30-terminal system for editorial, classified advertising and production.
- North of England Newspapers at Darlington—extension of existing system with the addition of advertising terminals at its Durham office.
- Tamworth Herald—editorial system added to an existing advertising and production system.
- Lichfield Mercury—10-terminal production system.
- Hartlepool Mail, a member of the Portsmouth and Sunderland Newspaper Group, a large Atex user—upgrading its existing Compugraphic system to handle direct editorial input.

Newest member of Information Systems Group

Kodak acquires Unix software firm

Eastman Kodak has purchased Interactive Systems of Santa Monica, California, a firm that specializes in Unix operating system software and related programs. The monetary terms of the agreement were not disclosed.

Interactive Systems, which will operate as a wholly owned subsidiary, will be the third company to join Kodak's newly formed Systems Software Division, within the Commercial and Information Systems Group. The first two companies in the group were Yourdon, Inc., a consulting and training firm, and Aquidneck Data Corp., which specializes in developing computer software for the federal government.

According to Kodak, the new subsidiary will develop computer guidance systems for future Kodak peripherals, such as printers and copiers, and complement the company's expanding software business. We wonder if it will play a part in the future of other Kodak subsidiaries as well.

Our first compatibility test passed

Sun announces 386i workstation

Last week (Wednesday, April 6), Sun made the grand announcement of its latest, and possibly most interesting, product: the Sun386i. It was done in grand style in Boston's World Trade Center, an odd place for a West Coast company introduction. Well, not so odd because the product was in fact designed (and will be manufactured) in Sun's East Coast division, in a suburb of Boston.

As Sun's president, Scott McNealy, noted, this was one of the poorest kept secrets in the industry. In an analogy to its philosophy on "open systems," he likened the situation to "an open season for open mouths." Most of us have been referring to the product by its internal code name, "Roadrunner." Many have known it was coming, but the more than 130 press people and analysts who attended the event weren't sure of the details. We think their general reaction was very positive and mildly surprised when given the details of this highly impressive product.

We reported most of the details of the product in our last issue, so we won't repeat most of that here. But a few things are worth repeating and a few new items came out of the press conference.

First, the product is a "workstation." In Intel's own words, it is the first device to take full advantage of the 32-bit architecture of the powerful '386 chip—unlike the '386 PCs that are currently hobbled by the operating systems they run.

Sun will offer a basic model (fully equipped model 150), with 4 MB of RAM and a 20-MHz clock rate, for under $10,000. This is a 3-MIPS machine that can be upgraded with the addition of memory to 4 MIPS.

The upper-end model, called the 250, is a 25-MHz machine that is an even more powerful 5-MIPS device. Outside of power and memory, the 150 and 250 are very similar. There is a diskless unit for $7,900.

Targeting DEC as one of its main competitors, Sun noted that the 386i is 43% cheaper than a DEC workstation and 43% more powerful. Similar (but less dramatic) differences were claimed with other competing products (such as Apollo).

Both of the new devices fall roughly in the range of existing 3/50 and 3/60 workstations. Sun believes that the new machines won't cut into sales of the 3 series very much and that they will bring in incremental business in a variety of new market areas.

One of the main features of the Sun386i is that it is both a Unix and a DOS workstation. Sun emphasized that it is a workstation, not a PC. However, by providing a seamless environment between the Unix and DOS worlds on the same screen, without consciously having to switch between operating systems, the Sun386i gives the user the advantages of both a powerful, Unix-based workstation and a DOS PC.

Interactive testing. We were curious how easy it was going to be to move between the two environments. Sun's demonstrations were impressive, especially the ease in switching between programs within the different operating systems displayed in multiple windows on the same screen. But we like to do our own tests, so we brought a copy of XyWrite, a basic DOS word processing program. At first there was a question of how to load the program—the workstation comes standard with a 3½-inch floppy, but our floppy was 5¼ inches (like those used by hundreds of other programs in the field).

No problem, as it turned out. Sun has provided a 5¼" drive on the file server, so the program was immediately transferred to our workstation. Once there the operation was just as if we were working on a PC, but better. Using a "system" cursor, it was trivial to define text in the XyWrite window and, with a single keystroke, paste it into a Unix window. There was no need for multiple steps, putting it first on a clipboard and moving off the clipboard onto our Unix window. Bottom line: the interface between the two operating systems is truly seamless.

There is one problem we noted in our review of the product that is worth mentioning again. As a person moves quickly and easily from one program to another, the need for a common user interface becomes even more important. At the user level within a program, Sun refers to the details of this interface as "the look and feel" aspect of the product. At the press conference, Sun said that this is coming very soon and that AT&T (with the rights to Unix) will be the one making the announcement.

Where does it fit? There are new (as well as old) markets Sun feels will take advantage of the new product, including the technical, federal, office, education and commercial areas. These are where Sun feels that the significant lead Unix has over OS/2 will become a big factor; it plans to take advantage of this window of opportunity. This is especially true of its lead in the networking area with NSF, as well as its ability to offer the added power and extra memory that remain unavailable in the DOS world.

To tap these new market opportunities, Sun has begun a new VAR program. This was originally announced in November 1987 (in a test market mode). April 1 was the official kickoff of the program, and Sun hopes to have its anticipated complement of 100 VARs very soon. Sun sees these alternate channels of distribution as crucial for tapping new markets and broadening the penetration of Unix into the workplace. This is especially true of a '386 device, regardless of whether Sun considers it a workstation or not. It has the potential (especially in the publishing market) to act as a replacement and complement to some of the PC-based products. But the attraction of the PC has been its availability, freedom of choice (clones) and the fact that repairs are just around the corner. Sun is not planning to launch it into the retail chains, at least not for now.

For many people, the 386i will be the solution to the problem they have been facing—the desire to use all the DOS programs that are readily and cheaply available, but within a more powerful and sophisticated operating and networking scheme. It also gives Sun three basic platforms: the power user can move to the SPARC-based machines, the bridge user (Unix and DOS) can use the 386i family, and the pure Unix world has its 68000-based Sun machines. Not a bad stable of horses, and a real plus for Unix in the publishing field. It is also, by default, a real plus for DOS (over the Mac), in spite of Microsoft and IBM.

Stock transaction

QMS, Imagen merge

QMS has entered into a definitive agreement and plan of merger with Imagen. QMS will acquire Imagen by a merger of the latter into a new, wholly owned subsidiary of the former, in exchange for about 1.85 million shares of QMS common stock. The merger is expected to take effect late in May.

Notes from Art-X

The second annual Art-X show and seminar took place in New York on March 6-8. Aimed primarily at designers and artists, it was a small event—about 100 seminar attendees and 25 exhibitors—but judging from the comments of the attendees, rather successful. Designers, like everyone else in the publishing business, are caught in the avalanche of new microcomputer technology. Opportunities abound to increase productivity, to test creative ideas faster with interactive computer tools, and to deliver more elegant and persuasive presentations to clients—but at a cost. To take advantage of these opportunities, designers will have to bone up on computers and software. They have to learn about issues that the traditional graphics curriculum never touched on—gray-scale scanners, raster image processing, dots per inch and the construction of halftone cells, vector and bit-mapped images, and on and on.

The exhibits included some vendors of typographic front ends, like Compugraphic, Magna, Linotype and G O. Graphics. There were several desktop publishing vendors: Quark (Xpress), Xerox (Ventura Publisher), Aldus (Freehand and PageMaker), Letraset (ReadySetGo and Image Studio). A few of the art creation and color design systems were represented: Unda, Du Pont Design Technologies and SlideTek. We found little in the way of product announcements, though; most of the exhibitors had either made their splash at the Seybold Seminars a month earlier or were hoping to be ready with new stuff for Graph Expo, a mere two weeks later.

Canon color copier. The hit of the show, judging solely by the depth of the crowd around the booth, was the Canon color laser copier. People lined up six deep to have copies made of their wallet photos and slides. A number of attendees had come prepared with Cromalins and printed samples and 10X magnifiers.

The copier is fully digital. It combines in one cabinet a 400-dpi flatbed gray-scale scanner with a 400-dpi color laser printer engine; these two subsystems are joined by a color computer that lets you adjust the density of the cyan, magenta, yellow and black toners from the control panel. The computer can also crop the image and scale it independently in the *x* and *y* directions. To simplify the calculations, the copier includes a graphics tablet mounted on the cover; you simply place the original on the tablet and touch the pen to the corners of the area you want reproduced. You then indicate the percentage of enlargement or reduction, or you can let the copier compute a best fit to the paper it's using.

The cost of the unit is $37,000; $39,000 if you opt for the 35mm slide copier attachment. It prints 9 pages per minute in single colors; 5 ppm in four colors. Materials run about 11¢ a copy. The duty cycle is rated at a maximum of 10,000 copies per month.

Color quality is quite acceptable for standard office uses like business graphics, and the color balance can be fiddled with to reproduce snapshots of the grandchildren. It would be quite acceptable for showing artists' concept drawings, but falls short for final presentations where true colors must be shown with reasonable fidelity. The print resolution, to our eye, is not as good as Mead's cylith paper *(Vol. 17, No. 7)*, but

Canon color copier. *An all-digital device, it should be eminently suitable as a color output device for a computer. Canon representatives refrained from commenting on that subject.*

it will be some months before products using that technology appear.

Because the machine is fully digital, it is only natural to ask when a color laser printer based on the print engine will be available. But Canon's representatives couldn't answer that question. Apparently the marketing of copiers and printers is handled by two entirely separate Canon divisions, and the copier people won't know any sooner than the rest of us.

Du Pont Design Technologies. At Graph Expo last fall, we noted that Du Pont Design Technologies was able to show greeked text on screen. Over the winter, it upgraded its text handling functions. Now, you can enter and edit text in a monospaced window, rasterize it using Bitstream fonts, and then place the composed block of text on the screen as an object. You can choose justified, centered or ragged setting. After it has been rasterized, the block can be treated as any graphic object; you can rotate it to any angle, position it anywhere on screen, and save it on disk for future use. The text remains editable even after rotation, by calling up the monospaced window and then recomposing. Mind you, this is not a typographic system. There is no provision for hyphenation or kerning. Thus it serves only to indicate the position and general appearance of the type. This, however, is in keeping with the overall philosophy of the system as a tool for preparing comps rather than final production.

Letraset. In addition to leaking word of an update to ReadySetGo, version 4.1, due sometime this fall, Letraset told the Art-X crowd that its next product will include 100 display fonts. Letraset has an enormous library in its line of rub-on faces. It also owns ITC, with one of the largest font collections in the world. The product will also offer a font-modification program. It will not be a mere bit map editor, but no other details were forthcoming. No timeline or pricing for this product was given.

SlideTek. A SlideTek demonstrator agreed with us that his company's name is misleading, because it implies sales of only slide-related products. He confided to us that a corporate identity change is imminent, probably to a moniker like "LightWave." Remember: you heard it here first.

Moves toward standardization

Highlights from America East

Our full report from the annual America East exhibition in Hershey, PA, will appear in our next issue one week from now. But in the meantime, here are some highlights from the show, in addition to the Mycro-Tek AdWriter *(see separate story)*:

- ***Triple-I introduces archive system; moves to standard Sun.*** Triple-I showed a PC-based archival system that is undergoing beta testing at the Augusta *Chronicle-Herald*. The system is integrated with the Morris editorial system.

  Although it has been using a Sun Microsystems platform for its display ad system for some time, Information International has always added some proprietary hardware. At Hershey, Triple-I showed the system solely using a standard Sun platform.
- ***Dewar shows network on '386.*** Dewar Information Systems demonstrated the beginning of its effort to port its proprietary network protocol to an MS-DOS PC running on Arcnet. Some features remain to be enabled, but a two-terminal system was running at the show.
- ***Cybergraphic in a briefcase.*** Cybergraphic has reconfigured and repackaged its system to fit in a small briefcase housing the PDP-11/73 computer and two 80-MB disk drives.
- ***CPS unveils 2000 system.*** The Astrotek 2000 system that CPS announced at Seybold Seminars '88 was shown for the first time. It supports faster processing speeds, Winchester disk drives and the same software and terminals as the former 1000 system.
- ***Harris enhances software.*** Harris showed the latest upgrades of its 8300 Page Layout Software and its class-ad package.
- ***New editorial system from Digital Technology.*** As we reported in a recent issue *(see Vol. 17, No. 13, p. 36)*, Digital Technology has developed an editorial system using Macintoshes as terminals. It was introduced in Hershey with some nice features, although it is too soon to judge it.
- ***SII's enhanced library system.*** System Integrators demonstrated a revision of its LASR library software that is about to be given a serious test at the San Francisco *Examiner*.

To Birmingham every March

Newstec moving site, schedule

The Newspaper Society, the management organization for the UK's regional press, is moving its Newstec Conference and Exhibition from Brighton to the National Exhibition Center in Birmingham (the same location as IPEX). At the same time it is bringing the time forward from November to March, and making the event annual rather than biennial. The UK's vendor community welcomed the move from the cramped conditions of Brighton to Birmingham, but was up in arms about the change to an annual event. Vendors almost universally stated that the UK market was not sufficiently large to require a move to an annual event, particularly with IFRA being annual. The first Newstec at Birmingham will be March 4-7, 1991. The final Newstec at Brighton will be in November 1989. The rationale for moving to March was that this date would be before ANPA and IFRA and did not conflict with other exhibitions, as the November date did. We hope the organizers notice that the annual Seybold Seminars event always occurs in the second week of March, and many UK newspaper executives make the trip to California at that time.

The Seybold Report on Publishing Systems

Vol. 17, No. 16 ISSN: 0736-7260 May 2, 1988

The Open Look. AT&T and Sun Microsystems have unveiled the missing piece for Unix: a consistent, graphical user interface that is being adopted by many Unix software vendors. **Page 39**

Hale back as Varityper president. Ed Hale has returned to AM International's Varityper Division as president, as Joe Verderber steps down to concentrate on selling the division. **Page 41**

Hershey highlights. In addition to the Mycro-Tek AdWriter covered in our last issue, America East had its share of highlights, including a new editorial system from Digital Technology; new or enhanced library/archival systems from System Integrators, Information International and Software Consulting Services; and new hardware from CPS and Cybergraphic. Our review covers these items and more.

SEYBOLD SEMINARS '88

Applications & Industry Views

THIS IS THE THIRD of three articles summarizing this year's Seybold Seminars discussions. The first covered the New Technologies that comprise the fourth-wave of which we have been writing of late. The second consisted of our coverage of the companies that showed new products at the annual Product Showcase accompanying the Seminars. This issue covers the vertical market applications—the publishers and vendors most directly affected by the fourth-wave revolution.

An index of speakers covered in this issue appears on page 3. For a list of speakers in the earlier issue, please see Vol. 17, No. 14, p. 6. The index of equipment demonstrations appeared on page 1 of Vol. 17, No. 15.

People

Andrew James, previously electronic publishing manager at Rank Xerox (UK), has been named marketing manager for **Interleaf UK**, reporting to General Manager Oz Hornby. Interleaf UK, which now employs 17 people, has given James a mandate to set up a marketing and support organization. At Xerox he had been involved in marketing all electronic publishing products, including launching Ventura Publisher in the UK. His move to Interleaf, we were told, puts him "further up market from the yapping jackals of the PC world." We'll pay him a visit when he's had a chance to survey the situation a little more closely.

Atex has named **Peter Wood** vice president, imaging operations, reporting to Harland LaVigne, executive vice president, operations. Wood, who had been vice president/general manager of the Graphic Arts Systems Group at Eikonix, will be responsible for bringing Atex and Eikonix color imaging and related products into the newspaper and magazine markets. He earlier worked with Crosfield.

The board of directors at **Monotype Corp.** has appointed **K.A. Allen**, CBE, as a nonexecutive director. He had been director general of printing and publishing at Her Majesty's Stationery Office. He is also chairman of the Printing Industry Quality Assurance Council and was a long-time member of the Printing Industries Economic Development Committee.

Chris Nathan has been appointed director of imaging systems, UK, for **Du Pont**. He succeeds **Peter Higginbotham**, who is now director of medical products, UK and Scandinavia. Nathan had been the imaging systems division's marketing manager until 1985, when he undertook a worldwide assignment for the company's flexographic plates division.

Ultre has named **John Kennedy** director of engineering, in charge of all research and development, replacing **Herbert Kepler**, the retiring co-founder of the company. Kennedy had been in charge of electronic development for the UltreSetter recorder. He earlier worked with Spectrum Electronics and Mergenthaler Linotype.

Trevor Haworth has been appointed senior vice president, sales and marketing, for **Crosfield Dicomed Inc.**, heading the integration of Dicomed into the Crosfield organization. He retains his position of director of Crosfield Design Systems, for which he had worldwide responsibility. He will relocate to Minneapolis, the location of Crosfield Dicomed's headquarters.

Crosfield's new sales representative for Quebec and the Maritime Provinces of Canada is **Robert Jollet**, who comes from Compugraphic, where he spent 12 years.

Digital Technology has named **Ed Hubbard** southeastern sales manager. He was previously an account representative for Xyvision, Varityper and Omni Business Machines.

Auto-trol has promoted **Denny Chrismer** to vice president, international operations. He had been director of sales operations for Europe, Asia and Australia.

Ricoh has named **Wayne Mize** vice president, office products support, customer service group. He had been director of field service operations for copier service.

Palantir has appointed **Gerry Purdy** to the position of vice president of marketing, responsible for marketing and sales. He had been PC marketing manager for Metier Management Systems, of Houston, developers of Artemis project management software. He earlier served in marketing and sales positions with Compaq Computer Corp. and two dealer chains.

Each year, the Danish company Erik Levison, part of the world's largest graphic arts distributor, The East Asiatic Company, presents an award "to a person who has shown special excellence within the graphics arts industry." The latest recipient of the award is **Arne Purup**, chairman and founder of **Purup Electronics A/S** and the Purup Group. It was stated that Arne Purup had established a niche market, and succeeding in building a company with enormous influence in the prepress world.

Hell Graphic Systems has appointed **James Sholar** midwest regional manager for sales, service, training and administration in Schaumburg, IL. He has been with Hell since 1982.

ImagiTex has appointed **Lee Alnes** to a position as product marketing manager, applications. He earlier worked for Scitex and has served as an industry consultant.

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Seybold Seminars '88: Newspapers and Magazines

THE NEWSPAPER/MAGAZINE session—and the evening bull sessions that followed—were the liveliest and most impassioned sessions of the week. As we explained in our first Seminars issue three weeks ago, the Seminars this year took a "time out" from perennial pagination/integration issues to discuss the underlying question of the transition to new, "fourth-wave" system architectures.

It immediately became clear that much of the newspaper industry—most specifically the larger users—is split on the "fourth-wave" concept. There are believers and nonbelievers, who hold their views strongly. There are fence-sitters who are not quite sure what to believe.

Seybold views. Our stand on fourth-wave systems has placed us right in the middle of all this. We thought we had been fairly clear about our position in our recent fourth-wave article. But we keep encountering people who have misinterpreted what we said. Here is our view:

1. We do believe that the publishing industry is joining the mainstream of the computer industry, and that proprietary "third-wave" publishing systems will be supplanted by "fourth-wave" systems rooted firmly in the mainstream of the computer industry.
2. This does not mean that every user will become his own system integrator. Some will. Others clearly want to continue to buy solutions from a system vendor.
3. However, to benefit from being part of the computer mainstream, users are going to have to pay attention to that mainstream. Issues (such as MS-DOS vs. OS/2 vs. Mac vs. Unix) that once were curiosities to newspapers are now central concerns.
4. Moreover, the vendor of the future (including the current vendor who makes the transition) will be quite different from the vendor of the past. Because he is no longer manufacturing and supporting most of the hardware involved, no longer writing as much system software, and no longer building anything like the number of hardware/software interfaces he did in the past, he will be considerably smaller. He will also have considerably lower revenue. He may not even sell much hardware at all.

   But people can make money selling application expertise, system integration and application-specific software.
5. In addition to the other benefits of being in the computer mainstream, we believe that the fourth-wave hardware/software base provides a better foundation on which to build a new publishing system than do older third-wave proprietary hardware and software.

   Some Seminars attendees disputed this view. We think that the answer will be very clear to everyone within a year or two.
6. We have never claimed that mass-market software currently provides functionality equivalent to that of a mature, third-wave system for producing large newspapers or magazines. In fact, we are not certain that anyone is ever going to produce a large newspaper or magazine exclusively with mass-market, off-the-shelf software. There may always be some level of custom functionality required on top of a mass-market base.

   However, we do believe that mass market software will become increasingly important to even the largest

Index to Speaker Coverage

Newspapers and Magazines

Long Documents and Books

Industry Redefined

[See our last two issues for more Seminars coverage.]

newspapers and magazines. It will form the basis for much of the application software, and it will provide additional functionality that extends the usefulness of the base publishing system.

7. We have never recommended that everyone who has a third-wave system should throw it out and replace it with a fourth-wave system. As we have pointed ont in the past, we still use a third-wave system to produce most of this *Report*. It works, it is paid for, and we know how to use it.

However, if we were setting out to buy a new system, we would only buy a third-wave system if we were convinced that no fourth-wave system could do the job, and if we could not afford to wait for a satisfactory fourth-wave solution to become available.

More to the point for most users: before we spent a lot of money expanding or upgrading an existing third-wave system, we would want to know what sort of migration the upgrade would give us. And we would want to look at the fourth-wave alternatives available. Should you, for example, install networked PCs for part of the newsroom rather than expanding the third-wave system? (This is essentially what we have done. We make extensive use of PCs, Macintoshes and other fourth-wave platforms, and transfer files between systems. When the third-wave system eventually dies, we will use fourth-wave technology exclusively.)

This, naturally, does not endear us to vendors that are selling third-wave systems. They claim that we are destroying their market. We think that it would be abdicating our responsibility to users if we did not tell them what we think is happening. Each nser has to decide for himself whether we are right or wrong. If he agrees with us about the general direction of the industry, he must still weigh all of the factors relevant to his own situation and make up his own mind as to what he should do. The decisions are rarely easy—especially for the larger users.

Technology matters? The underlying assumption is, of course, that someone who is buying a computer-based solution to serve his application should pay attention to the computer technology being used as well as system functionality. We contend that the benefits to being in the mainstream are so great—and the penalties for being left behind so severe—that users *must* care about the computer technology used. The self-proclaimed "dinosaurs," on the other hand, claim that functionality is all that matters. Further, they define "functionality" in fairly traditional terms. They do not, for example, place much value on the kinds of tasks that are not supported by dedicated publishing software but that are well supported by mass-market software.

The debate raged all day and long into the night.

Newspaper and Magazine Seminar: User Panel

We decided to kick off the discussion by looking at the problem from the user's perspective, then ask the vendors for their points of view. The users were selected to represent a wide range of views: do-it-yourself with desktop publishing, stick with the third wave, or make the transition from third to fourth wave.

Eddy Shah, Messenger Newspaper Group

One of the most interesting and decidedly controversial talks of the day was that of lead-off speaker Eddy Shah, publisher of the Messenger Newspaper Group and founder of the color UK tabloid *Today*. Shah has had experience both on the conventional side of the fence (with a very advanced third-wave system he installed at *Today)* and with a more recent fourth-wave system he pnt together with Macs for a large editorial system for the Messenger Newspapet Group.

There was little question where Shah was coming from. "Desktop publishing has given us the opportunity to get the paper out at a fraction of the cost of couventional technology," Shah stated. He said that he had always looked to the U.S. for innovation, versus the slow-moving, almost stagnant progress in the UK, which has been hampered by the unions. Shah used advanced third-wave technology to help break the union's gtip on the UK newspapers. Many Seminars attendees were shocked to hear the exorbitant wages and benefits UK the unions had come to demand and get.

But with the unions being broken, huge profits were beginning to surface. More importantly, new titles seemed to be cropping up everywhere with a much lower breakeven point required (to become profitable) because of the available uew technology. Papers based on new technology simply didn't have to sell as many copies or obtain as much advertising revenue to become profitable.

Desktop savings. As Shah considered the alternatives for the Messenger Newspapers, he got quotes from both the traditional and desktop perspectives. A traditional system would have cost him more than $2 million. He was able to configure the equivalent system using desktop publishing technology (and, ironically, functionally superior page make-up programs) for $400,000. For a pnblisher the name of the game is profits, so his decision was obvious.

Other than just ttying to get the best value for what he was buying, Shah related the cost is:sue to snrvival. He feels it is vital to get the cost down to compete effectively. Competition is coming from traditional sources, such as television and radio, and it is getting easier and easier for new titles and competitors to emerge. He doesn't buy the argument that newspapers are safe simply because they have been around for a long time. Those that are complacent and ignore the business issues are vulnerable to this competition.

Desktop publishing—no cure-all. Shah said that desktop publishing is not a cure-all for newspapers, but that it is a

significant piece of the final pie. From the comments we heard during the week (and especially at the newspaper bull session, which Shah couldn't attend) it was clear that many misunderstood what he said.

Many attendees felt that Shah was saying desktop publishing was going to solve all the problems for the largest papers. His point was that it can be (and should be) considered to address many of the problems facing most newspapers.

He also stated that he thinks it is important to work closely and cooperatively with the supplier—a point echoed by many of the other newspapers that have opted to move to fourth-wave systems this year. At *Today* he relied heavily on the system vendor to solve all of the problems. In the Messenger installation, Shah's group worked closely with the system suppliers to get the job done.

Shah also raised some other controversial issues, such as, "Should you really have a production manager anymore?" He argued that with desktop publishing components there is less need for a manager to understand the formerly complex nature of the entire production process. (Years ago, a production manager told us, "If I do my job well, I'll be the last person at this paper ever to hold this job.")

Over 800 tabloid pages in 3 days. In closing, Shah took one more shot at the disbelievers. He pointed out the advantages of desktop publishing and networked micros to handle many of the tasks formerly done by centralized minis. He now produces over 800 tabloid pages in a three-day period using his departmentalized desktop publishing system.

To emphasize the simplicity of the page make-up software (he uses Aldus PageMaker), Shah cited the example of his own children, who produced a small newspaper in a matter of hours—having never seen the program before. Ease of use and ease of learning are key to his operation.

Small is beautiful. Shah's point was clear: newspapers that think big will create big problems for themselves. They must let go of the myth that a system has to be complex and expensive, and that more $$$ = better functionality. "Thinking big, spending big, will eventually kill you against emerging competition," said Shah.

Not surprisingly, this provoked an attack from some of the larger, established U.S. newspapers that were very skeptical about his views. In general they felt that he oversimplified the problem and that his scheme wouldn't work for the very large and very complex newspapers for which they were responsible. His response was that if you continue to think that way, and don't try to make major changes and simplify the operation, people like himself will move in and effectively create new competition.

We don't think any consensus developed on this question. Shah was putting the traditional papers (and vendors) on notice—warning them, speaking as a publisher, of the need to change. The skeptics left with the feeling that Shah doesn't fully understand the complexity of their problems, and his solutions won't work for them. We think there is something to be learned from both sides of this argument. But the worst thing would be to close your eyes to what's happening.

Bruce Adomeit, Minneapolis Star/Tribune

In sharp contrast to Shah, Bruce Adomeit presented a very different view of the problem, one that concluded with his belief that the reality of the situation is that in the long run, publishers will have to continue to rely on a single system vendor (in Minneapolis's case, Atex) to provide solutions for all their needs.

Twilight of the dream. Bruce titled his talk "Twilight of the Dream." This expressed his feeling that the industry is in danger of losing the system vendors, and if it loses the vendors it will probably lose its dream of total pagination as well.

Adomeit feels that pagination is far more than simply assembling pages. In fact, he argues that if all we get from pagination is output from computer to plate, why bother? He believes very strongly that pagination is not worth the effort if we don't have extensive management control and reporting schemes. Therefore, the focus of paginatiou should be on management control and information—not just composition and make-up. He feels we must "track every piece of the newspaper" or we haven't really solved the problem. (This, of course, is one of the central concepts underlying Atex's "Total Publishing Environmeut" effort, which focuses as much on managing the publication database as it does on total pagination.)

In addition to Adomeit's belief that these management information tools are an absolute necessity for total pagination, he also feels that management is willing to pay for this management information. (We ask publishers: exactly *how much* are you willing to pay for this information?)

Who will foot the bill? On the other hand, Adomeit pointed out that the market appears to be too small to pay the real cost of developing total pagination solutions. He does not believe the new vendors (CText, Camex, *et al.*) have the incentive to take on the task of pagination. He sees the possibility that some of the traditional vendors may falter, placing newspapers into a second "technological Dark Age."

Adomeit is afraid that the *best* that large newspapers can hope for is that one of the traditional large system vendors will survive as a monopoly supplier. The worst case is that none will survive, or that none will survive who want to pursue the dream of total pagination.

Some reactions. Adomeit's talk raised several interesting issues:

1. Does a complete pagination solution require that the entire system be supplied by a single vendor? Adomeit thinks so. Not everyone agrees.
2. Does his dream of Atex TPE-style total pagination make economic sense? If so, then why assume that a new vendor will not be able to provide it, even if the old vendors falter? If not, why will *anyone* provide it?

It may be that without the profit margins afforded by selling proprietary hardware, no vendor could afford to develop the kind of pagination system Adomeit wants. This argument would suggest that development of pagination systems is being subsidized by sales of text editing systems and terminals. Take away the subsidy, and total pagination cannot stand on its economic feet. An interesting proposition.

On this point, Al Edwards of SII announced at the Seybold Newspaper Tutorial last October that his company was abandoning its drive for total pagination because newspapers did not appear to be willing to pay what the development would cost *(see further comments from SII on this subject, below)*.

In sum, if we understand Bruce's concerns cortectly, he is afraid that the indnstry is rapidly moving toward an era in which newspaper system vendors will be very much smaller than they are now and will undertake only that software development that will require reasonable levels of effort and will yield reasonable returns. He is wotried that grand schemes for pagination do not fall into this category. In this sense, the fourth wave is a positive evil because it may have killed forever the dream of total integration and total pagination.

Unfortunately—and this is Bruce's anguish—all of this is not going to make the fourth wave go away.

Beth Loker, Washington Post

By the time Beth Loker spoke, it was clear there were two extremes, and, judging by the questions from the audience, people were falling into one camp or another: the "we-can-do-it-ourselves" with desktop publishing tools in one, and the "you-need-your-traditional-vendor-for-everything" in the other. Loker opened by saying she agreed with both views, apparently understanding the points made by Shah, while not being ready to throw aside the traditional vendors either.

She concentrated on two issues, the fourth wave and application software. It is far too easy for discussions of the transition to end up focusing on hardware rather than on the application software. Loker did an excellent job in separating the two factors and expressing her view on the importance of each separately.

Making the transition. She apparently agrees with the concept of the fourth wave as an architecture, hut like many of her peers she qnestions how to make the transition. She agreed with our view that it is important to nnderstand the technology because we are reaching the limits in current systems (zoning requirements, color needs, etc.). According to Loket, the industry hasn't been able to harness the technology currently available, and the vendors ate having problems coping with the transition to the fourth wave.

Loker does not believe standatd components are ready to solve the *Post's* problems today. However, she did express a need to move toward standard platforms to access PC-hased programs such as Lotus 1-2-3. She also sees improvements in accessing the business system side of the business if everyone was on PCs. She does not think we can he "single thread" and expect to get all the software components from a given system vendor. To help address this problem she is looking for salvation through standards. The problem is getting everyone to agree on the same standards. No one seems to be taking the lead to accomplish this.

Pagination through standards. Loker also brought np an interesting twist on the problem. She doesn't believe standards would be nearly as important as they now appear to be had the industry solved the problem of pagination back when everyone expected it to be solved.

For the *Washington Post,* no vendor currently offers all the pieces to pagination—or the people to do the job. So unlike Adomeit, who is looking to his system vendor to provide all the pieces, the *Post* believes a mixed solution is an option. Loker also made it clear that "owning all the pieces does not integration make." Therefore it is her opinion that integration and pagination will he a cooperative effort between vendors and newspapets and will be henefited by the use of standards.

Newspaper and Magazine Seminar: Vendor Panel

In the next session we asked the three largest "big system" suppliers to respond to the concerns raised by the users, and by the challenge of the fourth wave in general. These three vendors (Atex, SII, and Crosfield) and their customers face the biggest challenge in migrating to fourth-wave systems. They have the largest, most complex and most ambitious customer installations. They have hundreds of man-years of application software to contend with. They have the burden of a large installed base of customers who are expecting a rational migration path. They have the longest commitment to full pagination.

Al Edwards, president of SII, and Graham Shaw, senior vice president of sales and marketing at Crosfield, the key decision-makers for their two companies, both agreed to come. Although we had hoped to have Dave Monks, president of Atex, to complete the triad, Atex was represented by Rick Simpson, its VP of marketing and business planning.

Al Edwards, SII

Al Edwards started the session by dropping a bombshell. Edwards first announced that he has moved the company from Over the Counter to the NY Stock Exchange. The ticker abbreviation will be SIN. This got a good laugh from those who consider SII the industry's "bad dude." But the laugh was short-lived when Edwards next announced SII is joining the mainstream of computer technology.

Al said that he has been hearing from us, and more recently from his customers, that there really is no other choice. Publishing systems must move into the mainstream of the

computer industry. SII had gotten the message early about changing its system architecture to one based on intelligent workstations connected via a local area network. But it had set about implementing this with its own proprietary Ring operating system and a strong bias toward its own proprietary hardware.

The company was getting the message that the industry considered Ring to be proprietary. A proprietary operating system and proprietary workstations is *not* joining the computer mainstream. It was becoming increasingly clear that SII would ultimately lose most of its market unless it changed course.

Two scenarios for the future. Edwards offered two directions the transition to fourth-wave systems could take. The first would be for users to buy off-the-shelf components and assemble their own systems. In this case, there is no role for a company such as SII. This is exactly what some newspapers were threatening to do at last year's Seybold Seminars.

The second alternative presumes that users really do want to continue to buy systems from a system vendor. In this case, SII could use "mainstream" computers (Tandems would do just fine) as file servers to support standard desktop computers serving as workstations. SII would provide all the system application software. SII, not the user, would remain the system integrator.

This is the approach SII has elected to follow as its strategy for the 1990s.

Living up to its name. In Al's words, "SII will be true to its name" and become system integrators. What this means is that SII is moving from an approach based entirely on proprietary terminals (such as Coyotes and the Ring-based Tahoe and Sequoia) and the proprietary Ring operating system, to mainstream hardware and software. The challenge now will be to "navigate through the sea of (*de facto*) standards."

Among the standards that SII believes are important are PostScript and Apple QuickDraw (PICT) data formats, TIFF file formats for scanned graphics, Unix and MS-DOS, Handshake, TokenRing, Ethernet and DDES, to name a few. In other words, SII, the company which told Seybold Seminars audiences two years ago that "you cannot integrate cats and dogs," is now advocating open systems and data interchange standards!

On the terminal side there will be three alternatives for the user:

1. ***PCs on Xport.*** The first is PC input for news and advertising connected to the host file server via SII's Xport PC serial interface. There will be no limitation (save system response times) on the number of terminals that can be connected to the Tandem host. The Xport can be purchased or leased, but in any event the user will pay a software license to connect his PC to the system.
2. ***PCs on X.25.*** The second alternative is the opportunity to directly connect a PC or LAN of PCs to the Tandems via the X.25 virtual circuit. This would allow the user to run whatever PC programs he wishes. This would provide two-way communications with the host, full directory capability and security. The price for the connection will be $2,500 per PC.
3. ***SII editor in a PC.*** The third choice will be the Coyote editor in a PC running under OS/2. This is SII's ultimate step toward a fourth-wave system. Both the '286 and '386 PCs will be supported. The cost of this software will be $4,000 per terminal.

These are nontrivial charges, about which many SII customers in the audience complained, but in SII's view this represents "fair value" for the SII functionality being accessed via the PCs. We agree. If system vendors cannot charge for the value they provide in expertise, specialized application software and system integration, there will no longer be any system vendors. Most of the newspapers and magazines at the seminar desperately want to keep their system vendors. And, in stark contrast to last year, most of them now say that the level of integration and support they want is not going to come at mass-market software prices.

Rethinking pagination. Edwards still feels there is a diversity of opinions about what pagination really is (and what it must include). However, all future SII developments will be made on standard platforms. Ring, which was formerly the underpinning of SII's pagination effort, is no longer part of the equation. Ring will remain a product for SII's "other business interest," but pagination for newspapers and magazines will not.

In addition, Al made it clear that SII is willing to integrate other vendors' products, specifically display ad terminals. This will not provide the "all-encompassing" pagination solution favored by Minneapolis, but it will be SII's "affordable and practical" solution to what customers need (and, more to the point, are willing to pay for). Components of this solution will be introduced beginning this spring.

Exit Ring, enter standards. In summary, SII is moving from its proprietary hardware and software solutions and into the mainstream on standard platforms and standard operating systems. SII is further softening its view on integration by stating directly that it will integrate other vendors' products as long as they also follow computer industry standards.

However, SII is not offering a commodity solution. Instead it will offer SII newspaper solutions based on standard hardware and will act as the integrator for its customers. Edwards made SII's position clear, outlining where it is headed and how it will proceed as it awaits the "industry to decide who will stay in the business."

Rick Simpson, Atex

In contrast to the dramatic change in direction coming from SII, Atex acknowledged that it, too, will move to standard platforms, but that this will take time, and it expects to continue to sell proprietary systems in the interim.

Migration strategy. Atex is engaged in moving its application code to standard platforms, but it is doing so in a manner that (for now) keeps customers on older proprietary hardware. Atex views this as "protecting the customer's investment." Development of Atex application software for PCs will be done by a newly formed PC publishing group.

This is a tricky business. Atex is very anxious to avoid going into the "valley of stalled sales" if customers decide to stop buying systems and wait for the next-generation product

(something that would not be so much of a problem had Atex started the conversion earlier).

At present, Atex says it is keeping the money flowing into the company by offering upgrades that extend the life of the older proprietary systems. We asked why customers would continue to invest in these older systems knowing that Atex is openly planning to move to standard platforms.

Simpson replied that the proof is in the sales figures: customers are buying these upgrades, so they must see value in what they are buying. But regardless of why customers are buying older hardware, it is Atex's way of funding the "bridge to the future."

In addition to bridging the stalled buying cycle via upgrades, Atex has decided to "increase its pace" to deliver more products to its customers faster, and to meet the challenge of the smaller, newer vendors who have reacted quickly to the new technology. Simpson didn't give us any details as to staffing or funding that would be provided to address this quickened pace.

Ripe opportunities for the leader. Atex believes opportunities abound for the reliable vendor who leads. It plaus to be that vendor. It plans to do this in three areas: (1) as a planning partner, consultant and adviser; (2) as a company that can offer application expertise; and (3) as a system integrator.

Atex believes the publishing community needs a system vendor to act as the integrator, and it will offer this capability. Atex believes that it is a mistake for the publisher to act as his own integrator, because he won't have the expertise that Atex will gain from integration of other customers' systems.

Atex plans to get to pagination via several routes. It will help to set standards such as DDES for color as a means to accelerate the pagination process. It will use industry consolidation (the merger with Eikonix into the Kodak Electronic Prepress Systems Group) to shorten the R&D effort for some of the components. It will build all the "core" pieces and says it will integrate others. For example, it announced that it has acquired the rights to the Monotype font library, which it plans to use on its WYSIWYG screen for make-up applications and on output as well.

In summary, Simpson said that Atex will use its expertise as the foundation from which it will build a full product offering that makes use of standards.

Motherhood and apple pie. In the question period we tried to find out what Atex is telling its new prospects about the future. How do you sell older proprietary hardware and software after you tell the world you are migrating to off-the-shelf platforms and standard software? The question was asked more directly by one of Atex's competitiors (SII): Do you offer a rebate or trade-in when selling these proprietary components? Simpson responded by citing strong 1987 sales, saying that business is good and customers obviously believe there is value in what they are buying.

Afterwards, a number of Atex users told us they thought Atex's presentation came off more like a "report to the stockholders" than as a candid dialogue concerning the opportunities and pitfalls of being a vendor in a fourth-wave world. "I have to hang in with them because they are my vendor," one said to us. "But I would feel a lot more comfortable if they were more worried."

Graham Shaw, Crosfield

The third vendor on the panel was Graham Shaw (not to be confused with Eddy Shah). Graham did not use the forum to get back at Shah for some of the digs he made about the *Today* installation. Instead, he decided to talk about dinosaurs. He had trouble thinking of his company, a proven successful supplier in the industry, as a dinosaur. But he does see the need to move quickly into the next generation.

For Crosfield, the key issue is the process of evolution. It must keep pace with modern technology. This is a difficult challenge for any vendor, because computer technology is moving at a breakneck pace. But another key issue that was not addressed by Crosfield's competitors is the need to expand beyond the narrow vertical newspaper marker to a much broader base of publishing applications. (This is an interesting twist, considering that Atex's early successes included inroads into the magazine, commercial, in-plant, and even legal markets as well as newspapers.)

Shaw shares many of the views expressed by the other speakers, Bruce Adomeit in particular. The market is solution-oriented rather than technology-oriented, and the customer demands functionality above all else.

Managing the transition. Crosfield's strategy for the future is based on three key propositions:

1. Crosfield will develop a broader range of prepress products to serve a broad range of its customers' needs.
2. It will begin to attack a broader spectrum of the publishing market.
3. It will support a long-term integration strategy via an open architecture philosophy based on standards.

Broad product range. By being a full system supplier Crosfield believes it can reduce sales and support costs. (It is cheaper to support three products in one customer site than one product in three different sites). However, Crosfield vows not to offer me-too products just to have a complete product line. It will therefore not try to develop every application product just to be complete.

As our readers are aware, Crosfield has used the acquisition route extensively to help supply missing pieces (having acquired CSI, Hastech, Muirhead, Chelgraph, and Dicomed over the past two years). But Graham emphasized that all these products must be good enough to stand on their own as individual products.

This was a very clear point of differentiation between Crosfield and Atex/SII. The other two vendors focused their presentations almost exclusively on newspapers. But Crosfield feels the key to survival is a broader market, not just more standard, cost-effective platforms for a vertical niche business.

A multiplicity of vendors. Shaw also disagrees with Minneapolis's view that pagination and integration have to be provided by one vendor. Integration can be provided with multiple systems (by traditional vendors) if these vendors offer "open systems" and base their development on standards (hardware and operating systems).

Crosfield is moving from a closed to an open world by promoting its own "high-level access" standard as a means to

connect other systems with Crosfield systems. (This still places the burden on the other system vendor to write the proper interface to deal with the Crosfield system.)

Standard platforms. Crosfield's commitment to standard hardware does have limits. Shaw contends that mainstream components alone are not the answer. The system must first and foremost provide the right solution for the application. For the time being, Crosfield sees a need to offer nonstandard components in special areas, such as RIPs and graphic subsystems and databases.

Crosfield also doesn't share the view that solutions based on standard computer hardware should threaten vendors. The key is how well vendors will be able to replace hardware revenues with software revenues. Is the industry ready to pay the real cost of soft goods? Newspapers say they are ready to pay for software, but will they pay for what it *really* costs?

Shaw believes the move to the computer industry mainstream will help the development area as well. Vendors will be able to devote more development effort to providing good application solutions, and less effort on interfaces, typesetter drivers and the like. More of the software effort will focus on integration. This ties in with Shaw's belief that customers want total solutions, not partial solutions. (Despite the fact that most publishers have never come even close to realizing a "total" solution to any of their needs.)

Last word. Graham had one last word, which might have been directed at both competitors and users: "Companies that sell software at cost will go out of business."

Newspaper and Magazine Seminar: Display Ads and Pagination

After lunch, the sessions turned from discussion of general industry direction to more specific focus on display ad implementations and pagination.

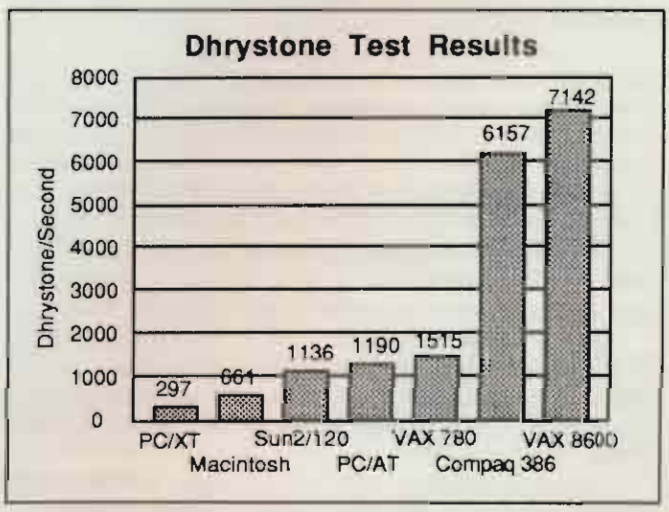
One of the most hotly disputed questions at last year's Seminars was the question of using standard platforms (and especially standard PCs and Macintoshes) for display ad composition. Were these devices powerful enough to handle the demanding job of display ad make-up? A year later, Camex has moved from proprietary workstations to standard Sun Microsystems workstations, Harris has added a hybrid PC-plus-custom-hardware to its product line, III has moved to completely standard Sun hardware *(see Report from Hershey, this issue)*, Dewar has moved to standard PC hardware, Microtek has moved to the Mac *(see last issue)*, and most of the original PC and Mac-based systems have gotten more sophisticated. Xenotron remains the lone hold-out.

The display ad/pagination panel included three vendors that have taken different approaches to systems based on standard platforms: Dewar, Archetype and Camex.

Steuart Dewar, DISC

Steuart Dewar kicked off the display ad discussion with some interesting points concerning platform issues as well as input scanning and graphic issues. Less than a year ago we devoted a full article to Dewar and its product line. At that time the company was advocating its own proprietary workstations and operating software. Since that time it has migrated its display ad software to a completely off-the-shelf hardware platform—the 80386 class of PC.

However, unlike most of the other vendors who have moved (or are moving) to the PC, Dewar is not convinced that Microsoft's MS-DOS Windows and OS/2 Presentation Manager are the right environment for this application. In many ways, this part of his presentation was a direct challenge to the opinions expressed by Paul Grayson of Micrografx the day before *(see the earlier Seminars coverage, Vol. 17, No. 14, p. 10)*. In essence, Dewar does not believe that the Microsoft PC windowing environments are (or will be) so dominant that Dewar is forced to use them when it thinks that there are far better "standard" alternatives available.



Dewar's view of PC/minicomputer performance.

Solutions, not platforms. The erstwhile proponent of proprietary workstations started his presentation with a ringing endorsement of standard, mainstream computer platforms as a superior foundation for future publishing systems. But he cautioned that by itself, the platform was not a solution. An equally important factor is how the tool is used and, especially, the application programs written for it. He cautioned against the compromises that may come with the use of standards.

Although we must be careful, Dewar believes, we now have uniform agreement that the industry *must* be on standard hardware. What he feels we don't have agreement on is the appropriate operating system software and application software. The application software, in particular, must be unique—in the end, it *is* the product. It is why a user will choose one system over another.

The '386 PC as a platform. Dewar presented some interesting charts which compared the processing power of various computer hardware platforms. At the bottom of the chart were the older Macs, a Sun 2/120, a PC/AT and a VAX 780. Although there was about a 2:1 difference from the lowest to the highest power among this group, the differences between them paled when compared to the powet of the next two machines: a Compaq 386 and a VAX 8600. The VAX had a slight edge, but the two were very close, with the 386 at least four times more powerful than the VAX 780.

Of course, the benchmarks Dewar chose are only one way of measuring the power of a processor, and CPU power is only one factor which determines the throughput of a computer. But the comparison did make the point: when it comes to having enough processing power to address the demanding display ad application, the PC is no toy and has more than sufficient power to get the job done.

Realizing the potential. Dewar also showed a chart which compared '386 machines running in 16- vs. 32-bit mode and 16- vs. 20-MHz clock rates. Again there was a dramatic difference (almost a 3:1 ratio) between the 16-bit machine running at 16 MHz and the 32-bit machine running at 20 MHz.

Using a third set of charts, Dewar made a strong case for requiring use of the 32-bit mode when working with high-resolution graphics. The bottom line—a '386 machine is fine for display ad make-up, but you better make sure it can run in a 32-bit mode if you are going to work with high-resolution graphics.

OS octane ratings. The significance of this became clear when Dewar turned to operating systems available for 80386 PCs. Microsoft's OS/2 is the logical choice from a marketing standpoint, but Dewar contends that it is seriously deficient for publishing applications from a technical standpoint. The principal problem is that Microsoft wrote OS/2 to support the 16-bit 80286 computers as well as the 32-bit 80386 machines. It accomplishes this by running in 16-bit mode rather than the more powerful 32-bit mode on 80386 machines.

Dewar claims, in fact, that OS/2 is "overtly hostile to the 32-bit mode by clobbering the 32-bit registers that are available on '386 machines." Therefore, the programmer can't even fool the CPU and take advantage of what the hardware offers.

Dewar also thinks it will be much longer than Microsoft predicts before we will have a stable operating system.

This led Dewar to look at the alternatives, including MS-DOS, DOS Extenders, Desqview/386, PC-MOS/386, OS/2, and Unix. Of these, the company favors Desqview/386 for now and will evaluate OS/2 when (and if) it is ready.

Graphics the key factor for pagination. Dewar had a few comments on related topics as well. He believes we have missed the real reason why pagination has not gotten here yet. It isn't for technical reasons. It is because all of the development that has gone into pagination has been ahead of the "collateral technology," such as graphics, which hadn't yet made it into the mainstream. Therefore, developments of many of the key peripheral needs of pagination were out of sync with the general pagination development itself. He still doesn't view graphics as being fully here, and he says they will not be here until all graphics are in a digital format.

Scanners to disappear? In another very controversial statement he said he believes (as happened to OCRs) we won't have any scanners 7 years from now (scanner vendors will enjoy another 3-5 years of healthy sales, he allowed). This belief is based on capturing graphics at their source in a digital format—minimizing, if not eliminating, the substantial amount of scanning that is required today to get line art and halftones into display ads. It also assumes that camera-ready ads will be provided in all-digital form. This was a hotly contested issue (especially by the scanner vendors) during the conference.

Paul Trevithick, Archetype

Paul Trevithick addressed the same topic as Dewar, but from a marketing rather than a technical angle. He started with his rationale for choosing the PC. He acknowledged the capabilities of the competing platforms which are getting closer in performance and functionality. But he has chosen the PC because of its huge acceptance. He attributes the PC's success to the clone market which has pushed more than one million per year into the hands of users. This has happened, and will continue to happen, because the clones have been able to reduce drastically the price of the PC to make it affordable to a large number of potential users.

PC vs. Mac. Trevithick chose the PC over what might appear to be a more logical architecture for a graphics-intensive application (the Mac) because of the PCs networking capabilities. He does not believe that the base-level LocalTalk implementation of Apple's AppleTalk network is as fast or as complete as the 25 choices he has with the PC world. In the PC world he claims he can trade price for performance (and vice versa). Trevithick didn't include the newer Apple EtherTalk cabling in this comparison.

Trevithick thinks that developers (and users) must make a choice between the PC and the Mac. He doesn't think it is practical to try to run PC programs on a Mac (or vice versa). He would certainly get some debate on this from companies such as Aldus and Interleaf, which support versions of their software for both machines.

PC vs. Unix. Compared to Unix workstations (which offer superior networking facilities), Trevithick cites two advantages for PCs (both of which would apply equally well to Macs): support costs and the huge base of mass-market PC software. Paul thinks that support may become the most expensive part of a system. Here he feels the PC has a significant edge. Publishers can go to the local corner store for PC repairs (or replacement). Repairs for Sun and Apollo workstations are performed by service organizations.

Widespread Use of Scanned Graphics—Really Just Around the Corner?

We had had several conversations with Bill Givens, president of ECRM, on the role of scanned graphics in publishing systems. We were impressed with his careful, sharp observations and analyses, and therefore we invited him to share them with Seminars attendees in a session later in the week.

Flat growth. He started with a graphic symbol of what he thinks represents industry progress toward full text and graphics pagination: a spiral. He says that much of the industry has assumed for a long time that everyone would have an on-line scanner by now.

In fact, only 10% of publishing systems have scanners on them—a figure that is remarkably consistent from the desktop market through the largest professional publishing systems. Further, Givens contends, the percentage really is not changing much over time. Desktop scanner sales are up—but only in proportion to increased sales of desktop systems. Sales of ECRM's high-resolution scanners have remained almost completely flat over the past three years, while sales of read/write Autokon cameras have increased dramatically.

Why is this? Givens thinks the argument that every page with graphics requires electronic integration is flawed. At current (and immediately foreseeable) levels of cost, he contends that scanned graphics simply do not make economic sense. Unless you have a specific reason to digitize graphics (reuse of the same graphic, heavy interaction between text and graphics, the need to have a complete page in electronic form for remote transmission or on-demand printing, etc.), it is simply less expensive to leave room for the graphic and to drop it in by hand when the page is complete.

Even where scanned graphics do make economic sense, Givens thinks that other things have slowed progress. The text side of pagination took longer than expected and the unfolding of the fourth wave has been keeping us all busy.

Standard interfaces. Givens thinks the task of full electronic integration of graphics is a very difficult one and one which will still take a long time to achieve. The move to fourth-wave systems will certainly help. In the past, system integrators who wanted to support scanned graphics had to build special hardware/software interfaces for the scanners they chose to support. Now, more of the interface burden is falling on the scanner manufacturer. Scanners have to be able to plug into standard computer interfaces. In ECRM's case, this has meant building SCSI and VME interfaces for its scanners, including high-capacity disks to buffer data on its SCSI interface so that data fed from the scanner will not overwhelm the host computer, and supporting standard data formats (such as TIFF).

User as integrator. After thinking about system issues for some time, Givens has come to the conclusion that increasingly, the user will be his own system integrator. This, of course, is easier to achieve at the low end, where hardware and software must be inexpensive, and must plug together relatively easily.

High-end users who want to include high-resolution scanned graphics will have to cope with all of the problems inherent in the massive amounts of data required. Nevertheless, industry convergence on standards is making system integration easier and easier, and more and more users will elect to assemble their own systems.

Costs are not dropping. The simple truth is that high-resolution scanned graphics are expensive—and the costs involved will not drop as quickly as most people expect. High-resolution scanned images generate huge amounts of data. These files are expensive to store, manipulate, transfer and output at reasonable speeds.

High-resolution scanners themselves are relatively expensive, and they are not likely to decrease in price. Givens showed a graph that plotted scanner resolution vs. price. The relationship is roughly linear: more resolution costs more money. And the things that make a high-resolution scanner expensive are not greatly affected by increases in computing power or decreases in the prices of computer chips.

Prognosis. In summary, Givens believes integration of high-resolution graphics will proceed slowly and that the end user eventually will become the integrator. As he has said in past presentations, Givens believes that publishing customers are rational buyers. He believes these rational buyers will integrate high-resolution graphics when and only when it makes economic sense to do so. In the meantime, sales of stand-alone cameras will continue to increase. The stand-alone customers expect to go on-line eventually, but not today. When the economics become attractive, "plug and play" standard interfaces and standard data formats will make interfacing the scanner to the system relatively straightforward.

The second advantage, of course, is all the nice mass-market software that can be used to perform a wide variety of publishing and other office tasks. (This is the major reason that Sun Microsystems recently introduced its Sun386i workstations; *see Vol. 17, No. 14, p. 34.)*

Which PC environment? As someone who has invested a great deal of effort into converting PC software from the GEM environment to Microsoft Windows, Trevithick has no doubts that this was the proper choice. Showing a chart of support from the developers' community for the various platforms and windowing environments, Trevithick argued that the PC is preferred over the Mac by a ratio of three to one. Within the PC world he showed the relative amount of development effort that is currently under way for Windows, GEM, Desqview and Xenix. Here, Windows was shown with an overwhelming lead over the competing windowing environments.

Following the mainstream. Whereas Dewar's technical analysis indicated a preference for Desqview/386 (and possibly Windows/386), Trevithick made a strong marketing point for following the mainstream, which he views as Microsoft's Windows (and its successor, Presentation Manager). He has chosen to go with the momentum, which he feels is clearly with Windows.

He concluded with his reasons why the user interface is important, and why it should follow the mainstream. He showed a slide of a Windows screen, with multiple applications represented, and described the way in which a user would move elements (such as graphics) from one program to another. It was evident that this is far easier to accomplish when the user interface is the same in both applications. Therefore, for Trevithick, compatibility allows the best path for integration of pieces from several programs. He refers to this as "Integration via User Interface."

Tom Hagan, Camex

Tom Hagan addressed a more global issue than the platform arguments on which Dewar and Trevithick focused. He considers the industry standards issue to be "apple pie" at this point. Everyone has to move into the mainstream.

Bullish on pagination. The focus of Hagan's talk was pagination. Hagan disagrees with what he considered to be the "pessimistic views" on pagination expressed in the morning sessions. His optimism stems in part from his belief that his company is now much closer to achieving full pagination because it has solved the problems of high-resolution graphics.

He also contends that progress towards pagination has been obscured by the tendency to focus on pagination of news pages and ignore class ad pagination—which is now being accomplished, and which may have a more immediate payoff than news pagination.

He has a good point. News pagination *has* gotten most of the attention—in part, we think, because this is what concerns editors, and editors have had so much influence in system selection. But there are significant savings to be had with classified pagination for larger papers, and there is ample evidence that decent class ad pagination programs are available.

The major stumbling block for full class ad pagination has been graphics (and, more specifically, display ad graphics). Hagan says that Camex now has a viable solution to display ad graphics. In conjunction with NSSE's batch classified pagination program, it is possible to get fully made-up classified pages, including all display ads—with all graphics in place.

On the move. Concerning news pagination, Tom contends we will start moving more rapidly than we have in the past. Several circumstances support this view. One is that everyone is moving to standards, which will facilitate interfacing products from different vendors. In fact, Al Edwards raised eyebrows earlier that day when he said SII will interface to a Camex display ad system. (Remember that SII spoke about the impossibility of "mating cats and dogs"—specifically in reference to connecting with a Camex ad system—at previous Seminars!) Some will argue over the degree of integration, but at least the first step has been taken.

Another factor that will help integration on the news side is the progress which is being made in handling digitized graphics. Again, we may not have solved all the problems for deadline output of full graphic pages, but we have gotten a lot closer in the last year.

Hagan does not deny the slow pace which has plagued pagination until now, but he feels we are now getting much closer, faster. He also gave us another of his famous Chinese proverbs, which relates well to news pagination: "Time is what keeps everything from happening all at once." A truer statement about pagination has never been made.

Explaining the Sun migration. Hagan concluded with a recap of how Camex moved its products from proprietary hardware to Sun Microsystems workstations. He now sees little difference in price between the low end of the Suns and the '386 machines, and considers either choice to be viable. We have come a long way since last year.

In fact, Hagan did not rule out future possibilities of running on '386 machines or even the Mac II. Similarly, the database servers might be Sun/4s, VAXes, or even an IBM MVS machine. The important thing now is to stay on a standard platform. This gives you richer software development tools, more third-party software, and a wider product range. Most of all, it's what the user wants.

Newspaper and Magazine Seminar: Coping with the Changes

The final session of the afternoon gave four additional vendors the opportunity to talk about how they intend to cope with the changes facing the industry. Each company's strategy appears to be dictated by its particular market situation.

Dick Mooney, NSSEA

Newspaper Systems Support and Engineering Associates is the group that picked up the TMS/EMS-II and CMS-II software from DEC when DEC decided to get out of the newspaper system business. NSSEA now claims to have installed significant upgrades in about 60 of the approximately 90 original DEC customer sites and now claims these 60 as NSSEA customers. This was evident with a good attendance at its own recent nser group meeting.

NSSEA shares some of the problems of the other big vendors. But Mooney feels that he has one significant advantage: his customers are already accustomed to paying for software and support separately from hardware.

NSSEA inherited a very loyal bunch of customers which Mooney says expected "up front" to pay regular amounts for software upgrades and support. In many of the other segments of the large newspaper market, paying for software upgrades is viewed as an option—not an automatic yearly obligation.

Newspaper Bull Session

The newspaper bull session is traditionally one of the liveliest sessions of the week. It's a time when vendor and user alike let their hair down. It's not a time for the faint of heart. Some people get offended. Some leave the session feeling hurt that everyone doesn't agree with their point of view. Others feel good because they find someone who does agree with them. But we always hope that everyone leaves a bull session in a friendly frame of mind, having gained something out of the session. We find that those who participate (usually most of the crowd) get the most out of it.

Truth or consequences. This is an opportunity for customers to direct pointed questions at the vendors. Surprisingly enough, the vendors are very direct and honest with their answers. We find more revealing facts about vendors at these sessions than in any other forum.

This year was no exception. The crowd was larger than ever—over 130 attendees. And it didn't take long for things to heat up.

Each year we ask a user, usually someone who is doing something interesting—on the "bleeding edge"—to lead the discussion. We intentionally leave structure out of the session with the intent of encouraging frank conversation between users and vendors. Some feel it gets a little out of hand being done this way—but it certainly gets people to say what's on their minds.

Point men for the session. This year we asked Ralph Brown and Hu Morgan of the *Toronto Star* to lead the discussion. As we reported last summer, Toronto is the first major metropolitan daily to opt for a complete fourth-wave system—based entirely on standard hardware and software. After Ralph and Hu explained what they were doing, it was clear which direction the discussion was headed.

The fall guy. Most of the early discussion was centered on what was feasible and what wasn't. As usual, most of the contributors represented larger newspapers and reflected their view on how viable fourth-wave systems were for them. Eddy Shah, who unfortunately wasn't there to defend himself, was the first target. An hour's worth of discussion could be boiled down to the argument over whether the solution which Eddy has put into place in the UK could really work for large U.S. dailies. In the long run we doubt that many papers were convinced that Eddy's Mac-based desktop system could really do their job. But we also think there was less thought given to how portions of his system, or the approach he used, could help solve the transition for several papers.

There wasn't much talk about the second half of Eddy's message—the fact that as a publisher he believes that unless the cost of producing a newspaper is significantly reduced (in his case drastically reduced via the use of fourth-wave technology), competition will hurt him. He made a point during his talk earlier in the day that the entry cost for new competition is much less than most publishers think—especially if they are big and think big.

Feasibility of fourth-wave systems. Much of the remainder of the bull session centered on the feasibility of fourth-wave systems and in particular focused on Toronto's project to install a large new system based entirely on off-the-shelf components. Other papers raised tough questions: (1) Is the project for real, (2) does it mean sacrifices in functionality (were the editors involved in the decision and do they like what they are getting), and (3) who will be the integrator?

It is always difficult to judge the risk of a pioneer. Toronto has an advantage in that the system it is buying exists in smaller configurations. This gives the paper the ability to judge functionality—but performance and system issues are a calculated risk. The size of the risk was discussed at length with no consensus—how can there be on a system that is not fully in place yet in its full configuration?

But on the second point, several newspapers assumed that because Toronto was buying from a relatively new vendor and the system doesn't exist in its final large configuration anywhere today, the functionality is suspect. Representatives from both the Toronto technical staff and the editorial staff were present to defend their decision. We would say that the technical staff is very confident, and that the editorial staff appears to like what it has seen but is still a bit cautious and is waiting for the final configuration before it exudes the same degree of confidence as its technical partners.

Other newspapers that were challenging the Toronto decision are very happy with the functionality of their older systems, are not ready to *change* to different (not necessarily less) functionality from new vendors, and question the ability of the fourth-wave vendors to deliver this level of application code.

Who will be the integrator? The question of who will be the integrator was a confusing one. Toronto was asked to describe its staffing in the MIS department. With a number like 75-80, everyone assumed that Toronto was doing a large portion of its own development and integration for its new system. They clarified the point by stating that they were *assisting* their vendor in choosing the appropriate equipment and evaluating smaller configurations as they were put together—but the staff is not being used to build its large front-end editorial system.

However, even with this clarification, there was considerable discussion about what a large user should be doing in regards to system integration. Here again we didn't have any consensus. There were users who felt strongly that they have to be involved (like Chicago), and have to take the lead rather than be led by their vendors. They emphasized the need to understand the new technology and work "with" their vendors rather than having their vendors dictate a solution (but still requiring their vendors for integration). Others felt just as strongly that the vendor should still be the sole integrator and the newspapers will have to rely totally on that vendor. There wasn't anything resolved here, just statements of difference of opinions.

The night ended about where it started—with the believers and the pioneers planning their future around the fourth-wave concept of mainstream technology, many traditional users clinging to their third-generation systems and their traditional vendors, and some still sitting on the fence—wanting to move to the new technology, but hoping the traditional vendors will play a bigger role in this transition period.

Future plans. NSSEA does not plan to conquer the world. It will not try to broaden its market focus as Crosfield plans to do. It wants to remain focused on its newspaper customers and to be guided by what its customers tell it they want.

One major change for the company is the decision to offer its application software on other platforms besides DEC. NSSEA says that its customers are now asking for this, and that it does not want to be completely dependent upon one hardware vendor. (This has been brewing for some time. NSSEA has complained in the past that DEC has treated Crosfield as its favored newspaper marketing partner.)

Mooney did not specify what computers might be used as hosts. He did promise, however, to support Macintoshes as NSSEA system workstations. This makes NSSEA the first large-system newspaper vendor to do so.

Purchased software. NSSEA also intends to buy software where feasible rather than trying to re-invent the wheel itself. Mooney announced two such deals, one expected, the other a surprise:

1. ***Toronto Star* class ad software.** NSSE has purchased the rights to Toronto Star's classified pagination program, which it has enhanced and installed in several of its sites, one in conjunction with Camex for full classified pagination including display ads and graphics.
2. ***XyWrite.*** NSSEA also announced an agreement which it had just concluded with XyQuest to provide XyWrite as an "alternative" editor package for TMS-11 users. Users can either stick with the older TMS editor or use XyWrite. The choice will be on an individual basis.

(As an aside, it certainly appears that Harry Dahl is making good on his promise to make XyWrite the "MS-DOS" of publishing applications. There is hardly a system vendor in the business that isn't [1] offering XyWrite as an OEM product; [2] accepting XyWrite input from PCs; or [3] negotiating with XyQuest to OEM XyWrite to its customer base. With Affiliated Publications' backing, don't be surprised to find XyWrite running on other platforms later.)

In closing, Mooney praised the customer good will he had inherited when he took over support for the DEC product. Customers who could have been abandoned instead had someone to turn to. Because of the close ties NSSEA has with these customers, he does not see any financial risk in converting entirely to being a fourth-wave system vendor. His customers will continue to pay for software and support.

Tom Carnohan, Harris

Tom Carnohan discussed the two different types of page make-up: the interactive or manual approach and the layout or dummy and flow approach. In general, the manual/interactive approach involves one user at a single terminal manually and interactively placing stories onto a page, adjusting them via composition or editing them to fit, and outputting the page from the page make-up terminal.

The layout approach begins with a simple diagrammatic dummy or layout of a page. This layout (page geometry) is passed to a front-end editorial system where editors using standard text editing terminals (not interactive pagination terminals) copy fit stories to the length and shape dictated by the layout.

Ongoing debate. There have been lengthy discussions among newspapers and vendors favoring one or the other approach. In the past Harris favored the interactive approach (possibly because that is the approach it offered). Atex, which offered the layout approach, argued for that one. We have long believed that for larger newspapers, both approaches are necessary. Now Harris also agrees with our view.

Harris acknowledges the desires of the large front-end customers who want a common database for editorial and pagination (vs. separate databases from more than one vendor). But Harris also believes that many customers who would like to install a pagination system already have an editorial system which they are not ready to replace. For these customers, it is realistic to assume that an interface between the existing editorial system and the new pagination system will be required. Harris expects to continue to support this approach.

Carnohan also made a strong pitch for ad dummying as part of the pagination process. Full pagination must include the display ads as well, and is limited without graphics. Carnohan feels that most pagination systems lack the graphic solutions needed for production work. He sees two areas which must be addressed to solve this problem: performance must be improved in dealing with high-resolution graphics, and the database structures must be tuned to address the very large volumes and multiple pieces of data associated with graphics.

Fourth-wave platform. Carnohan presented the new 8900 terminal (introduced at IFRA—*see Vol. 17, No. 5)* as the Harris move into standard platforms. He claims that it meets the requirements of customers who want lower-cost hardware solutions which are part of the computer mainstream. He also announced that the 8900 can now be networked to form a complete system configuration. However, the 8900 still uses a considerable amount of proprietary Harris components—you simply can't buy an 8900 from your local Computerland store. Harris, while generally favoring standard platforms as an approach, didn't have any comment as to firm plans to move completely to a standard platform.

John Attas, CPS

John Attas was one vendor representative who staunchly defended the use of proprietary computers, at least for use as database servers. He does see the advantages of using PCs rather than proprietary terminals, and is now integrating PCs into the CPS (ex-Itek) system.

Attas claims the talk about standards has caused many buyers to purchase platforms while ignoring software and solutions. Other people at the Seminars had expressed this same view, but most of them assume that it is only a matter of time before the functionality available on fourth-wave systems catches up to and passes the functionality available on proprietary hardware.

The case for proprietary hardware. Attas takes a different view. He claims that newspapers' requirements are so unique that they should be satisified with proprietary hardware—at least at the file server level. In essence, Attas contends that even 80386 PCs do not have the input/output capabilities of

a minicomputer. High-performance file service and control of input and output devices, he believes, require a specially-designed host computer.

Not surprisingly, ar the accompanying equipment demonstrations CPS announced a new proprietary host computer which will run all of the existing CPS host software. (A cynic might argue that Attas's view on the need for a proprietary host computer has more to do with his need to run existing software written for an odd-ball computer than it does with any performance differences between his new computer and a Sun/4, DEC VAX, or other high-performance file server.)

Standards. Attas also sees real value in some mainstream standards. He singled out PostScript, which will become the glue for much of the CPS integration work (including color and color separation systems).

On the subject of pagination, Attas said that he does not understand why pagination has bogged down in the U.S. Over 80% of CPS's European customers' newspapers are paginated. Only a fraction of its U.S. customers are using any form of pagination. (This is an interesting point. We should note, however, that the CPS customers we have seen in Europe have very different newspapers and very different operating procedures from the U.S. customers.)

Attas's conclusion was that the unique nature of the newspaper market requires a high-performance (preferably proprietary) host computer to serve as database manager.

John Daly, Information International

We had deliberately scheduled III to follow CPS because III has (in the Morris system) an editorial system which follows exactly the opposite philosophy to the one Attas recommends: the Morris system is entirely PC-based and does not even have a central database.

Fourth-wave partisan. Triple-I declares itself squarely behind the fourth-wave concept. This is why it acquired the Morris system.

Daly thinks that building on mainstream technology will help III progress and evolve its system more quickly. He blamed the high cost of its older systems on the fact that III had to develop the hardware as well as the application software. Now, with off-the-shelf components, he predicts the cost and prices will drop.

In addition ro the advanrages of cost, Daly explained the virtues of standard platforms as positively affecting service and transporrability of programs. He was also excited about the new opportunity presented by the off-the-shelf platforms to make it easy to integrate other off-the-shelf programs.

Still room for value-added software. But Daly didn't go so far as to say that off-the-shelf application software is about to do the job for daily newspapers. He still feels this industry is unique and requires special application software written just for this market. But this software can and should take advantage of the standard hardware, operating systems, etc.

He also made a point that we shouldn't forget the need for large databases.

The need for speed is another area which is very evident in newspapers, due to tight deadlines.

Magazine Bull Session

Although many of the magazine publishers in atendance took part in the newspaper user session, strong interest was expressed in scheduling a get-together to consider the unique problems of the magazine industry. As usual, the meeting turned out to be an Atex users' group, with a few interlopers, and some vendors who were curious to sample the thinking of the magazine people. John Seybold moderated the session.

Virtually every magazine representive who could get hold of the mike expressed his desire for a total solution that would somehow evolve in a modular fashion from his existing Atex configuration. And it was evident that what was now relevant for the newspaper industry was of little interest to magazines.

Seybold pressed to find out what the magazines really wanted, and there was quite a bit of disagreement on this point, which suggests that perhaps this is one reason why neither Atex nor other vendors have been able to step into the perceived gap. Some magazines appear to want a design station that would display color, as for halftones and other artwork, and also serve as a parameter-generating device and for pagination. Others would have been satisfied with a black-and-white display that permitted more fluidity in the handling of text and graphics than current Atex editorial systems offered. All seemed to feel that such capabilities would evolve out of desktop publishing, but agreed that existing desktop offerings did not offer the sophistication of file management and other multi-user features which Atex has long offered and which are now a vital part of every magazine editorial/production operation. No vendor seems to be addressing the specific needs of the magazine industry—at least that portion producing weekly news magazines or similar products.

Seybold suggested that Atex users or others in the magazine field might get together to see if they could agree on a set of specifications. He thought it likely that vendors would be responsive if a satisfactory product definition could be evolved.

It appears that III is endorsing the fourth wave in general, but pointing out the need for special attention in certain areas. Daly summarized its support for the fourth-wave architecture by predicting lower costs, elimination of the fear that a newspaper has to buy all of its components from one vendor, improved service (in fact, service will become competitive), and the integration of software from its competitors with Triple-I components. Triple-I will use its experience in graphics and output as the key to its success in the future. It will also pursue the acquisition of complementary products (such as Morris) to offer a full range of products and support total pagination.

Long Documents and Books: Integration through Standards

Early in the 1980s, a host of innovative start-up companies set out to provide new solutions for the production of long documents. The focus was the in-plant market, and—to a lesser extent—production of commercial-quality books, journals and other long documents.

There was a widespread assumption that the in-plant market in particular was the next "hot" publishing market. It would drive the industry the way that the newspaper application had driven the industry in the 1970s. There was a further assumption that system solutions for in-plant applications would follow the same model that had been so successful for newspaper systems: all-encompassing turnkey hardware/software systems supplied by system vendors that would take on full responsibility for building, integrating, installing and supporting the system.

Generals are not the only people who prepare for the last war.

Heterogeneous environments. The reality has turned out to be quite different. The in-plant document prodnction process frequently involves a number of different people in different departments. Over the years, many of them have acquired computers of one sort or another. All too often, the computers are different. The software is different. The file formats are different. All of this stuff is installed. Ir is not going to go away.

Book publishers and others in the commercial market find themselves in a similar situation. Increasingly, manuscripts are created on a personal computer. Any "system solurion" for this market must take into account the need ro exchange data between different computer systems.

As a consequence in-plant and book publishers have had to struggle from the beginning with implementing solutions in a heterogeneous environment, dependent on emerging standards to take the pain out of interfacing as much as possible, and looking for compatible pieces of the publishing puzzle with which to assemble their own integrated publishing solution.

This is the central fact of life for these applications, and the cenrral topic fot discussion at this year's long-document seminar session.

Salvation through standards? The need to tie together diverse systems makes standards which facilitate interconnections and data interchange appear quite attractive.

A natural move towards standards is part of the migration to fourth-wave systems. But there is another factor at play as well: some users now face a mandate from their customers to deliver documenrs in a standard electronic form as well as (or instead of) in paper form. This is especially true for firms supplying the U.S. Department of Defense (DoD). Through the CALS (Computer Aided Logistic Support) initiative, in particular, DoD is mandating the electronic form of defense documentarion.

The dark side. Both of these situations bring us face-to-face with another concern. When we articulated the fourth-wave concept, we realized that the other side of rhe fourth-wave coin (some would call it the "dark side") was the resulting necessity to find some means of inregrating the heterogeneous, standard environments in which we are now playing. As we have commented in our previous essay on the Seminars *(see Vol. 17, No. 14)*, one of the key problems that has to be addressed in fourth-wave implementations is adapting generic, off-the-shelf solutions *which haven't necessarily been developed with publishing applications in mind* ro the specialized tasks required in these applications.

There is an inherent tension here which is beginning to bother a number of people: standards are good, but inadequate standards may be extremely constraining.

The role of the system integrator. In-plant publishing system vendors have pretty well accepted the fact that they are not going to be able to follow the cradle-to-grave turnkey model of the newspaper system vendors. (As you can see from the preceding discussion of the newspapet/magazine sessions, there ate more than a few people in the newspaper industry who do not believe that newspaper vendors will be able to continue to follow this model either.)

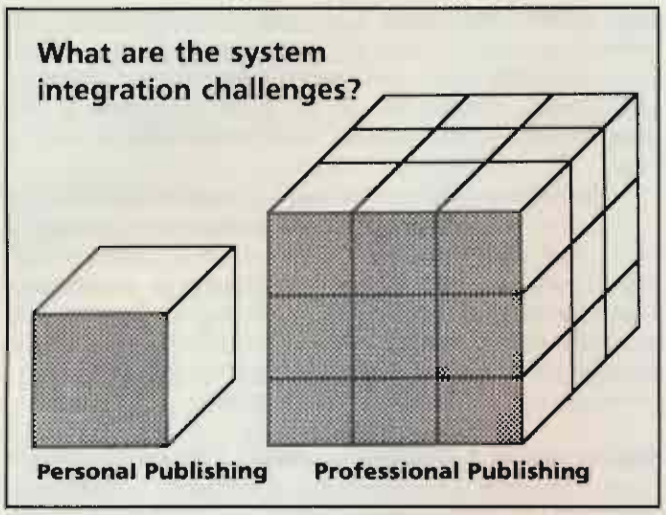
What should the role of the in-plant publishing system vendor be? The first three speakers in the long-document session represent companies with significantly different views on this question.

Xyvision has defined its role as the self-contained publication "node" optimized via proprietary hardware and software for throughput, but also with a wide variety of import and export filtets and conversion programs for inretconnectivity with the larger corporate computing environment.

Interleaf seeks, in effect, to impose a homogeneous layer (namely, itself) on the heterogeneous corporate environment by porting versions of its software to most major platforms, thereby ensuring commonality of data structures across all environments.

Context has defined its role to be principally the document management environmenr itself, providing the glue and rhe management tools with which to link disparate pieces of data (and data types) into a "virtual document" for publication purposes.

Regardless of the paradigm pursued by the vendots to provide a "total" solurion, users more often than not will take on the responsibility for integrating a given "solution" with the other elements in their information workflow. Time and time again we heatd ftom users who had implemented their own solutions, consisting either of major "subassemblies"



from established vendors linked by the user to other subassemblies, none of which had necessarily been designed to work together, or (in rarer cases) of complete soup-to-nuts home-grown solutions consisting of a hodge-podge of off-the-shelf "packages."

Neither approach is without pain. Unlike last year's Seminars, where many Young Turks argued for discarding the old vendors in a wholesale migration to off-the-shelf solutions, this year's Seminars reiterated again and again a realization that as much is lost by going that route (in terms of application expertise, service and support provided by the traditional vendors) as is gained in cost-savings from standard hardware and operating environments. As Larry Liebsou of Xyvision said, do-it-yourself integration is like trying to solve a Rubik's Cube—it seems easy at first, but before long you throw it against the wall in frustration.

Overall, it seems clear that the integration puzzle is going to remain unsolved until the standards picture clarifies itself further. Publishers and vendors alike will have to struggle to adapt these standards to their own unique applications. However, it seems increasingly certain that if corporate-wide integration is ever to take place, it will be built on a bedrock of standards capable of supportiug corporate-wide and (to use DEC's term) enterprise-wide workflows.

Dave Boucher, Interleaf

Interleaf's president, Dave Boucher, talked about means of implementing publishing functions as part of a rich computing environment that includes a variety of applicatiou programs and compnters. He presented seven quick case studies that illustrate how Interleaf customers are accomplishing this.

The commou thread through all of the examples is the ability to treat publishing functions as an iutegral part of a larger heterogeneous computer environment. In most cases, we think it would probably be fair to view the publisher himself as the system architect and integrator. Interleaf's coutributiou was to provide publishing software that would fit into the system scheme the user had in mind. In some cases, Interleaf also supplied guidance and system integration help (which, Boucher says, it is now treating as separate, billable items not included in the base cost of the software).

Multi-platform software. Interleaf has achieved fame and (some) fortune by means of its willingness to port its application software to any major platform. This has led in the past to sales situatiôns where competing platform vendors have come head-to-head selling the same application—Interleaf. We have often characterized Interleaf as "the company that invented channel conflict." However, with increasing attention being paid to heterogeneons environments, Interleaf's approach has the not-inconsiderable virtue of providing compatible software which can run over a wide range of platforms in a diverse computing environment.

At the Desktop Publishing Conference in Santa Clara last fall, Boncher argued that data exchange standards for text and graphics are inadequate to achieve corporate-wide integration. He elaborated on this contention in his seminar presentation.

SGML, DDIF and the like provide document content revisability at the expense of preserving the document's form, whereas PostScript does the reverse. What you really want, Boucher contends, is to be able to keep a fully revisable document in composed form, and to be able to edit and/or recompose that document on any computer in your system. The logical way of doing this is to have identical software using the identical data file format available on a full range of platforms—something, not coincidentally, that only Interleaf offers.

Interleaf software already runs on a wide variety of Unix platforms, plus the Macintosh II. At last year's Seminars, Boucher announced the company's intention to do mainframe batch composition versions for IBM mainframes and DEC minis.

This year, Boucher alluded to a PC product, but indicated that he did not think OS/2 is ready yet. A month later, IBM and Interleaf announced that IBM would sell a version of Iuterleaf Publisher running on the 80386-based IBM PS/2 Model 80 under the MS-DOS (not OS/2) operating system. *(See Vol. 17, No. 14, p. 33.)*

Automated database publishing. One of the earliest and most logical forms of computer-aided publishing was to use an automatic page formatting program to arrange and compose data extracted from a computer database. This is a very clear example of how publishing becomes a computer application.

Automated database publishing is being rediscovered. Interleaf, for example, has included database publishing facilities as an important part of its upcoming TPS 4.0 release. A major distinction between what Interleaf is doing now and the work that was doue 20 years ago is that the pages composed with a program like Interleaf TPS can be displayed, edited and recomposed in WYSIWYG form. We would love to have had this facility years ago!

Case file: Simon & Schuster. One of the customer examples Boucher eited will illustrate his points. Simon & Schuster published a college guidebook of about 1,600 pages. The problem here was finding a way to produce a large book "that consists almost entirely of timely material." Simon & Schuster elected to put the data into a database (Progress), and had a programmer design a database with more than 500 fields per college. It used six data entry operators workiug at home day and night to enter and update data

on PCs, and chose Interleaf to provide the publishing portion.

Using Interleaf's ASCII input filter capability, Simon & Schuster was able to transmit text into Interleaf. However, to incorporate the codes that would tell Interleaf about the structure of the document required a programmer to write a custom program to take the ASCII output stream from the database and insert the Interleaf generic ASCII markup language codes into the text stream. (Our suggestion to Interleaf is to take a look at what RCA did with FileComp 20 years ago and what Datalogics did 10 years ago.)

In essence, in this situation—as in most of the others cited—the customer built a system by assembling the major pieces. Interleaf supplied the composition software component of the system. This is exactly the kind of thing that is facilitated by being part of the computer mainstream.

Larry Liebson, Xyvision

Larry Liebson, president of Xyvision, discussed key issues which he believes users have to consider when implementing a system. He stressed, in particular, the importance of application-specific publishing software which really fits the needs of the application, as well as the importance of properly trained, motivated and managed *people*. We are, after all, really talking about tools for people to use.

Xyvision directions. Most of Liebson's comments were non-commercial in nature, and, in fact, could be applied to virtually any professional publishing application. He did, however, throw in a majot strategic announcement which we would like to cover first.

Xyvision is the only major vendor in its market whose products are still based on proprietary hardware. Since this is increasingly viewed as a liability in the market, the company is often defensive about the situation. Almost as a throwaway at the end of his presentation, Liebson laid out a two-pronged product strategy for his company. The focus this year will be on the new, less expensive (but still proprietary) Xyview 3 workstations. Next year, these will be supplemented with a new "high-end" Xyvision system based on a standard platform. Although Liebson did not specify whose workstations would be used, he did indicate that the new system will support DECnet, the X.11 Window euvironment, and DDIF—all DEC standards—as well as the CALS-1840A standard.

Types of publishing systems. Liebson does not deny that there will be a market for "one-size-fits-all" products and "off-the-shelf" system integration. He sees three markets for publishing systems iu the future:

- Personal publishing
- Publishing services (commercial service bureaus and corporate entities)
- Document management systems (in-plant).

He identified the latter two segments as being appropriate markets for Xyvision. Although he cedes that "off-the-shelf" integrated solutions may suffice for certain publishing services segments, the demands of corporate-wide document management will justify vendors such as Xyvision. It is to this class of publishing problem that he addressed his comments.

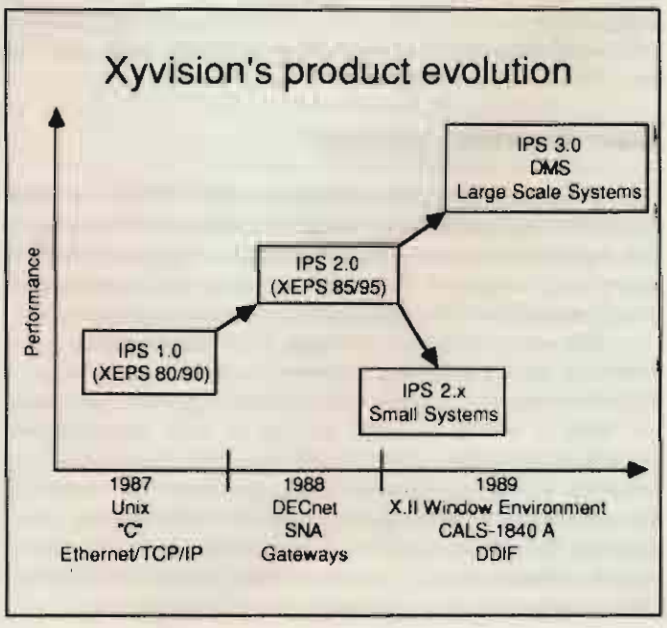
Who is the integrator? Like many system vendors, Xyvision is concerned about the perception that nsers will be able to assemble their own systems from standard hardware and software components. It is, as we snggested in the introduction to this section, much more difficnlt than it looks.

The issue is confused, we think, by a great deal of ambiguity about what is meant by system integration. In several of the examples Liebson cited, integration meant taking overall responsibility for the entire pnblishing system. In others, it meant taking responsibility for interfacing the Xyvision system with other computer systems already in place so that the Xyvision system could serve as a document production subsystem in a larger computer environment.

The essence of a publishing system. Like several speakers in the concurrent newspaper/magazine session, Liebson took some care to separate hardware/platform issues from the value provided by application software. Like his newspaper counterparts, Liebson contends that the "proprietary value added" is and will always be in the application software itself. From this perspective, it is easier to envision and justify a transition from a proprietary to a standard platform, since the publisher's applications (and his investment in training) will make the transition as well. (To the argument that the publisher is still left with a garage full of obsolete hardware Liebson would no doubt respond that even ***standard*** hardware becomes obsolete—although the latter's resale value might be higher.)

Application-specific software. In many situations, the most important aspect of choosing a system may be to identify the real requirements, then look fot the systems which can meet these requirements. He cited capabilities such as Looseleaf Pagination, Reviewer's Notes, and Mil-Spec 38784-B tabular composition as examples of very specific application requirements which some customers have to satisfy.

As Liebson pointed out, if your requirement (mandate, if a government contract) is to produce documentation, it



does you no good to cut costs by assembling an off-the-shelf standard platform package that doesn't get the job done. He cited one example of a company that spent $500,000 on an off-the-shelf solution which turned out to be the next-generation word processor, not a system capable of generating documents according to mil-spec requirements. The vendor in question had fulfilled the RFP. It is up to the customer to specify what he needs.

Adherence to standards. But publishing systems of the sort Xyvision sells are rarely installed in purely self-contained environments. The most important aspect of the fourth wave, according to Liebson, is not so much who builds the workstation as it is adherence to industry standards for operating systems, networking, and data interchange to make system integration in a heterogeneous environment possible.

People. We were delighted to have someone reintroduce the human side of the equation. Liebson did this in a dramatic fashion by comparing the costs two separate customers incurred producing the same 100-page manual. One customer had a cost per page of $59. The second had a $140 cost per page. Liebson attributed the difference to the way each had implemented its system and trained its operators.

This is a "motherhood and apple pie" issue. But it is one which cannot be restated too often.

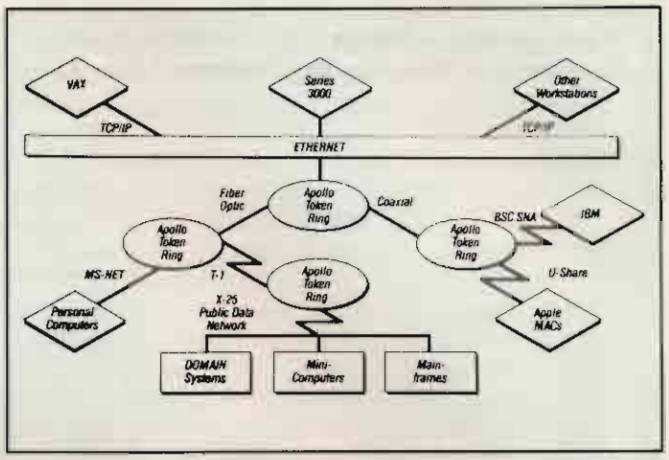
Paul Needham, Context

As we indicated earlier, there are three basic approaches to managing document production in a company-wide or enterprise environment, where diverse machine environments, data structures, and standards coexist. Interleaf's approach is to make itself the common data structure across all platforms, thereby eliminating (as much as possible) the need to translate or filter data types from one environment to the other. Xyvision's approach is to stake out the publication production node as its turf, and use standard data formats combined with import/export filters and translators to move foreign data types back and forth across the moat.

Context's approach differs from either of the above, in that it sets itself up as a kind of document management switchboard operator and traffic cop to establish and police links between different data structures distributed throughout the corporate-wide computing environment *without changing the original data or data structures.*

We have described previously the elements of Context's document management facility in detail *(see Vol. 17, No. 15, p. 7)* and won't repeat them here. Suffice it to say that we have been impressed with the extent to which Context's change control tracks and manages revisors' changes, notes, and conflicts, maintaining links to several versions of the same "virtual" document (perhaps for different versions of the same aircraft), without altering the original data.

Group productivity. Paul Needham, director of product marketing at Context, described the elements of a group-productivity-oriented document management system, and, as had Liebson, pointed out that "publishing and pagination are only one part of the process." Needham claims that documentation emphasis has moved from composition to information management, where there exists within organizations a large number of databases that need to be linked together. Information therefore needs to be managed (and hence integrated) across databases.



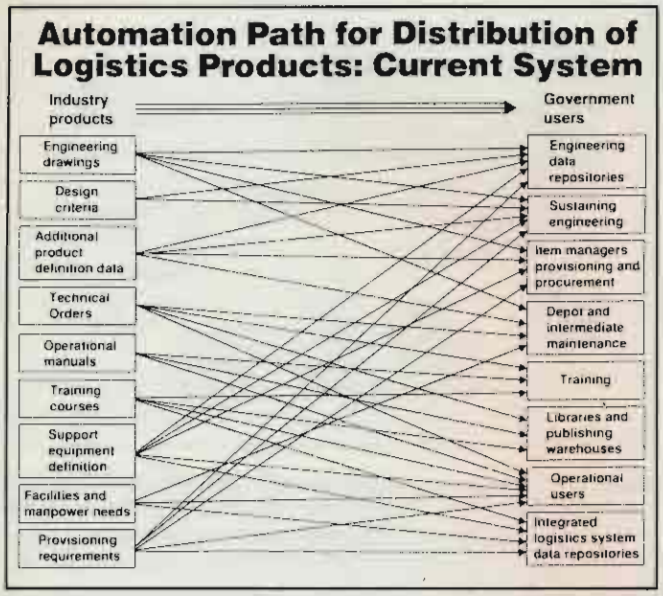
Apollo's Computing Environment. *Paul Needham of Context described how Context builds its applications for distributed publishing within the Apollo computing environment.*

Needham described the document management environment as consisting of collaborative projects, which are geographically distributed. The requirements include shared data, standardization and automation of processes, heterogeneous databases and tools, long-lived evolving documents, formal review and revision, and the production of large, complex documents. Context believes that the way to fulfill these requirements is to provide tools which allow the user to assemble a document from data contained in diverse databases.

Graphic Gateway. Needham contends that this "direct access" to the native data structures provides the most efficient data interchange capability. By supporting the native format of a given data type only, the documentation server reduces its overhead (no filtering or translation required, thank you) and instead simply manages the passthrough to the output device.

This is best exemplified in Context's new Graphic Gateway, announced at the Seminars. Described by Needham as an "external object interface for graphics," Graphic Gateway enables the operator to include within a document by reference graphic objects that are external to Context objects. This of course means that these objects are not *revisable* within Context, since Context doesn't in most cases provide graphics editing support for foreign graphic data types.

This has the virtue of simplifying the data translation requirements and preserving the original data types. Context allows you to layer text and graphics *over* the original graphic, but not to change it. Needham contends that this is the preferred way to operate since only the department which controls the graphic should be permitted to change the graphic itself. Yet we can also understand the opposite argument, best exemplified by Interleaf, that all data types should be editable within the document publication system to facilitate revisability, particularly in deadline situations.



Automation Path. *Dave Becker's view of today.*

Standards: Dave Becker, Boeing

No discussion of "integration through standards" would be complete without a detailed examination of the data format standards that directly affect our industry. We approached this topic with some trepidation, since standards, while important, can also be boring. We even went to the extent of spreading our discussion of this topic over all three seminars, as those of our readers who were there can attest from the names discussed in the following paragraphs.

Overall, the sessions on standards more than accomplished their missions. Indeed, many who attended singled out both Mills Davis's and Dave Becker's presentations for special commendation in handling a potentially tedious topic in an informative, provocative, and (perhaps most important) entertaining manner.

Citing an old Chinese proverb, "If we don't change direction soon, we are doomed to end up where we're headed," Dave Becker, of the Boeing Services Division, managed to condense the history and significance of each major publishing-related standard into a rapid-paced 45 minutes. We liked Dave's presentation so much that we have asked him to convert it into an article which we will use in this publication later this year.

Lack of control. To summarize his main point, which has significant implications for all who are attempting to navigate a canoe through the shoals of the fourth wave, virtually all the standards initiatives, such as CALS, SGML, IGES, and ODA, with which publishers and publishing system vendors will have to come to grips are originating from the government or office automation world—not publishing. This fact has and will continue to create problems for publishers since it means that they aren't completely in control of all the parameters on which they depend to get their jobs done.

As we've indicated before, this is a necessary byproduct of the merging of the computer and publishing mainstream, and along with the generic aspects of the off-the-shelf hardware and software being employed (by which publishers have to conform to mainstream computer standards rather than enjoying the benefits of customized boxes) represents what some would call the "dark side" of the fourth wave. Perhaps the saving grace here is that the computer mainstream is increasingly adopting conventions from the publishing industry, such as h&j and WYSIWYG displays.

Becker believes, and we concur, that the best standards are those that derive from a user population that wants them (*e.g.*, TIFF or PICT) rather than those that are imposed on the user population by the government or a standards committee. He cited SGML as an example of a standard that has been more than 20 years in the making due to its slow winding course through government and international standards bodies.

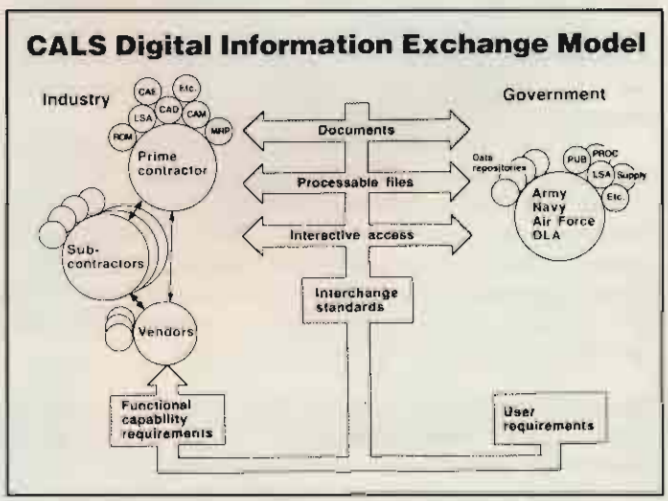
Standards: Roger Archibald, HP

Standards was also the theme of Roger Archibald's talk, in which he expanded on Becker's points about the desirability of "grass-root" standards. He believes that the fourth-wave revolution is in itself the reason for the industry's sudden preoccupation with standards. He breaks these standards into two categories: fully documented and endorsed (blessed) standards like those emanating from the IEEE, and the "*de facto*" variety where the user decides what is and is not a standard. During the week many vendors reiterated this point by saying that a standard was anything that was popular—which of course creates a problem of deciding what standards they should and shouldn't adopt.

***De facto* standard-making.** Archibald proposed his own criteria for the *de facto* standards as:

- The number of units sold using this standard
- The market share
- Other companies supporting it
- How many have cloned it
- The number of times it appears in *The Seybold Report*.

Regardless of the criteria, there is a common cry for standards that can simplify our lives and decision-making process. But because standards tend to "homogenize life" (everything



CALS exchange model.

is bland and equal), there is a need for more than one standard—a single standard doesn't cut it.

In comparing standards which regulate the tire industry, he showed how a standard can provide rather strict parameters (*e.g.*, a tire should be round, not square) while at the same time allow for aesthetic or practical variations (street tires vs. "sport" tires vs. off-road tires).

Vendor alliances. On the vendor side he sees a responsibility for alliances with other vendors (as occurred with TIFF). According to Archibald, an area that is in desperate need of this type of cooperation is type four metrics. Everyone's scheme is too proprietary and the user is the loser. Archibald said that HP is working with font suppliers and page makeup suppliers to simplify downloading fonts to help the user solve at least part of this font problem.

He also sees a need for the vendor to worry about the problem of incompatibility when using standards. He says the most frustrating thing is when the user has to find out for himself what the incompatibilities are. The vendor must also help the user benefit from the standard.

User obligations. In a footnote, Archibald said that the user has an obligation as well—to take the time to learn an application to an appropriate level of understanding and not rely so heavily on the vendors. He believes that the day is past when users could safely assume that a single system vendor would assume full responsibility for every aspect of the user's system.

On a bright note, Archibald is pleased with the progress that is being made and is now beginning to see an evolutionary process of cooperation between vendors.

PCL and PostScript. Although it was not the subject of his talk, Archibald did extend the example of multiple complementary standards to cover PostScript and Hewlett-Packard's PCL language. As we mentioned in our first Seminar issue, we had had hopes that PCL might emerge as a simpler, faster alternative to PostScript for high-volume publishing applications. Compugraphic's presentation on the first day of the Seminars pretty well dashed this hope. Archibald's presentation three days later confirmed that impression. He characterized PCL as appropriate for office applications, while saying PostScript is more geared for professional publishing.

Standards: Mills Davis, Davis Review

In the Q&A following his multimedia presentation, Mills Davis of the Davis Review skipped past the fourth wave to exclaim that the fifth wave is where he wants to be—when exchanging data or interconnecting two machines is "like turning a light switch on and off—you won't have to think about the process."

Given that we are just entering the fourth wave, Davis had spent the bulk of his presentation going over the "popular" standards for electronic information exchange in the areas of text, graphics, images, pages, documents, databases, and sourceware (principally CD-ROM-based material). The standards he summarized are by and large the same as those covered by Becker, which will be covered in more depth in a subsequent article from the latter.

Image standards adrift. Davis pointed out that no single image standard exists for image interchange at the moment. TIFF and RIFF (from the developers of Letraset's Image Studio) have possibilities, and DDES is a possibility. But he believes that the trends in image processing—multiple image sources, varying resolution images, dynamic ranges, color, ragged image metafiles, image compression and the like—will make standardization in this area problematic.

He does believe that Adobe's Encapsulated PostScript format will emerge as a *de facto* standard for both graphics and image interchange for office and technical publishing, and especially for high-end professional publishing applications and commercial software. (Indeed, more than one speaker during the Seminars expressed a strong preference for—and a satisfaction with—color Eucapsulated PostScript as the *de facto* standard for all graphics and image interchange. Don't be surprised to find an increasing number of application vendors lining up behind color encapsulated display PostScript, should Adobe find a way to provide it to them.)

Davis also believes color EPSF will play an important role in page interchange formats in the future, and applanded the Scitex alliances with Quark and Adobe as "fabulous."

Database interchange standards. Similarly, he believes that database standards are in a state of flux, as the move toward text management tools and hypermedia changes our thinking about the fundamental ways of organizing information. He finds SQL deficient as a database interchange standard because it depends on application-specific host languages to access facilities not provided in SQL. He mentioned a Networked Database Language, which is ANSI standard X3.133-1986. However, this he claims to be appropriate only for applications where the structure is static and retrieval requirements are well defined.

Davis briefly touched upon color interchange standards at the end of his talk. Here he finds the principal problem with establishing standards as the lack of precision inherent in RGB to CYMK conversions—especially given the problem of defining each. (Note, however, the presentation by Kodak summarized on page 24 of our first Seminars issue.)

Standards: other viewpoints

Steve Brown, Datalogics. Steve Brown gave a reasoned analysis of the importance of standards in the reference data publishing business. Brown defined reference data as including aerospace operations and maintenance manuals, automotive shop manuals and parts catalogs, public utility rate case applications, and the like. He pointed out that these publishers have a new role as information providers, where information is increasingly viewed as being a corporate asset ("exit the subscription list").

He discussed the pros and cons involved in a move toward standards: the pros being multiple suppliers, reduced costs, and simplified procurement, whereas the cons are anti-competitive (one-size-fits-all), lack of innovation (clones), less product distinction (clones), and the less-than-optimum technical solution.

Brown identified the principal data interchange standards for reference publishers as being SGML for text,

CCITT fax for raster graphics and IGES for vector graphics, SQL for the data management subsystem, SGML/IGES for the input/revision subsystem, PostScript for paper output, and combination SGML/IGES/CCITT for electronic databases. He concluded that the use of standards is essential in providing the flexibility to enter new markets and reuse existing data, being the least-cost supplier, and maintaining the publisher's investment in its data asset.

Joan Smith, Sobemap. Joan Smith is one of the world's leading authorities on SGML. If we are to trust the assertions she made during her talk, SGML is an infinitely flexible and modifiable language capable of supporting graphics, links to electronic databases, hypermedia and the like.

However, as with any language that attempts to separate form ftom content, there are tradeoffs that have to be made. One of the rhings that bothered us most about the batch pagination systems we had to contend with in the 1960s was that the user had to anticipate all conditions beforehand. If the batch program produced a result you did not like, the only recourse was to change the instructions, reprocess the job, and hope for the best.

A batch pagination program by definition is a trial-and-error process. The combination of batch capabilities and WYSIWYG interaction provided the answer to more than one commercial typesetter's prayers by providing interaction between the form and content in real time. Yet today with hypermedia we find ourselves being pulled back to the situation we were in in the 1960s, which is a less-than-tantalizing prospect.

Smith indicated that the next standard to be defined will be a style definition language with explicit links into SGML. Yet such a language would have to incorporate many of the characteristics and features of PostScript to be competitive with PostScript. Unless Uncle Sam or some other international entity mandates the new style definition language (which in any event could, like SGML once was, be 20 years in the making), we don't think that it has much of a chance of solving the form-content dilemma on an industry-wide scale.

John Meyer, Ventura Software

John Meyer is best known for being the president of a little software company that made its product—according to Meyer—the number-one-selling PC-based desktop publishing package. (Meyer quoted recent sales statistics saying Ventura Publisher has 62% PC market share, compared to Aldus PageMaker's 35%.)

Meyer didn't come to the Seminars to speak about Ventura Publisher, however. Instead, at our request, he delivered a thoughtful essay about the tradeoffs inherent to standardization.

Who makes standards? Like Becker and Archibald (and most of the audience), Meyer believes strongly that the best standards are those that evolve directly from users' preferences, rather than being set by companies (e.g., PostScript) or standards committees (SGML or CALS). Tfus is not to say that other methods cannot work. A vendor who is first in the market with a clearly superior product (displaying "true innovation") is in a position to establish a standard that will stick (again, like PostScript). Similarly, a standards body can succeed teasonably well establishing standards only when "no one wins if all the vendors involved don't cooperate."

What level of standardization? Similarly, we should consider the *level* of standardization that is most appropriate. Meyer declared rotal standardization to be "communism": it results in no competition, little innovation, little progress. On the other hand he asserts that a lack of standardization is "feudalism": no contact with the outside world, little progress, innovation run rampant and therefore unfocused.

"Intelligent" standatdization is in his view "capitalism": it delivers the "lowest cost, highest benefit, and lots of innovation and progress."

Ventura strategy. Meyer said that the industry has targeted operating systems and platforms, the user interface, and data interchange formats as being the "prime" candidates for standardization. As a consequence, Ventura is responding by standardizing on the IBM PC platform, providing the "correct, mouse-based user interface" (which he indicated was still GEM; however, the next release will allow importing data from Windows' clipboards), and by providing a document structure that "dynamically integrates with other applications on the file level."

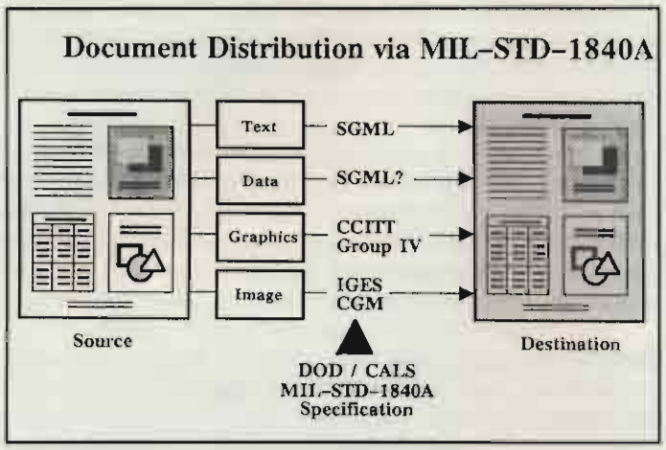
On the software level Ventura intends to provide hooks into larger systems, such as Scribe, Data General, CPT and Harris Lanier; add the Edco hyphenation dictionary (130K words in EMS memory); become the output end for database publishing, and continue to work with VARs (over 100 to date) as it has done so well.

Where from here? Meyer sees increased configurability in Ventura's future, with loadable word processor and graphic format convertors, "even more" printer and screen drivers and graphic file conversion options. (This is certainly in line with the trend we've seen for some time toward attempting to make file format conversion virtually transparent to users. Meyer's targeting of these areas for future enhancement indicates he has been hearing this message from his installed base as well.)

During the Q&A afterward we asked Meyer if there wasn't one other principal means of standardization—standardization by market share—and wouldn't that dictate Ventura porting from GEM to Windows? As he has done in the past, Meyer indicated that there are significant performance advantages to operating under GEM, since running under Windows' Executive would "degrade our performance." He did indicate that Ventura intends to develop a new version for OS/2 Presentation Manager—one that will take advantage of OS/2's full capabilities.

David Mayer, Auto-trol

During David Mayer's excellent presentation on the graphics view of document management and distribution, we were struck by the similarity of the messages coming from the major in-plant and corporate publishing vendors concerning heterogeneous, or compound, document architectures. There was virtual unanimity among the major vendors and users that this is the next "growth area" for tech-doc publishing



David Mayer's depiction of standards.

technology. It is no longer sufficient to have standalone publishing systems, functioning as self-contained universes, attempting to solve all the users' problems—at least not in large workgroup settings. What are needed—and evidently are just now beginning to get delivered—are publishing systems capable of "integrating the heterogeneous publishing data sets" (to use Mayer's terminology) throughout a corporation. Indeed, we are tempted to label this year as the "year of the compound document architectures"—only we know what that moniker did to LANs.

Playing in a heterogeneous world has obvious benefits—users can select the best word processors, spreadsheets, drawing programs, etc., that suit them. We have also made strides in pulling these diverse data sources together into one document—both Xyvision and Context have systems that are optimized for pulling together diverse data types and producing a publishable compound document from them.

Revisable compound documents. The problem comes when you then attempt to go back and revise that document. With Context's system, for example, the operator has to pull the graphic elements back into the original application for modification. If he doesn't have that application on his system (as might be the case if he is at the end of a long, winding work flow that began in another geographic location), he is out of luck.

This is made even more acute by the fact that one of the principal goals behind the compound document architectures is to provide as much as possible for the electronic delivery of information. To this end, a typical compound document consists of a minimum of four data types—text, data, graphics, and images (some include voice and full-motion video also).

The text, data, graphics, and images found in a compound document are, according to Mayer, "highly integrated packets of information—in fact they are compound micro-documents, each having a distinct relationship to the other." For example, the narrative text referring to data, graphics, and images, the data tables containing composed text, and the graphic and image frames containing text and data are all interrelated within a page, and all pages integrated within the chapter, section, or book.

According to Mayer, if the intention is to provide iutelligent, reprocessable versions of a compound document, what is needed is a revisable data interehange format that can work as a translator between source and destination documents. (In some situations, to control the content and quality, Mayer indicated that an "imaging only" version can be made available so that the recipient can look at, but not modify, it.)

CALS. Mayer indicated that many of these electronic publishing goals for data management and document distribution have been codified in the Department of Defense's Computer-Aided Acquisition and Logistic Support (CALS) program. CALS has specified several standards to facilitate data interchange—SGML for text (and possibly for data as well), IGES and CGM for graphics, and CCITT Group IV for images.

The problem with these, however—as Dave Becker reiterated in his talk—are that they are "mostly a collection of computer and office automation standards" and are not optimized for the application—especially not for the task of assembling a complete, publishable page capable of being output to a PostScript printer.

Mayer questioned the usefulness of a document that has been distributed using this "odd collection" of standards and asked, "How would you like to buy a bicycle and receive the documentation and assembly instructions in a CALS compliant manner—on four floppy discs!"

He also wonders whether the use of Group IV raster format will permit the transfer of editable ASCII annotation text and typographic callouts used as overlays on the photograph—which are elements that are bound to change over the life of the document. And he asks whether these "engineering-oriented standards" will allow us to retain the typographic attributes of character kerning and letter spacing found in the callouts, and provide for the use of multilanguage character sets, and the raster tints and patterns found within vector graphics.

The future of document distribution. Mayer concluded with a plea that we might begin to shift our emphasis from the use of these engineering standards to the development of document interchange formats that have been optimized for publishing. He speculates that perhaps a publishing-oriented language such as PostScript will evolve into a definition of a revisable compound document architecture designed for our industry.

Mayer pointed to the work being done on ODA/ODIF and DEC's Compound Document Architecture as being encouraging. But he pointed out that these efforts still rely on these "same engineering computer graphics and data transmission standards" that hobble CALS.

Mayer indicated that the "ultimate" publishing-oriented compound document architecture has yet to be defined.

Jim Bessen, Bestinfo

Jim Bessen, president of Bestinfo, has long believed that IBM PCs are well suited for publishing applications, and networked PCs especially—after all, Bestinfo had one of the first high-end PC-based publishing packages, and was one of the first to network PCs together. To support this contention, Bessen cited that 80% of the publishing workflow is editorial

and management-related—which can be easily accommodated on low-cost, ASCII-based PCs—and only 10-20% is composition- and pagination-oriented (requiring workstation horsepowet and bit-mapped graphics).

Ascii über alles. Bessen stated, lest anyone have any doubts, that "ASCII is the language of PCs," and that in spite of the strides being made on the user interface and gtaphics fronts, ASCII is likely to remain the principal data interchange standard for PCs for some time to come.

Bessen indicated that the importance of this statement is underscored when yon begin to consider the difference between integrating and interfacing PCs—the difference between integrating compnters (interconnecting machines and/or operating environments) and workflow integration (where the work resides on one or more PCs in a network).

A managed environment. Bessen contends that electronic publishing is task specific, where each person has a different job and therefore requires different tools to get his job done. Tasks can be separated into two categories—those that are content-oriented and those that are style-oriented.

As the work on these diverse tasks moves thtough the production cycle—as the work "flows" from one workstation to the next on the way to being typeset—a "snowballing" effect occurs as the document acquires additional codes, revisions, attachments, etc.

Managing this process, therefore, becomes complex, requiring electronic job tickets and management reports to inform production managers of where each element is in the production process. This reqnires good communications among tasks (rather than simply between machines), which is facilitated by the nse of ASCII (hence we come full circle).

The problem with the high-end systems against which Bestinfo competes is that they don't use ASCII to communicate between tasks, which makes managing the workflow "a cnmbersome process."

Bessen believes strongly that the key to the future is a move to an open (fonrth-wave) system, where there can be transparent transfer of text and graphics both ways, revision control, and a unified management system. Achieving this, however, requires cnstomer snpport, since pressure must be exerted on the diverse vendors to gain snpport for an environment that can be managed in this manner.

Long Documents and Books: Users' Perspectives

Taking the pulse of in-plant and book publishers is particularly appropriate for a seminar focusing on integration through standards since by and large it is these men and women who have found themselves in the no man's land between the publishing and computer mainstreams. These are the people for whom the fourth wave isn't so much an option as it is a necessity, since, unlike in newspapers and magazines, in-plant and book publishers do not have control over all the information sources or tools that they are expected to employ.

As we learned at the in-plant users' bull session, in some cases the operators don't have much choice in the type of equipment they purchase (often having fourth-wave gear foisted on them by managers who had seen one too many Apple desktop publishing commercials during the Super Bowl TV coverage), and have very little guidance in how to make it all work together.

Consequently we have kept our ear to the ground for stories of resourceful applications of fourth-wave technologies to the jobs at hand. The representatives on our users' panel each had a provocative, albeit different, approach to solving their unique problems that, well, more or less worked. And getting the job done is, after all, the bottom line.

Mona Zeftel, Addison-Wesley

Like many book publishers, Addison-Wesley's Higher Ednca-tion Division had investigated electronic prepress publishing alternatives over the years, but could never justify investing in a high-end system due to:

1. The peaks and valleys in production schedules that could lead to capacity and staffing problems.
2. The number and diversity of outside authors, freelance editors, and the like, each of whom works on a different computer.
3. The design-intensive nature of their books, which served as an obstacle to any batch-driven pagination program.
4. The desirability of being able to select different outside compositors for different types of jobs.

Nevertheless, Addison-Wesley was anxious to take advantage of some of the newer dcvelopments, particularly on the desktop end, since they promised to lower its total costs, tighten its prodnction schedules, provide better support for authors, facilitate the review process, and allow it to stay within the mainstream of the industry.

Publisher-assisted books. Using a variety of packages for the Mac and the PC, such as Word, Ventura Publisher, PageMaker, Quark Xpress, Mathtype and Textnres, Addison-Wesley found that it could support a new breed of textbook publishing—the publisher-assisted camera-ready book. Based on the assumption that authors want or need control over the pagination and presentation of their material, "because they best understand how it is being used in the class-room,"

publisher-assisted camera-ready book publishing involves supplying the authors with a book design, stylesheet, and document, thereby giving them a structure within which to write and lay out the book. "Because the author is formatting and editing math, tables, and pages directly, this has proven more rewarding than asking them to provide SGML type coding which they are resistant to." (Joan Smith, of course, would respond that SGML parsers, such as Mark-it from Sobemap, could remove the grunt work from the SGML markup process for authors. However, we believe history is on the side of interactive WYSIWYG.)

No pain, no gain. Zeftel pointed out that this "democratization of the publishing process," while giving more control to authors, also requires more from them in return. The author is now doing the work of both the editor and the compositor to an extent, and in some cases is beginning to demand higher royalties or manuscript preparation rates than he asked for in the past. There are also technical problems to overcome, such as getting different results from the output device in the publisher's office from those obtained with the author's identical configuration (a well-known phenomenon to anyone using a Mac-based desktop publishing package if there are different versions of fonts installed on different machines).

Zeftel raised a number of critical issues that could affect the success of the publisher-assisted camera-ready program. The first is familiar to most PC users (and a growing number of Mac II users): support for the myriad displays, printers, and hardware add-ons that an author may want to use from within applications. This is an especially acute problem when one recognizes that Addison-Wesley can only make recommendations—it cannot force authors to standardize on a given display or software package. Programs like Windows—which isolates application packages from the underlying devices—will help. But not all publishing-related programs run under Windows.

When authors become part of the production team, who is responsible if the book is behind schedule, over budget, and sub-par in quality? Do we want authors to spend their time typesetting their own work, rather than getting on with what they do best? Should authors be compensated for composition work, and at what rates? Will this be cost effective?[1]

[1] There are interesting parallels here to the introduction of some of the early pagination systems in newspapers. In the 1970s newspaper editors were more than willing to take over responsibility for hyphenation/justification, final proofreading and copy fitting in exchange for later deadlines and increased editorial control. Newspaper systems made this relatively painless through the use of stored formats and other aids that made the formatting and composition process a natural by-product of the editorial process. Moreover, newspaper editors put out a paper every day—something most book authors do not do.

But the introduction of the Hastech and Triple-I pagination systems in the early 1980s changed the equation considerably. In order to perform the complete task—including newshole page make-up—the editor had to master a much more complex production procedure.

One of the real contributions of Aldus PageMaker was to make precise layout-driven page composition relatively easy to accomplish. Professional-level page make-up still requires extra time and effort, but the burden is now less onerous than it was.

There may be a lesson here for author-assisted book publishing: authors and editors appear to welcome control over the final product if the level of effort required to accomplish this is "reasonable." The trick is to set things up in a fashion which shields them from as much of the drudge aspects of composition/page make-up as possible.

Long Document Bull Session

In the evening various in-plant and book publishers, as well as a handful of vendors, gathered to swap war stories, share dreams, and recount nightmares from the field. There was a clear consensus that everyone is moving toward a heterogeneous fourth-wave environment. Many attendees were impressed that even IBM had embraced it so firmly.

We were impressed with the extent to which users focused on people issues—training, support and service. Three years ago, the biggest concern at the in-plant bull session had been cost justification. We think the reason for the change is clear: three years ago, everyone was still thinking in terms of relatively expensive turnkey systems, most of which ran on proprietary hardware. People who wanted to install them had to find ways of cost-justifying the decision to skeptical corporate bosses who wanted to know what the payback would be.

The world is very different now. The desktop publishing revolution has made publishing technology fashionable. Equally important, publishing systems are no longer expensive, and will most often run on computers that the organization would probably buy in any event.

But low-cost, mass-market publishing solutions come at a price: the user must be his own integrator. And users are coming face to face with the issues of training, support, organizational control and people productivity.

No messy divorces. Several people observed that unlike the newspaper group, which seemed in the process of going through divorces with their vendors (or at the least heavy marriage counseling), the in-plant group had no such ties that bind. Instead, the issue for these people was how to get support when there was no identifiable "vendor" to whom to turn. Several stories were recounted about packages assembled by the user himself, consisting of PCs, Ventura Publisher, and a laser printer, sitting in a corner because no one could figure out how to make it all work together.

Many asked the very real question of "Who are the vendors?" in situations where your system components might have been purchased from 11 different vendors that have no vested interest in making the sum total work together. In an encouraging turnabout from previous years, most people indicated they (finally) recognized the value of the application software, service and support that vendors have been providing, and said they'd be willing to pay for it for their fourth-wave systems—if they could find someone who could offer it. Many expressed the desire for a VAR to come along and install the whole kit and caboodle as long as the resulting solution could operate in a standard environment.

Multiple platform support. Vendors, take note: many in the gathering expressed a strong preference for having the same applications running in a variety of environments. It was suggested that their multi-platform support may be a major reason underlying the market success of Interleaf, Microsoft Word, PageMaker, and WordPerfect. We have long argued with application developers that it is within everyone's interests to port an application to a variety of platforms. Expect to see more such activity in the future.

Jury is still out. Zeftel didn't have answers to all her questions—indeed, part of her motive for voicing them in our venue was to see if other publishers have had similar experiences and have worked out appropriate strategies. Yet both here and in the subsequent bull session we heard again and again that we are all still babes in the woods when it comes to grappling with this issue—regardless of how sophisticated a given fourth-wave solution is, it's still alpha test for most players trying to roll their own.

Joseph Jaynes, Apollo Computer

We shouldn't forget that vendors can also be users. And in some cases, such as the Domain/Delphi Online Document Retrieval project at Apollo, a vendor-user-sponsored project started initially for in-house use can turn into a revenue-generating product usable by others.

Joseph Jaynes and his colleagues were charged with the task of placing Apollo's Domain documentation on-line so that it could be accessed by Domain nsers on-line, or printed out to make hard copies. They realized they were embarking on a formidable undertaking. Whereas in the "old days," available disk storage and compute power constrained vendors to placing limited, ASCII "help" facilities on systems, the modern distributed workstation environment made it possible to store complete manuals on-line, and (potentially) to display them in fnll WYSIWYG on bit-mapped graphic displays.

Further complicating this picture were the "extensions to the heterogeneous environments" being made by extending Apollo's Domain network environment to include non-Apollo machines with the Network Computing System (NCS—Apollo's response to Sun's NFS challenge—see the first article in this series). Jaynes stated his problem as, "How can I deliver documents produced on a variety of publishing systems to users on a variety of hardware platforms?" The documents in question had been produced with Interleaf, Sctibe, troff, and "unformatted ASCII" application packages.

System-independent Domain/Delphi. The result of the efforts of Jaynes, *et al.*, was a portable, modular electronic document retrieval system that implemented an X Window-compatible user interface to make it possible to access it from any X Window-compatible system (admittedly a tall order in the short run until X Window is firmly defined and established). The system also ntilizes a "system-independent data retrieval" component which provides a standard database interface that communicates with various database systems on various platforms via the NCS distribnted computing protocol.

"Native" display drivers. Perhaps the most clever component is the one that solves the problem of how to display in "native" mode documentation created on a variety of publishing packages, without requiring that the viewer have those packages himself. Jaynes and his colleagues used a "publishing system-independent interactive display interface," which enables documents to be rendered on the screen using display modules from the vendors that run on the same platforms as the publishing systems. Thus, viewers will be able to see the documentation on-line just as it looks in hard copy, which many trainers believe to be an important factor in getting up to speed quickly on complex systems.

Commercial Typesetting

How is the commercial typographer to survive in a world of desktop publishing and a trend to take the work in-plant? George Alexander, of Mindmeetings, led an evening session that looked at several potential strategies.

- ***Seek protected markets,*** whose workflow requirements or financial conventions make life difficult for the generalist.
- ***Occupy tricky niches:*** become highly efficient in some arcane discipline like math.
- ***Add new services*** that bind your existing clients closer while capitalizing on your existing skills.
- ***Become a vendor:*** people who know both type and computers will be needed to integrate and support fourth-wave systems.
- ***Sell expertise:*** trade typographers understand about design, image quality, production workflow, computer operations, and so on. Their customers will continue to need this guidance.
- ***Integrate with your client:*** perhaps the client keyboards the text while you perform design and production, or the client may do the composition while you handle the output. In some applications, you might even provide computing power for the client's database, which you typeset whenever required.
- ***Stand and fight.*** The market for high-quality type is expanding as new users get a taste (via desktop publishing) of what type can do for them. Sell them the extra value of good composition and high-resolution output.

Apollo has decided to offer Domain/Delphi as a product via which other vendors can provide on-line documentation to their own applications. Apollo is supplying the initial display modules necessary to view its own documentation; however, it will be up to the individual vendors to provide their own display modules.

A word about production: Apollo gave each writer his own workstation (of course) to produce the documentation for Domain/Delphi; therefore each writer was his own publisher. Style was controlled via heavy use of templates so that the less experienced compositors among them could essentially connect the dots to lay out the pages.

Barry Silverman, Carnegie-Mellon

It is unusual for universities to be on the "bleeding edge" of the fourth wave, since nsually their budgets restrict them to hand-me-downs or low-cost PC solutions. Occasionally one of them receives funding to do something more ambitious. It shouldn't be surprising that Carnegie-Mellon, which already can claim permanent bleeding-edge status with its ongoing Andrew project, received funding from the National Science Foundation to set up Expres.

Expres is a multidisciplinary project that involves a partnership among the NSF, National Bureau of Standards, Carnegie-Mellon and the University of Michigan (as well as other major research universities and the Big Ten), and industry (including IBM, Apple, DEC, BBN, and Sun). Barry

Silverman is the assistant director of the Information Technology Center at Carnegie-Mellon, where he is responsible for coordinating the implementation of Expres.

Moving mountains. Expres's goal is to automate the NSF's proposal review process. Currently, tons of paper are being shuffled around the country as part of NSF's effort to fund research at American universities, think tanks, etc. The NSF would like to eliminate this paper chase entirely by making it possible for grant proposals to be submitted as electronic compound documents.

The key to making any scheme of this sort succeed, of course, is the use of a comprehensive data interchange format, since the goal is to ship an editable version of each compound document to reviewers, and then back from the reviewers to the author with comments and suggestions embedded.

ODA Toolkit. Largely because it was the only nonproprietary compound document interchange format available at the time (DEC hadn't yet announced that DDIF specifications would be made public), the Expres team selected ODA (Office Document Architecture) as the interchange format for the project. This was not an altogether popular decision, since many believed that ODA was not up to the job, especially since many aspects of it haven't been articulated yet (its font models are restricted, as are its page layouts; and it doesn't support equations, spreadsheets, or voice annotation). To this end, Expres project members also took on the responsibility to create a general ODA Toolkit for building translators, providing useful subroutines, and delivering a consistent version of ODA.

A crucial factor in the project is to demonstrate to the NFS that ODA can cut the mustard as a general-purpose document interchange facility. This capability must be demonstrated before the project will proceed to full implementation. In a real sense, the future of ODA as a publishing standard largely depends on the success of the Expres project. If ODA bombs in a government-sanctioned, generously funded project, what chance do private organizations have of making it succeed (especially in view of DDIF's increasing visibility in the market)?

Work flow. With Expres, a submission will arrive at the NSF electronically, where it will be catalogued and shipped to reviewers. Reviewers will transmit it back to the NSF with their suggestions and comments. NSF in turn will shoot it back to the author. The goal is to provide filters that convert authors' submissions into ODA format, as well as to scan pictures electronically to have a total digital submission. (As an interim step, images will be handled separately in hard copy.)

For the pilot project interchange demonstration, Expres will support the Andrew Toolkit, Diamond, Microsoft Rich Text, and WordPerfect formats, and will demonstrate the ability to act upon multiple fonts, document structures, and raster images.

Silverman believes that although ODA will be set up ro handle a variety of document formats in Expres, there will be "pressnre" exerted to use typographically simple document formatting. It is the project members' "dream" to have all data types be effortlessly translated into (and back out of) Expres's ODA format. The reality may be more along the lines of the trial—an approved list of supported data formats and document styles.

The demonstration is planned for September 1988. We will be anxious to receive an update on how it fared, and what future efforts may come out of it.

Industry Redefined: Vendor Views on Who Supplies the Solutions

The final sessions of the week centered on the direction users and vendors see the industry moving. It could best be summed up with the question: Who will supply the solutions?

Jonathan Seybold set the stage with a brief summary of the week. He called this a frightening time. A time when there is "so much to learn." The publishing industry is joining the computer industry exactly when the computer industry is itself in the midst of traumatic change and is moving at incredible speed. For people now trying to join the computer industry the learning process is like "trying to catch up with a moving train." Many are not ready and some are not willing to take the time to learn what is necessary to keep up with what is happening. But we may not have a choice.

We next heard from a number of vendors, each of which spoke to the issue of where solutions will come from in the fourth-wave world.

John Warnock, Adobe Systems

"The world is in a tremendous state of flux," said John Warnock, president of Adobe Systems. Everything is new, from the tools we are using, to the operating systems, user interfaces, and so on.

Warnock advised attendees to focus their attention on three principal computer architectures: those based on the Motorola 68020/30, Intel 80386 machines, and the new RISC processsors such as Sun's SPARC machine. Warnock considers the '286 to be a short-lived animal which will become quickly obsolete with the cost differential becoming minimal between it and the '386.

The operating system wars. The important issues at the operating system level, as Warnock sees them, are the user

interface and the data exchange capabilities. He believes Apple took the lead on the user interface and now everyone else is following. Progress in common data formats which permit exchange of data between programs and/or between systems is coming more slowly. The increased attention to networking will surely help.

Warnock does not think MS-DOS is dead yet. The installed base and the library of application software are so large that MS-DOS will be around for a long time to come. However, the limits of MS-DOS (especially the fact that it can address only 640 KB of computer memory) will make it less and less attractive for publishing applications.

OS/2 will arrive much later than most of us expect. The rule of thumb, he said, is that it takes five years to develop an operating system. OS/2 development is now in year three. Further, Warnock is concerned that Microsoft has not gone far enough in specifying a consistent application software-level user interface for OS/2 applications.

Warnock believes that the Macintosh OS still has a long life ahead of it. Apple is working on evolving the Mac operating system into a full multi-tasking operating system over time. But he believes that it will have a hard job in moving to a multi-tasking environment while trying to keep the user interface constant.

Warnock believes what has kept Unix from moving into the mainstream of the computer industry has been the lack of a consistent user interface. When it resolves this issue, which it has since done with the announcement of the Sun/AT&T "Open Look" (*see pp. 39-40*), he thinks it will be a very strong contender. Unix will have especially strong appeal for those needing a true multi-tasking environment.

Application software strides. On the application software side Warnock believes that page make-up and document composition packages are getting much better and the developers are beginning to learn our business very well. He sees image processing and graphics as the biggest limitations on the PC side because of the bandwidth problems inherent in PC hardware. But strides are being made here as well.

He is particularly optimistic about the future of presentation graphics products. The most pressing need now is for good, low-cost film recorders.

Printers. There are currently about 20 models of Adobe PostScript printers on the market. This number will triple over the course of this year. New printers coming onto the market will give users more choices for color, duplex printing, lower cost and better performance.

Warnock sees opportunities in the electronic distribution area of graphic and printed material via compact PostScript files. On-demand printing with high-speed remote printers is another opportunity. He also sees a growing need for large graphic databases. Many are being developed and he expects this to continue for some time to come.

In short, this is an especially exciting time for all of us in the "visual communication" business.

The distribution dilemma. There are, of course, some problems to be overcome. One that bothers Warnock is that the rapid increase in sophistication of desktop publishing products is threatening to overrun the ability of mass-market distribution channels to understand, demonstrate, sell and support them.

If this sophistication increases to the point that these products can no longer be sold through retail channels and must be sold and supported by a direct field sales/support organization, sales and support costs (and thus product price) will go up dramatically. There are two solutions:

1. Find alternative distribution channels, such as market-specialist value-added resellers (VARs) that can cope with the increasing sophistication.
2. Provide user interfaces that permit control of even a sophisticated program to be simple and straightforward. This is the route that Warnock favors.

Darryl Tjaden, CText

Darryl Tjaden of CText spoke on the following day, addressing the transition to the fourth wave from the perspective of someone who had extensive experience with a third-wave supplier before helping to found one of the first fourth-wave newspaper system suppliers. He addressed "the changing role of the system supplier." He believes that the technology and the economics associated with this technological change will have a profound effect on the relationship between the user and the vendor.

Tjaden followed the evolution of responsibility for system integration from the 1950s and 1960s (when the user was his own integrator) through the rise of turnkey system integrators in the 1970s and into the early 1980s. The state of computer technology really left no other choice for sophisticated publishing systems.

Technology trends. The situation now is very different indeed:

- The increasing sophistication of standard computer systems has made customization by a publishing system vendor unnecessary.
- System software standardization has made it unnecessary for vendors to develop and support their own operating system software.
- Inexpensive desktop computers have more power than minicomputers of a few years ago.
- Local area networks make it possible to build cohesive systems based on intelligent workstations.
- Sophisticated hardware and software is now being sold and supported through mass-market channels.

As a result, the vendor of today can focus all of his effort on the specific added value required for the application(s) he serves.

Market trends. But there are other factors at work as well. In the newspaper market which CText serves there are a fixed number of newspaper prospects—and, in fact, the number is actually decreasing as ownership of newspapers continues to be consolidated into the hands of newspaper groups. The plain facts are:

1. Less of a newspaper's revenue is being spent on newspaper systems.
2. As a result of decreasing hardware costs, the total revenue available to newspaper vendors is decreasing.

3. Some newspapers are beginning to be their own system integrators.

The prognosis. Tjaden sees the situation emerging at the moment as what he terms "user and vendor joint integration." The system vendor still plays an important role, but he is now working cooperatively with the customer rather than taking sole responsibility for system definition and implementation. An increasing portion of a newspaper system consists of off-the-shelf hardware and software.

In the next decade, the user will move into the driver's seat. Users will assemble hardware and software modules and subsystems from the mass market and from specialist software companies and plug these together to build a system.

The vendor of the 1990s. Overall, Tjaden predicts that system vendors' revenues will drop more than 50%, with some of the lost revenue going to suppliers of the computer system and the mass-market software used. The rest will remain in the users' pockets.

He believes the system vendor of the coming decade:

- Will provide application software running on standard hardware and software platforms.
- Will provide application software which will run on a variety of computers.
- Will integrate mass-market software into the application-specific software.
- Will not usually supply the system hardware and software. (If he supplies hardware, it will be done as a service at a low margin.)
- May act as a paid system integration consultant.
- Will support only the application software. The underlying hardware and software will be serviced by others.

The result for the user, he says, will be overwhelmingly positive. Vendors, on the other hand, will face a considerable challenge in maintaining support for existing products while down-sizing the company and speeding development of new-generation products.

New roles for all players. Tjaden thinks that system vendors must reorganize themselves to play more of a support role to customers who are building their own systems—without depending on hardware revenues as they did in the past. The vendor must also learn to survive on the basis of customer satisfaction rather than confrontation.

Users have challenges to overcome, too, including the need to have in-house expertise, less dependence on single-vendor solutions, and the need to insist on standards.

Tyler Peppel, Apple Computer

Tyler Peppel reported on the major trends he, and Apple, see in the publishing market:

- ***Strong market growth.*** Peppel cited forecasts which predict 40% to 60% growth in the desktop publishing market in 1988, with 35% growth per year though 1992. Apple sales of desktop publishing systems show absolutely no signs of peaking.
- ***Increasing competition.*** A market this robust draws a lot of potential competitors. This is exactly what is happening in the publishing market. For end users this means constant innovation and rapid change. Product life cycles will be short. Industry standards will have to withstand the waves of innovation which threaten to obsolete them.

  Alliances will be more important. Fewer companies will be able to make breakthroughs on their own because customers now demand complete solutions rather than sexy stand-alone packages.
- ***Merger of professional and desktop publishing.*** Peppel described word processing, desktop publishing and high-end publishing as a three-layered market. But as the desktop products become more sophisticated, and as increasing attention is paid to solving high-end problems with mass-market systems, any remaining distinction among the markets begins to fade away. Apple is now concerned with the full spectrum of publishing applications.

  Apple will clearly be moving "up-market" to address more and more ambitious publishing solutions, including increased emphasis on color. In doing so it will seek to preserve and exploit what it perceives as its unique "ease of use" advantage.
- ***Merger of creative and production functions.*** New tools are coming onto the market which encourage effective bridging of the creative, design process and the prepress and production processes.
- ***Rapid increase in user sophistication.*** Even desktop-level customers are rapidly becoming more sophisticated and more demanding. They want more of everything: fonts, resolution, speed, color, and larger display screens. This, in turn, feeds the growing overlap of desktop and high-end publishing solutions.
- ***A broader view of publishing.*** Peppel believes that everyone (including Apple) is now taking a broader view of publishing. He defined "publishing" as "gathering, organizing and dispensing information." Besides traditional ink-on-a-page processes, this encompasses presentations and electronic media (including CD-ROMs and HyperCard).

Steve Kahn, Texet

Steve Kahn of Texet disagreed with Peppel about the merger of desktop and professional publishing systems. He believes that there is still a clear distinction between them. More specifically, he thinks that there is still a meaningful distinction between the "casual" publishing world and the "professional" publishing world.

He defines the casual market as part-time users putting out products that have a short life cycle, produced on systems that are often stand-alone devices, usually with 300-dpi laser printers as the primary output device. In contrast, the professional market requires sophisticated equipment to produce high-quality documents and is staffed by individuals who do this type of work on a full-time basis. Most of all, the equipment is fairly complex with very intricate I/O. With this complexity comes the need for greater support.

But as the products become even more blurred than they are today, Kahn believes the channels of distribution become the critical difference between the successful and unsuccessful companies.

WYSIWYG authoring tools. Traditionally, "professional" publishing systems have relied on monospaced text editors to

prepare text input to be fed into the publishing sysrem. Kahn believes that this approach makes them vulnerable to competition from WYSIWYG desktop publishing systems. Users prefer a full WYSIWYG environment even for text entry and editing. They will turn to desktop systems if this environment is not available as part of the professional publishing systems. (Texet announced such a product at the Seminars.)

Heterogeneous world. In general, Kahn predicted a world of heterogeneous systems. He does see the casual-market vendors beginning to offer *some*, but not all, of the facilities needed by the professional. But he admits that the world may not be neatly divided into "casual" and "professional" users. The typical in-plant environment will be decentralized with a variety of people performing a variety of tasks. For example, casual users may be required to input copy into the professional world while also being responsible for doing an entire job of publishing for some documents.

He concludes that it will become increasingly important to offer integration between the casual and the professional user—a true integrated solntion for both. But although these ties with the casual user requirements are being built, he still sees a clear distinction today for tools which are specifically needed by the professional.

John Duker, Compugraphic

Compugraphic has been the largest vendor at the low end of the typesetting market, and as such, was among the first of the traditional vendors to find itself in direct competition with mass-market publishing products. How is CG responding to this challenge?

At last year's Seminars, CG outlined a strategy of moving "up market" away from direct competition with desktop products and turning itself into a system supplier. It had just announced a company-wide move to systems based on standard hardware.

Since that time, the company has been able to move its system product line to standard platforms, has introduced its CG Script PostScript clone, and is offering third-party software as well. To complement this it has changed the structure of the company. It has trained the sales force in the system area and has put together an "elite" team of support personnel to address the problems and concerns of the higher end, which means integration.

CG has also decided to develop some custom software modules. These help it link systems to mainframes and PCs. However, this has not been without problems. It found the connectivity problem to be much greater than expected. It also found the level of support required at the upper end to be higher than expected. But it did find that customers were willing to pay for integration.

Where does CG go from here? Other than improve its position with other complementary products such as the Integrator, CG plans to offer more plain-paper printers in the near future, it will continue to offer more products on the presentation graphics side, and it will forge ahead with its Mosaic project, which combines full text and color graphics. It recognizes the need for a consistent user interface and will be addressing that problem as well.

Fourth-wave dispute. Duker took our fourth-wave article to mean that we believe that users can assemble their own systems without integration help. (We said that some will, but that a great many *do* want a system integrator.)

More fundamentally, Duker does not agree that the fourth wave decreases the revenues of companies that currently rely heavily on hardware sales. CG is combatting this by insisting that customers buy all their hardware from them whether it is proprietary or standard—it's all the same. The company has no immediate plans to offer software-only solutions.

We will check back in a year or so to see how well CG has been able to maintain this posture.

John Felahi, Sun Microsystems

This year's Seminars marked the emergence of Sun Microsystems as a visible supplier to the publishing industry. Sun has long been an OEM supplier of workstations used by such diverse companies as Camex, Interleaf, Berthold, Information International and Atex. Now it is emerging as a publishing power in its own right.

Sun will have an impact on the market in two ways: indirectly via its role in providing Unix system platforms upon which publishing systems can be based, and directly via its own open participation in the publishing market.

John Felahi, marketing manager for publishing at Sun, outlined three areas which Sun itself will address:

Presentation of information. The goal is to get attention by addressing typography, graphic images and page layout.

Access to information. The goal here is to allow the user to access other information in the systems, other workers' data, data from other systems—all through an open system architecture. Sun plans to provide a real-time, cut-and-paste environment via multi-tasking and a windowing environment. It will strive to work with all forms of data.

Delivery of information. Sun will adopt standard formats in order to disseminate publications electronically. It will offer a variety of ways to provide this data via displays as well as hard copy (on paper). It will offer increasing power to the user to image pages of information with greater performance.

Note: Addresses from the equipment demonstrations in our last issue are on pp. 37-38.

Industry Redefined: New Strategies for Providing Solutions

The fourth wave creates a very different world for system vendors. The dramatic changes taking place force them to rethink what they are and what products and services they should provide.

In each of the past few seminars, we have invited a cross-section of vendors to share their views of what is happening to the industry and to lay out their strategies for coping with it. This year's presenters included someone from a company selling desktop solutions (Xerox); a "new style" value-added reseller (VAR) and system integrator (Scribe Systems); one of the largest traditional typesetting vendors (Linotype)—which is moving toward selling turnkey packages based entirely on standard hardware—and one vendor (Intergraph) that is building a new-generation proprietary system.

Alan Ayers, from **Xerox**, said that Xerox was adhering to its philosophy of "listening to its customers." What Xerox has "heard" is that for an increasing number, responsibility for the publishing tasks is being moved closer to the "owner of the problem," the person who created the message or word. In addition to this, there is a clear tendency to move more into work groups (closer to professional publishing). This, he feels, will bring us benefits in faster turnaround, greater control and reduced costs.

He believes that most of the market growth is coming on the desktop publishing side, where there are an increasing number of finishing tools for word processing, more graphic capabilities, and spot color; all of which are becoming available at lower cost than in the past. Xerox, of course, responded to this trend with the acquisition of the marketing rights to Ventura Publisher and, lately, Cricket's product line.

The problems in making the transition to the retail level of selling publishing solutions cannot be underestimated. Xerox had a shaky start in the early days of irs Ventura marketing tenure, making such *faux pas* as sending crippled versions to reviewers (they could run the program, but not print—which of course makes it impossible to evaluate the results). Nevertheless, Ayers believes that Xerox has learned to succeed at selling publication solutions through a combination of mass-market distribution and third-party VARs.

Philip Lehman from **Scribe Systems** described a different strategy. As our readers are aware, Scribe Systems has in the past year moved quickly into the aerospace VAR market, putting together solutions from a variety of hardware and software supplied by itself and other vendors.

Lehman addressed the question: what is a system supplier and what should he supply? In spite of the plng-and-play potential of fourth-wave publishing solutions, Lehman said, we have to recognize that the customer's environment is complex and that we have both naive and sophisticated users. This includes authors, illustrators, editors and otbers. To address this situation Scribe has elected as part of its strategy (it also sells a high-end networked electronic publishing system called STEPS) to package heterogeneous hardware and software packages—in short, to become a valne-added reseller, but one with the backing of a national company.

The key issue iu Lehman's mind is to make all the components appear as if they came from one vendor. The vendor must offer a coherent solution—not a mish-mash. But it also must be done in a way that gives the user control over his system and documents. Most of all we must recognize that it is the customer's choice—"he is the one with the bucks," and he is the one who has to live with it.

To accomplish this the system must offer an open architecture, choice of platforms, flexible I/O and compatibility with off-the-shelf programs. The supplier has to be a consultant and understand the user's goals—not just sell systems. Like high-end vendors of proprietary solutions, the VAR has to go beyond the selling stage and take respousibility for installation, integration and project management.

In summary Lehman feels the supplier has to make a long-term commitment to the user, support all of the products involved, aud provide seamless integration, one-stop shopping and phone number support.

Counterpoised against Xerox's and Scribe's strategies—where each is marketing an off-the-shelf product that is enhanced by their sales, training, and support expertise (albeit via very different channels), **Mike Cunningham** of **Intergraph** described a third, more familiar strategy. Intergraph is supplying a single, turnkey solution based on workstatious of its own design, and even its own microprocessor design (Intergraph bought Fairchild's semiconductor operation and the Clipper micro chip set along with it).

Cunningham justified the decision to provide a one-stop hardware, software and support product package on the basis of the need in "industrial-strength" publishing applications to reuse data, share data with multiple applications, and, most importantly, provide real integration, not just interfaces between diverse machines. (However, recall Jim Bessen's argnment in favor of standardizing on the IBM PC—arguably the most standard platform in the business today—for the same reasons of integration rather than interfacing.)

All of this adds up to Intergraph's view that the single-vendor solution is the answer—a single source for all products. This is what led Intergraph to build a single integrated publishing product. Intergraph carries the need to integration beyond the normal boundaries of the publishing world. It sees the need for integration of the publishing workflow, the engineering workflow, and the corporate workflow. It sees a necessity to integrate all three of these areas with integrated databases.

Cunningham stressed how important network connectivity is to the Intergraph approach and the need to carefully

construct the proper database structure to allow for this connectivity. He sees that some customer translators will be necessary to tie all data formats inro the system. Although Intergraph is advocating the single-vendor solution, it pointed out the large number of platforms, protocols, networks and data formats with which it is currenrly compatible.

Dave Dinin of **Linotype** had the opposite story to tell. As most of our readers are aware, Linotype has long been a champion of its own technology, selling a variety of front-end systems and typesetters based on proprietary hardware. However, during the pasr year a fundamental change was in the making. In the words of Dr. Lutz Thiele at Imprinta: "PC technology will be the driving force in typesetting for future system concepts and markets in the prepress sector of the graphic arts industry.

"If thousands of old customers and millions of new users start ro input, process, and output text, graphics and image data on their PCs with these new standards," a vendor has no choice but to adapt to this new "traffic code." It was further reasoned that the age of the "special, closed prepress system has already been ended" by the technology and standards providing data conversion among various environments.

This evaluation led to the development of Linotype's Series 2000, based on standard PC hardware. *(For a description and assessment of Series 2000, see Vol. 17, No. 10, p. 26; No. 13, p. 26; and No. 15, p. 19.)*

Industry Redefined: Do-it-Yourself System Integration

Much has been written and said about the "dark side" of the fourth wave—the supposed demise of the traditional graphic arts vendors and the consequences of having publishers become their own system integrators. Again and again during the week we heard from many users who were either toying with the notion of venturing from under their vendor's wing and trying out fourth-wave solutions, or, having already done so, were having second thoughts and wanting to scurry back under their vendor's protective wing—for the good reasons of valuing the vendor's application integration expertise, support and service.

However, there have always been a number of publishers who have never fit cleanly into categories addressable entirely by either turnkey professional systems or off-the-shelf standard solutions. These publishers have been forced into the role of being innovators—perhaps even against their wishes.

Today, in the midst of the fourth wave, we have a new round of what Liebson termed "do-it-yourself integrators," who in many cases would have just as soon bought the solution from a turnkey vendor—had they been convinced that such a solution existed.

Carol Buchanan, Boeing Computer Services

Carol Buchanan's problem was that she needed a publishing system capability that didn't readily exist—at least within the budget allotted to her. Her departmeut is responsible for developing documenration for software packages that, due ro the lead rimes involved, must be documented during the course of software resting and verificarion.

Because the software (and hence the screen shots necessary for inclusion in the ultimate documentation) changed frequenrly during the development process, it was necessary to have a publishing capability that would enable Boeing to lift "live" screens and reports from the applications being documented directly from the screen and insert them into the documents. Since another requiremenr was that this process be "cost-effective" (*i.e.,* not in a high-end system's ballpark), it made sense to combine the testing and documentarion entirely into a PC-based package. The problem is, no one package fitting the bill existed.

Automated Laser Publishing System. Working with a resident programmer who was also a documenter (an in-house resource whose importance shouldn't be underestimated in pulling off any do-it-yourself project), Buchanan's group developed the Automated Laser Publishing System (ALPS). It consisted of PCs running DOS on Ethernet, XyWrite III Plus as the editor, and more than 100 custom programs (for example, screen save and report save, indexer, fronr matter and table of contents generator), as well as shortcuts and bit-mapped graphic display.

The savings from auromating this process were obvious. Manually ir took an illustrator 5½ hours to produce one screen illustration. The ALPS system allows the same screen to be captured and processed in less rhan a minute. And by making graphics and production part of the writing activity, ALPS fosters teamwork and eliminates the formatting and layout of pages as a separate step, thereby "saving time, increasing productivity, improving quality, and cutting costs," according ro Buchanan.

The group developed standards regarding how each document should look—headers, footers, etc.—to ensure consistency among the versions being developed and to simplify the formatting process for those who were not graphic arts professionals.

Observations for vendors. Buchanan shared several observations from her experiences with ALPS. First, she believes that strict adherence to standards can inhibit innovarion.

Certainly, a fair amount of custom "innovation" was required on her group's part to get her job done. Second, it is important to manage the document process—not let it manage you—which is a message we heard consistently throughout the week.

Third, she believes training is overrated. Too much training can get in the way—"user friendly can turu into user hostile." Last, she recommends that software developers coming at publishing applications from the computer mainstream should carefully study and understand how publishers do their johs. As an example she cited a programmer who developed a tahle of contents generator that very neatly grouped all the heads together, followed hy all the first-level subheads, then by all the second-level subheads, etc.—for the entire document.

Steve Kotrch, Value Line

Shortly after joining Value Line—which is the nation's largest independent investment advisory service—Steve Kotrch was given an assigument that would make many other people run for the woods. As chairman of Value Line's automation committee, he was made responsible for automating and integrating Value Line's publishing process. The system had to be simple enough to allow financial analysts to write to fit. Yet it also need to integrate oue of the largest financial databases in the world into the publishing operation.

Using techniques derived from his study of anthropology, Kotrch did a copyflow study to determine what system would best fit Value Line's circumstances. What he found was that Value Line's publishing operation couldn't be easily typed—it was neither tech-doc nor a newspaper, but instead shared elements of both. It has five published services that come out weekly, as well as on-line database services.

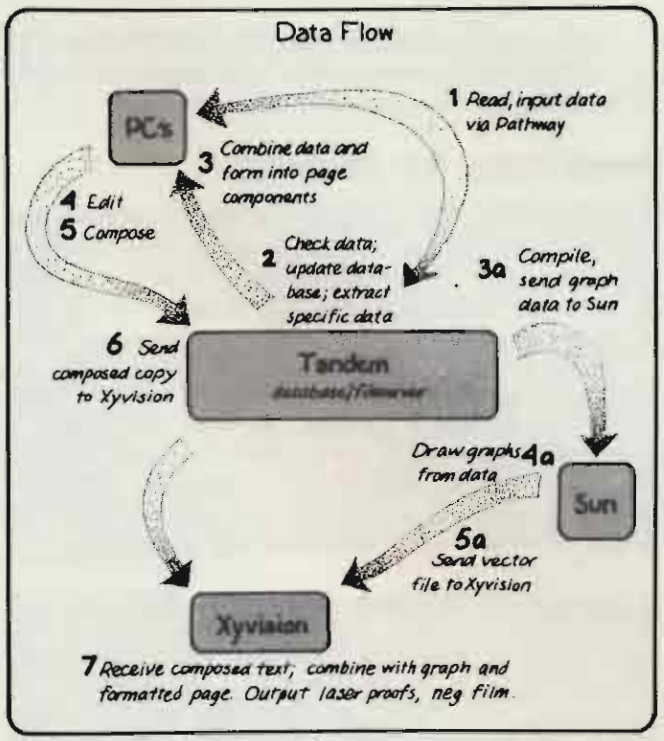
No big-system solution. Kotrch's team quickly came to the conclusion that a "big-system solution" wasn't appropriate for Value Line. Instead, they found that what worked was to integrate a number of smaller, independent systems, "each of which was dedicated to part of the publishing process, and each of which does its part very well."

What this meant was that Value Linc had to do a large chunk of the development work to bring it all together.

Value Line's financial data, residing on Tandems, had to be reformatted and made accessible to the rest of the system, as well as continue its role as the engine for electronic publishing. Tbis database had to be accessible by the financial analysts working on their PCs—and in such a way that it didn't burden them with computer-related nonsense during the data creation process. The goal was to make the financial analysts' interaction with the publishing process as easy and as transparent as possible.

Using Tandem's E-mail and terminal emulator software for PCs, Kotrch built a menu-based text editor using XyWrite (which he described as being not a word processor, but "an engine").

To create the mind-boggling financial graphs Value Line is noted for, Kotrch brought in a consulting firm to develop a program to extract and format the data, and employed Computer Associates' Tell-A-Graph software running on a Sun workstation to create the graphs.



The flow of data at Value Line.

Page make-up engine. Partly to simplify life for the analysts and partly because the capability was there, Kotrch tailored the system so that all composition was accomplished on PCs via XyWrite. This allowed analysts to write to fit, and also distributed processing, removing that task from the Xyvision system they brought in to do the page make-up.

Xyvision was chosen to do page make-up—particularly for its ability to integrate the graphs in vector form with the tables and text composed on the PC. We were surprised to learn that Value Line wasn't taking advantage of Xyvision's tabular composition capabilities. Kotrch claimed that with the overhead Xyvision puts into tables in the form of capabilities that they "didn't take advantage of," the *Ratings & Reports* page from their newsletter wouldn't fit into their system's memory; "Hence we just treat Xyvision as a slave typesetter and use it just to lay out and paste up pages."

Kotrch hastened to add that this was meant as no putdown against Xyvision; on the contrary, they believed that Xyvision was "the ouly system that could handle this level of complexity with the necessary degree of automatic processing." The layout of each page is stored in the Xyvision system. Precomposed copy blocks prepared using XyWrite and pre-composed charts and graphs are automatically dropped into their preassigned locations on the page by the Xyvision system.

Their own system integrator. The bottom line was that out of necessity Value Line had become its own system integrator. Kotrch indicated that he would have been "more than willing" to buy a turnkey solution had one existed, but that its "unique set of conditious and challenges" made that impossible.

Who, then, sbould be the system integrator? Kotrch answered that "whoever is in the position to ask—and to answer—the right questions" should be the integrator. In any event, given the technology available today and what it can

provide, he believes it should be possible for any company to provide itself with greater flexibility and competitive edge by taking advantage of it, wherever they may find it.

Harold Evans, R.R. Donnelley

Harold Evans also had a problem: no other vendor supplied what Donnelley needed. "We had no choice but to become a system integrator." Evans described to the audience the still-unannounced "Customer Publishing System"—but he cautioned it was a difficult and frustrating process to get there.

Evans described Donnelley's past frustrations with attempting to achieve system integration—the available "solutions" were newspaper oriented, and were "not geared to Donnelley's requirements, not provided in a timely manner, and were proprietary solutions." This resulted in a mismatch between competitive technologies of various vendors, and having to contend with proprietary font technologies.

Integration of functions. Significantly, Evans indicated that Donnelley no longer considers itself a "typesetting company"; rather, he views it as fulfilling the role of "integrating a range of functions and services" that its customers need. To this end, one of the principal components that was lacking was a means for customers to capture copy and art, lay it out, and then transmit it to Donnelley for creating the color separations and printing.

One means of providing a standard way to send data to Donnelley for production would be to accept PostScript input. To this end, Donnelley developed the Customer Publishing System, which is based on Display PostScript and output color PostScript. The system is designed to provide Donnelley's customers with a means of composing text, laying out pages, and integrating and proofing color line art at their local premises (as well as subsequently transmitting the finished copy and page geometries with callouts for color pictures to the Donnelley facility for final output).

Donnelley will shortly announce an agreement with Adobe to OEM both Display PostScript and output color PostScript, and a system built around a DEC or IBM workstation, Magna composition, and Donnelley developed layout and file-management software. The system currently picks up screen tints, reverses, and color type, but does not handle process color images due to the cost and complexity of today's color scanners (Evans noted that color PostScript can in theory handle 133-150 line screens).

The current implementation is geared toward catalog, insert and ROP publishers. Donnelley will eventually have a version for magazine publishers as well.

Lessons learned. Evans imparted some of the wisdom picked up from doing it the hard way. Above all, he stressed, understand your real requirements. Resist the temptation to trade hard requirements for cost savings. In addition, doing it yourself should be tempered by the number of people using the system—the more involved, the greater should be the incentive to work with a vendor or VAR to leverage their economies of scale.

Evans pointed out that there aren't strong VAR channels in the prepress market, which means that publishers are left with either doing it the established vendors' way, or going it alone. And there is a down side to not working with vendors if you can do so. He warned that if we drive all the system vendors away, we become solely responsible for our own situations. And that, he said, could mean a CLE—a Career Limiting Experience.

Industry Redefined: Design and Production

One of the oft-expressed "holy grails" of electronic prepress has been to get to the point where designers can work directly with electronic tools. The ideal electronic design system should provide the designer with tools which are at least as good as the manual tools available. It should be able to produce the various proofs required for approval and should be able to generate electronic files which can drive black-and-white and color production systems directly without the need to have someone else interpret and re-implement the designer's intention.

Further, graphic arts design has never been a capital-intensive process. It has involved primarily the talent of creative people, plus services and consumables which are either very inexpensive or which can be billed back directly to the client. No one has any real means of measuring and quantifying the productivity of a designer, so no one has any reliable means of cost-justifying capital equipment which will make a designer more productive.

Until very recently, most design systems have been relatively expensive. They have required lots of compute power, lots of interactive color capabilities, and lots of specialized software. They have been used primarily in applications (such as package design) where the cost of consumables is high and the rewards for being able to try out a number of alternatives, shorten lead times, and rework variations of previous designs are even higher.

It has been very clear to just about everyone involved in design applications that before design systems can have widespread impact, they must be relatively inexpensive. Fortunately, the technology which will make this possible is now at hand, or almost at hand.

The afternoon session on design and production explored tools available for the design process, and their links to production systems. The presentations included two designers with practical backgrounds in the area, and three vendors that are approaching the market from different directions.

Tom Weisz, Weisz + Yang. Weisz + Yang has been a pioneer in using Macintoshes, very large displays (for conference room presentations), color printers, and a full range of Macintosh software packages (PageMaker, Quark Xpress, Image Studio, Illustrator, Freehand, Lightspeed, etc.) for design (and production) of a wide range of materials.

Weisz + Yang now does approximately 80 to 85% of its design work on the screen, reverting to conventional methods where these are faster, easier and/or more effective. The company is particularly interested in exploring ways in which the electronic tools can speed the communication process between designer, client and production house.

To this end, Weisz demonstrated an approch he calls "MacProof." His firm had created a four-page color brochure using Lightspeed CLS software running on a Macintosh II. Intermediate proofs were output on a color thermal printer. Final output was sent (via Handshake) to a Scitex production system.

At the seminar, Weisz sent the file from its Connecticut office to a Macintosh II driving a projection screen so that seminar attendees could view the results. An operator working on the Macintosh in California made rough changes to the file, while talking to the designer over the phone. He could have transmitted the file back to Connecticut for the designer to view, he could have asked the designer to make similar changes to the original copy and transmit the revised piece to California an hour or so later (which is what actually happened in this case), or, he could have simply viewed the job on his screen and suggested changes to the designer as he might have done with a hard-copy proof.

The screen, thermal printer and printing press all reproduce a somewhat different color space (range of colors), so color proofs on the screen or on thermal output do not provide an exact match of the eventual printed product. Nevertheless, Weisz feels that the screen proofs, thermal printer proofs and proofs from color xerographic printers will be adequate for most working design review.

Although not perfect, Weisz believes that the tools now available allow designers to do things they could not do before. They provide the ability to get useful proofs back to the client quickly and easily, and they eliminate the need for most reworking at the production stage. (In most respects, the final electronic files are used directly for production.) All of this suggests a complete restructuring of the whole design/production process.

Alyce Kaprow, The New Studio. Alyce Kaprow thinks that realistic use of computer tools for the design process is further off than does Weisz. She emphasized that the creative design process is inherently non-linear, whereas production is linear and rational. The tools required are therefore very different. Production systems are designed for *operators*. Design systems should be designed for *artists*. Design artists use a wide repertoire of tools. Analogous capabilities must be supported on any system intended for their use.

Most of the pieces of a good design system now exist. (She cited Lightspeed, Genicom and Crosfield as three examples), but they need to be brought together. And, the total package must be much less expensive if designers are to afford it.

Kaprow believes that all of this is now beginning to happen. As it does, she believes that the new tools will give designers new capabilities which will change not only design/production methodology but the look of the finished product as well. She foresees that design computers will become necessities within the graphic design studio and ad agencies. People will use them from the inception of a project through completion.

John Grimaldi, Crosfield Design Systems. John Grimaldi is vice president of design and production of what was Dicomed and is now (since its acquisition by Crosfield Electronics) called Crosfield Design Systems. Dicomed wandered into the graphic design arena from the presentation slide end of the business. (Further evidence of the increasing ties between print publishing and presentations discussed in the following section.)

Dicomed had begun working with Crosfield to link its design systems into Crosfield color production systems. It was this work which eventually led to the acquisition of Dicomed by Crosfield.

The Crosfield design/production link is still in its infancy, but this will soon evolve into relatively transparent facilities for transferring not only page files but image files as well. Eventually, the design and production systems could even exist cooperatively on the same network.

Grimaldi confirms that Crosfield expects to use the integrated Crosfield design/production links to provide a complete inception-to-final execution for color materials. It will, of course, encourage input into Crosfield production systems from other (non-Crosfield) design systems, but the links between two Crosfield systems will be closer.

It will be interesting to see how this will turn out. Scitex is pursuing an "open" approach to design/production integration by trying (successfully so far) to turn its Handshake interface into a *de facto* industry standard. Crosfield is saying that it will talk to the rest of the world, but that it sees real value in an integrated single-vendor solution. At the moment, it would appear to us that the Scitex approach is more in tune with the direction the industry is going.

Marla Milne, Letraset. Thus far, the discussion had focussed on use of electronic tools to design a variety of print materials, with emphasis on type, graphics, color etc. Marla Milne introduced another element by advocating that designers are beginning to view electronically stored digital picture images as platforms for creative work.

This is not an entirely new concept. Companies such as Quantel have already developed and installed systems in which designers create fanciful color images based on

scanned images but with a great deal of creativity thrown in. These are expensive systems, justifiable only in special situations.

Letraset is working to make creative manipulation of photographs available to virtually any designer. Its first product in this area, Image Studio, is a facility for editing and retouching black-and-white photographs. Milne believes that designers want to be able to do this, and that they will want to get involved with experimenting with the effects of different screen treatments, changes in tonal values and the like, as well as airbrushing and other editing features. These tools, she contends, will blur the distinctions between traditional forms of illustration and photography.

There are still limitations with the desktop technology. Scanned continuous-tone images require a lot of data storage. Effective manipulation of these images requires as much computing power as you can get. Output of halftones through PostScript output devices can be painfully slow. But all of these problem areas are being addressed. Milne believes that there is still work to be done in terms of improving quality of output of halftones from desktop publishing systems, but that rapid progress is being made. The problem of data storage remains. (High-quality digitized continuous-tone images take up a lot of data storage.) But she believes that the ability to work directly with a digitized photograph is so compelling that designers will embrace the tools. The response thus far has been enthusiastic.

The next step for desktop systems will be the addition of spot color. Process color is somewhat further off—largely because of all of the black art associated with mapping colors accurately from screen display to printing press.

Jim Stoneham, Lightspeed. The current division of responsibilities within the graphic arts involves a strict separation of function between designers and producers. Designers have responsibility for visualizing the final product, presenting their ideas, and specifying what should be done by production. Producers are responsible for the content, assembly and manufacture of the product. A great deal of high-level time is spent in managing the communication between these two communities. Thus far, the production process has been automated, but the design process has been left largely untouched.

Stoneham believes that this is now changing. He believes that graphic arts will follow the same pattern as CAD/CAM and other industries that have adopted computer tools.

He does not, however, believe that design systems will take over responsibility for the entire process. He believes that designers (and design systems) will focus on geometry, photos, color and typography, while producers (and production systems) will concentrate primarily on handling high-resolution scanned images, photo retouching, final proofs, and quality control. Technology will permit close integration of the two worlds.

This suggests that type composition is ultimately the responsibility of the design system. Stoneham was asked in the question-and-answer session: if this is the case, why does Lightspeed not provide better text composition tools? He replied that he believed its tools are adequate for the purpose.

Industry Redefined: Presentations

The session on presentations reinforced the theme heard elsewhere in the Seminars that presentation of information via overheads or slides is becoming increasingly closely linked with presentation of information in other forms, including ink on paper.

Amanda North, Apple Computer. Amanda North, who has been responsible for Apple's move into the desktop presentation market, presented a rosy picture of the potential growth of the computer-generated presentation market. There are, she said, 15 million "frequent presenters" in the U.S. alone. Only 15% of the visuals they use are prepared using a computer. She cited projections which predict a 62% annual growth rate for the computer-generated presentation business, with an annual market of $1.8 billion by 1991.

The problem is that people have been making similar projections about the growth of the presentation market for some time now, and none of them have come true. Things may be different this time, though; there does appear to be increasing momentum behind using WYSIWYG personal computers to prepare presentation materials.

North sees desktop presentations and desktop publishing as being closely linked, with increasing demand for multimedia communication of information (most specifically, visuals supported by written materials). At present, business presentations (70% of the market) represent the dominant application, with education next (17%), followed by government (7%). Overheads are likely to continue to be the dominant form of presentation, with growing use of direct computer display through overhead projectors using an LCD panel which fits onto the projector. More formal presentations will continue to move towards slides—especially since it is getting easier and easier to produce 35mm slides via links to slide-making service bureaus and low-cost desktop slide recorders.

Sandy Beetner, Genigraphics. Sandy Beetner made the strongest and most articulate case for service bureaus we have ever heard. Genigraphics service bureaus have concentrated on slide production, but everything she said was directly applicable to companies that specialize in typesetting and other graphic arts services as well.

With the advent of desktop presentation software which runs in personal computers, low-cost laser printers (for making overheads), and, now, low-cost desktop film recorders, the "professional" slide-making system vendors and service bureaus are coming under exactly the same kind of pressure that typesetting system vendors and commercial typesetting shops have felt.

They are responding in exactly the same fashion: "professional" slide-making systems are being moved over to run on fourth-wave standard platforms, and slide-making service companies are moving aggressively to service the growing number of users who are creating their own slides on their desktop computers.

This means that slide-making service centers, like their commercial typesetter counterparts, will find growing business in accepting data files sent in on floppy disks or transmitted directly from their customers, and running these out on high-resolution recorders. The customer does not have to have his own film recorder (which has been very expensive), his own photographic processing facility, or his own slide-mounting equipment.

But, even though it may grow considerably, the business of selling output machine time by the slide is likely to be a competitive (and hence low-margin) one. Beetner places her faith in the continuing need for professional services for effective communication. She characterizes most customers as amateurs. Amateurs will need to turn to professionals when they need any or all of the following:

- High-profile presentation or video
- A project which requires design and/or conceptualization
- Any project with heavy color requirements
- Custom design or illustration

To this we would probably add: heavy load under tight deadline conditions. (Service bureaus exist for customers who want to go home at 5 PM at night.)

It is interesting to note that the range of services proposed by Genigraphics encompasses far more than simply slides. Beetner included video, printed materials and virtually every other sort of high-impact corporate communication. Clearly, Genigraphics sees itself as serving client's communication needs, not just its slide-making needs.

Richard Tompane, Mirus. The slide-making business is entering a period of significant change. Mirus is one of the catalysts of that change.

Until now, slide film recorders have been expensive machines attached to expensive (and largely proprietary) computer systems. There was desktop alternative: the Polaroid Palett. But this produces video screen-resolution slides which do not have the crisp impact or legibility of professionally-produced slides.

Presentation Technologies pioneered the low-cost 35mm market with a photo-mechanical unit which bears a striking resemblance to a second-generation photo-mechanical typesetter. Mirus contends (with some reason, we think) that what you really want is a full digital output slide imagesetter that produces quality nearly equivalent to that produced by the high-priced recorders.

Mirus entered this market at the Seminars. Three weeks later at the annual NCGA show, we found a total of five desktop units. Besides Mirus, Presentation Technologies and Lasergraphics, these included new announcements from "high-end" supplier Matrix Instruments, and General Parmetrics. *(See the April issue of The Seybold Report on Desktop Publishing, pp. 40–41.)*

Some people have tried to draw the analogy between the $6,000 desktop slide recorders and the LaserWriter. The implication is that these machines will result in an explosion of slide output. There are a couple of flaws with the analogy.

On the positive side, the output of the Mirus machine, for example, looks a lot closer to the output quality produced by the high-priced recorders than LaserWriter output is to typeset output. But on the negative side, a laser printer produces immediate output on very inexpensive material. A slide recorder exposes film. You must still send the film to be processed and mounted before you can see the results. (Few offices are likely to have their own color film processing equipment.) If you have a local shop with a one-hour slide developing machine you are in luck, but for most of us the turn-around will probably be no quicker than it would have been if we had sent our data file to a service bureau which had a film recorder and film processing/slide mounting materials on site.

One intermediate alternative may be the use of Polaroid's new instant slide film in one of these recorders. (Polaroid showed up at NCGA with a Mirus recorder with Polaroid covers on it.) We will be anxious to see what qnality slides this combination can produce.

Laurel Brunner
Craig E. Cline
Jonathan W. Seybold
William J. Solimeno
Andrew Tribute

Addresses of Vendors Demonstrating at Seybold Seminars

Abaton Technology
48431 Milmont Dr.
Fremont, CA 94538
(415) 683-2226

Adobe Systems
P.O. Box 7900
Mountain View, CA 94039
(415) 961-4400

Aldus
4111 1st Avenue South
Suite 200
Seattle, WA 98104
(206) 628-6675

Alphatype
506 West Campus Dr.
Arlington Heights, IL 60004
(312) 259-6800

ANA Tech
10499 Bradford Rd.
Littleton, CO 80127
(303) 973-6722

Apollo Computer
330 Billerica Rd.
Chelmsford, MA 01824
(617) 256-6600

Apple Computer
10455 Bandley Dr.
Cupertino, CA 95104
(408) 973-2566

ArborText
535 W. William St.,
Suite 300
Ann Arbor, MI 48103
(313) 996-3566

Archetype
145 South St.
Boston, MA 02111
(617) 482-2739

Auto-trol Technology
12500 N. Washington St.
Denver, CO 80233
(303) 252-2104

Barneyscan
1198 10th St.
Berkeley, CA 94710
(415) 524-6648

BellSouth
675 W. Peachtree N.E.
Atlanta, GA 30375
(404) 939-9379

Addresses of Vendors Demonstrating at Seybold Seminars (continued)

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2244 N.W. 21st Terrace
Miami, FL 33142
(305) 635-0482

Bitstream
215 First St.
Cambridge, MA 02142
(617) 497-6222

The Company
400 World Trade Blvd.
Boston, MA 02210
(617) 439-5346

Compugraphic
200 Ballardvale St.
Wilmington, MA 01887
(617) 658-5600

Conographic
16802 Aston St.
Irvine, CA 92714
(714) 474-1188

Context
8285 S.W. Nimbus
Beaverton, OR 97005
(503) 646-2600

CPS
3 Astro Place
Denville, NJ 07834
(201) 586-9330

Crosfield Data Systems
670 N. Commercial St.
Manchester, NH 03101
(603) 623-3330

Crosfield Electronics
65 Harristown Rd.
Glen Rock, NJ 07452
(201) 447-5800

CSE
7630 Little River Tpk., Suite 216
Annandale, VA 22003
(703) 941-0917

CSS Laboratories
1641 McGaw Ave.
Irvine, CA 92714
(714) 852-8161

data recording systems
80 Ruland Rd.
Melville, NY 11747
(516) 293-2400

Datacopy
1215 Terra Bella Ave.
Mountain View, CA 94043
(415) 965-7900

Datalogics
441 West Huron St.
Chicago, IL 60610
(312) 266-4444

Dataproducts
P.O. Box 746
Woodland Hills, CA 91365
(818) 887-8000

DEC
Continental Blvd.
Merrimack, NH 03054
(603) 884-5111

DocuPro
620 Clyde Ave.
Bldg. B
Mountain View, CA 94043
(415) 960-1214

Eastman Kodak
343 State St.
Rochester, NY 14650
(716) 724-1073

ECRM
554 Clark Rd.
Tewksbury, MA 01876
(617) 851-0207

Electronic Publisher
208 S. Marietta
Excelsior Springs, MO 64024
(816) 637-7233

Folio
100 View St., Suite 106
Mountain View, CA 94042
(415) 969-9760

Font Technologies
90 Industrial Way
Wilmington, MA 01887
(617) 658-5600

Frame Technology
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(408) 433-3311

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(914) 368-2787

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Culver City, CA 90230
(213) 390-8611

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1255 Post St.
San Francisco, CA 94109
(415) 771-7001

Intergraph
1 Madison Industrial Park
Huntsville, AL 35807
(205) 772-6392

Interleaf
Ten Canal Park
Cambridge, MA 02141
(617) 577-9800

Island Graphics
4000 Civic Center Dr.
San Rafael, CA 94903
(415) 491-1000

Itek Graphix
34 Cellu Dr.
Nashua, NH 03063
(603) 881-8448

LaserMaker
1117 Eleventh St., Suite 105
Manhattan Beach, CA 90266
(213) 379-2299

LaserWare
Box 668
San Rafael, CA 94915
(415) 453-9500

Lightspeed
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Boston, MA 02210
(617) 338-2173

Linotype
425 Oser Ave.
Hauppauge, NY 11788
(516) 434-2000

Lotus Development
Document Product Div.
161 1st St.
Cambridge, MA 02142
(617) 577-8500

Magna Computer Systems
14724 Ventura Blvd., Suite 1210
Sherman Oaks, CA 91403
(818) 986-9233

Mansfield Systems
550 Hamilton Ave., #150
Palo Alto, CA 94301
(415) 326-0603

MegaVision
P.O. Box 60158
Santa Barbara, CA 93160
(805) 964-1400

Metro ImageBase
33 W. 34th St.
New York, NY 10001
(212) 947-5100

Micrografx
1820 N. Greenville Ave.
Richardson, TX 75081
(214) 234-1769

Microtek Lab.
16901 S. Western Ave.
Gardena, CA 90247
(213) 321-2121

Mirus
445 S. Antonio Rd.
Los Altos, CA 94022
(415) 949-5544

Moniterm
5740 Green Circle Dr.
Minnetonka, MN 55343
(612) 935-4151

Networked Picture Systems
3960 Freedom Circle
Santa Clara, CA 95051
(408) 748-1677

Nissho Electronics
17310 Redhill, Suite 200
Irvine, CA 92714
(714) 261-8815

Omnipage
1000 Pittsford-Victor Rd.
Pittsford, NY 14534
(716) 385-8888

Pixelogic
38 Montvale Ave.
Stoneham, MA 02180
(617) 438-5520

Prepress Technologies
543 Encinitas Blvd., Suite 109 B
Encinitas, CA 92024
(619) 753-0194

PS Publishing
290 Green St., Suite 1
San Francisco, CA 94133
(415) 433-4698

Quark
300 S. Jackson, Suite 100
Denver, CO 80209
(303) 934-2211

Qubix Graphic Systems
1255 Parkmoor Ave.
San Jose, CA 95126
(408) 292-4000

RasterOps
10161 Bubb Rd.
Cupertino, CA 95014
(408) 446-4090

Ricoh
3001 Orchard Pkwy.
San Jose, CA 95134
(408) 432-8800

RIPS
4665 Nautilus Ct. S.
Boulder, CO 80301
(303) 530-2910

Rise Technology
One Kendall Sq.
Cambridge, MA 02139
(617) 491-6601

Scitex America
Eight Oak Park Dr.
Bedford, MA 01730
(617) 275-5150

Scribe Systems
Commerce Ct., Suite 240
4 Station Square
Pittsburgh, PA 15219
(412) 281-5959

Serif
1001 Jefferson Plaza, Suite 112
Wilmington, DE 19801
(603) 888-9725

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186 Wood Ave. S.
Iselin, NJ 08830
(201) 321-3400

SII
P.O. Box 13626
Sacramento, CA 95853
(916) 929-9481

Silicon Beach
9580 Black Mountain Rd.
Suite E
San Diego, CA 92126
(619) 695-6956

SlideTek
900 Larkspur Landings Cir.
#100
Larkspur, CA 94939
(415) 461-5400

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(201) 930-0315

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(216) 963-8337

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SuperMac Technology
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(415) 964-8884

Tektronix
P.O. Box 500
Beaverton, OR 97077
(503) 627-7111

Texet
37 Broadway
Arlington, MA 02174
(617) 641-2900

Ultre*
25 Harbor Park Dr.
Port Washington, NY 11050
(516) 484-7373

Unda
575 Madison Ave.
Suite 1006
New York, NY 10022
(212) 605-0460

URW
One Tara Blvd., Suite 210
Nashua, NH 03062
(603) 882-7445

Xerox
100 Clinton Ave.
Rochester, NY 14644
(716) 423-4556

The Latest Word

Third user interface standard

Sun's Open Look

As promised by Sun Microsystems president Scott McNealy at the Seybold Seminars in March, Sun Microsystems and AT&T have announced a consistent application program-level user interface for Unix software. This, we believe, is the final missing piece which will make the Sun/AT&T converged Unix V.4 the "third alternative" to Microsoft/IBM OS/2 and the Apple Macintosh environments for publishing systems.

You will recall from our coverage of McNealy's Seybold Seminars presentation *(see Vol. 17, No. 14)* and of the new Sun386i computer *(Vol. 17, Nos. 14 and 15)*, that Sun has been working feverishly over the past year to pull together the confusion and diversity in the Unix world to create a single, coherent standard that could serve as the foundation for greatly expanded use of Unix-based systems. The first step was an alliance with AT&T (which will eventually purchase a 20% stake in Sun) to develop a new Unix that converges the two principal variants of Unix (AT&T System V and Berkeley 4.3). This will include a "converged" windowing system which combines the Sun NeWS windowing scheme with the system supported by most other vendors: the standard X.11 version of MIT's X-Window.

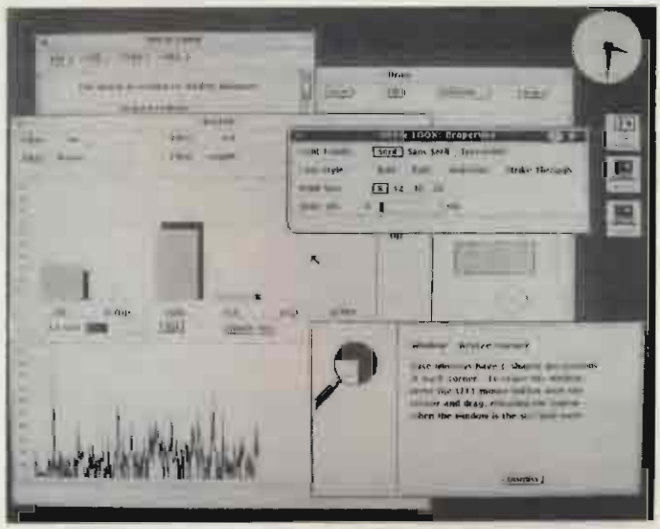
At the same time, Sun is leading a drive to focus the Unix market on a limited number of binary-level computer interfaces so that a Unix application program can be taken out of a box and run on a number of different Unix machines without having to be specially adapted for each one (as is currently the case).

In essence, Sun has been driving a consolidation of Unix from the operating system level up. The final missing pieces were a consistent Macintosh-style user interface for Unix programs, and the program development "toolkits" to support this.

Consistent user interface. As we discussed in our Seybold Seminars coverage, the industry has finally come to realize just how important a consistent user interface is. The Macintosh has shown the tremendous value of having essentially the same easy-to-use user interface for all application programs. It makes it possible to assemble your own collection of application software which functions pretty much as if everything is part of the same system. The skills you develop while working with one program carry over to using others. You can pick up a new program, or one you have not used in a while, and make immediate use of it.

This sort of consistency from one program to the next is important when you run one program at a time (as most Macintosh users still do). It becomes *essential* when you move to an environment in which you are running multiple programs concurrently in different screen windows and want to switch between them at will. The circuits in the human brain quickly fry if the user is confronted with new user interface conventions every time he clicks into a different window on his computer screen!

Politics of user interface. It was clear that there is a crying need for a consistent graphic user interface for Unix programs. It was also clear that since the Sun/AT&T alliance is driving the emerging Unix standards, whatever Sun/AT&T decided to do would probably become the standard Unix interface. Microsoft wanted Sun to do a Unix version of its OS/2 Presentation Manager. Since the user interface is so crucial to an application program, this would have made it easier for program developers to "port" programs between Unix and OS/2. Apple did *not* want Sun to adopt the Macintosh user interface for precisely the same reason: it does not want to make it too easy for developers to "port" Macintosh programs into other computer environments.



Sun/AT&T Open Look. *This picture shows several windows open on the screen, plus icons for a few basic functions on the system desktop. Note the comand buttons in each window. At the bottom right is a "help" message with a magnifying glass.*

This paradox is easy to understand: most of the available software designed for a graphic user interface has been written for the Mac. Everyone realizes that the next two years will be the crucial period for establishing the relative market positions of OS/2, Macintosh and Unix. Microsoft and (now) Sun are working frantically to attract as much new software as possible to their environments. Apple is working just as hard to protect and exploit its lead. Hence, for example, the Apple suit against Hewlett-Packard and Microsoft *(see Vol. 17, No. 13, p. 35)*. This is a hard-ball game being played for enormous stakes.

Sun and AT&T, for their part, clearly regard OS/2 as the real competition. Sun, in particular, was determined that it had to offer a real advantage over OS/2 in the form of a user interface which is designed to exploit the Unix workstation environment: large display screens, multiple screen windows, and the ability to run several programs concurrently.

Another factor entered the picture last fall when Xerox entered into the Sun/AT&T fold. This gave Sun the opportunity it had hoped for to license Xerox's pioneering work in graphic user interfaces. Sun had based its work on many of the original Xerox PARC concepts, plus some of the concepts Xerox had introduced with its ViewPoint software for the 6085 workstation. Sun did not want to face a legal challenge from either Xerox or Apple.

Open Look objectives. The objectives for the Unix user interface were straightforward:

1. Leverage the Xerox work, along with that done by Sun over the past few years.
2. Provide a simple and consistent user interface which is also fast and efficient for experienced users.
3. Use good graphics where they are appropriate, and words where words are most appropriate.
4. Design specifically for the large screen, multi-tasking Unix environment.
5. Harmonize as much as possible with the other major user interfaces (Mac and OS/2 Presentation Manager). This makes it easier for users to migrate and for software to migrate.
6. Make the interface open (available to anyone) to encourage its adoption as a standard for future Unix software.
7. Get the product to market as quickly as possible while the market window is still open.

Special characteristics. Basically, Open Look is a multi-window graphic user interface of the Xerox-Macintosh-Microsoft Windows-Presentation Manager variety. Some of the interesting distinguishing characteristics include:

- *No Finder.* The first thing you notice is that the current version of Open Look does not have a Macintosh-style display for viewing folders, documents and programs. There are, instead, destkop-level icons which represent different tasks which can be performed. (An early version of this approach is included with the software for the new Sun386i workstation described in Vol. 17, No. 14, pages 34-37.)

  The file structure can be displayed in graphic form in a window on the screen. (See *The Seybold Report on Desktop Publishing*, Vol. 2, No. 8, page 4 for a picture of the similar "Organizer" display on the Sun386i.)

  This is the one area where we disagree with what Sun has done. The rest of the implementation is remarkably well thought out.
- *Command menus.* There is no command menu bar across the top of the screen. Instead, a separate command menu bar appears in each window. The default location for the bar is across the top of the window, but the application program can place it elsewhere if that works better for the tasks being performed by that program.

  The consequence is that the user does not have to move the cursor to the top of the screen to access command, only to the top (or bottom) of the current window. This can make a big difference when you are working with a large display screen.

  Windows can be split (to view different parts of the same document). Each split can have its own menu bar.
- *Layered menu buttons.* Plain menu buttons simply execute a command. If the graphic used for the button appears to be the top of a stack, pressing the "menu" key on your mouse will cause the typical list of commands to pop down.

  The same applies to commands within a pull-down menu: if the command button is layered, there is an additional menu beneath that command. Menus can be as many levels deep as the application programmer desires.
- *Quick-execute defaults.* If the user points to a command button and clicks the "select" button rather than the "menu" button on his mouse, he will execute whatever is currently selected as the default choice in the menu(s) which lie under that button. This is a quick way of executing the same command over and over again.
- *Push pins.* There is a "push pin" icon at the top of each command menu. Push this in, and the menu stays pulled down to make it easy to access quickly. You can also tear off the menu and stick it down any place on the screen. This capability is essentially the same as the Radius extension to the Macintosh user interface.
- *One-, two- or three-button mice.* On a three-button mouse, the left button is used to select something, the middle button to extend the selection, and the right button to pull down a menu. On two- or one-button mice, the same functions are supported through shift levels of the single or double buttons.
- *Window sizing.* The screen window can be resized from any of the four corners, not just the lower right corner—a real convenience.
- *Enlarge and reduce.* Any window *and its contents* can be enlarged (so that everything appears larger on the screen to make it easier to read) or reduced (so that it takes up less room on the screen). The user can set his own standard default enlargement/reduction settings for "small," "medium," "large" and "extra-large" window sizes.

  This is an immensely useful feature. You can click on the "extra-large" command to view a window over-size, then click on the "small" command to shrink it down when you just want to be able to keep track of what is happening in that window. (Even at the smallest size, the window still displays the same information—it's just that everything is shrunk down to Lilliputian size.)
- *Scroll bars.* All of the functions for scrolling up and down through a document have been grouped on the scroll bar which appears on the right-hand side of the window. The conventions are slightly different (and definitely better) than those used by Apple or Microsoft.
- *Magnifying glass.* If you ask for "help" at any point in a document, a help screen which contains up to 20 lines of text will open up. The help screen contains a magnifying glass graphic that highlights the exact location in your document that is referred to in the message.
- *Cursor jumping.* System messages and help messages to which the user must respond take control of the cursor and place the mouse pointer directly over the "default" response button. The user has only to click the mouse to confirm the message.
- *3-D breaks.* Alert messages to which the user should pay particular attention pop out of the screen in simulated 3-D fashion. Cute.
- *Property sheets.* A system-level property sheet serves a function similar to the "control panel" in a Macintosh system in setting user preferences. Property sheets associated with each window can be used to set user preferences which relate to the application program running in that window.
- *Cut/copy/paste.* The Sun metaphor is cleaner than that used by most other graphic user interfaces. The ubiquitous cut, copy and paste commands operate on icons of files, folders or programs exactly as they do within a document. There is no need for a separate set of commands for manipulating files. Nor is there any need for a trash can icon. You simply "cut" a file or folder to delete it.
- *Mac editing commands.* Within an application program, the method of selecting and manipulating text and graphics appears to be very Macintosh-like.

Ideal for publishing? We will need to spend some time with Open Look, but our initial reaction is quite positive. The

interface appears to be clean, consistent and efficient—far better than Microsoft Windows/Presentation Manager (which feels as if it were designed by a committee). It is slightly more complex than the Mac user interface, but the refinements are all ones which should have real benefits for serious users doing serious work on a large-screen machine. We expect that it will be widely used for new publishing applications.

Schedule. AT&T announced Open Look at a press conference on April 12. Sun and AT&T will deliver preliminary specifications to selected developers, system vendors and OEM customers starting in June. After Sun has heard their reactions, the final spec and a style guide will be published. Developer conferences will start in September, at which time the first developers' toolkits will be released.

There will be three initial toolkits:

- *X-Window.* AT&T will release the toolkit that will enable programmers to use Open Look in an X-Window windowing environment. This will be released at the time the new converged Unix (System V release 4.0) is released spring/summer of 1989.
- *NDE.* A toolkit for the extended Unix with support for combined X-Window/NeWS will be released at the same time. This will be available from both Sun and AT&T.
- *SunView.* Sun will have a toolkit for its current SunView environment available slightly before the release of converged Unix.

Software support. The main point of all of this is to attract a growing body of application software to the Unix environment. At the announcement, a total of 36 hardware and software vendors (including Ashton-Tate, Autodesk, Borland, Lotus, Symantex, Unisys, WordPerfect, Informix, and, of course, Xerox) announced their support for Open Look. Many of the developers of Unix-based publishing systems with whom we have talked since the announcement have told us off the record that they expect to support the Open Look user interface.

Sun competitors. If Open Look is truly to become the Unix standard, then Sun's workstation competitors have to adopt it as well. Sun and AT&T are trying to make this easier to swallow by presenting Open Look as an AT&T product (with development work done by Sun for AT&T), and by making licenses available directly from AT&T, so that competitors do not have to go directly to Sun.

However, the grumbling among competitors about the Sun/AT&T juggernaut will surely continue. The fact that Open Look will be available first on Sun machines will not help this situation. Nevertheless, we think that the need for a common Unix user interface is so strong, and the benefits so great, that most Unix vendors will go along with Open Look. Some of the most likely holdouts include DEC, Apollo, Hewlett-Packard and Next—all of which have their own user interfaces and their own strategic reasons for favoring their own developments.

Apollo cuts 4000 price by 35%

Apollo has cut the price of its Domain 4000 workstations, leaving the entry-level price of the 68020-based machine, including 19" monochrome monitor, at $8,990, down 35% from $13,900. Prices for the color version now start at $13,990, a 26% reduction.

In addition, Apollo announced that through an OEM agreement with Texas Instruments it is now offering the TI 2100 8-ppm PostScript laser printer. The company also announced a new floating-point accelerator for the Series 4000; support for PHIGS and GKS graphical interfaces; and reduced prices of add-ons for the 3000 and 4000 workstations.

As effort to sell unit intensifies

Hale takes over Varityper presidency

Ed Hale has returned to Varityper to assume the role of president, which was recently vacated by Joe Verderber. Hale's appointment was expected to take effect on May 1. Verderber has been given a new post of corporate vice president for business development. He had recently stepped down as president to concentrate on efforts by the parent, AM International, to sell the Varityper Division.

We were told that Verderber will remain with the company to continue those efforts, as well as to serve as a consultant to other AM operating divisions assessing various new business development opportunities. It wasn't made clear that he will have a role with Varityper after the unit is finally sold.

Ron Smith, who has been filling in briefly as acting president prior to Hale's arrival, will return to his regular position as vice president for customer service.

Although there has been no official word regarding progress in the 10-month effort by AM International to sell its Varityper Division, rumors that a sale is imminent have intensified recently. All parties are being cautious, though, in view of some earlier negotiations that appeared ready for completion, only to hit a snag at the last minute.

We believe that one of the stipulations by AM in its sales effort is that it wants to retain the rights to distribute Varityper products internationally. This would make a good fit with a company that doesn't have an overseas distribution network, but it would be less attractive for a company that wants worldwide rights.

Hale, who will report to AM International's president, Jerry O. Williams, had held a variety of marketing, product planning and sales positions with AM International from 1953 until 1979, including vice president and general manager of the Varityper Division from 1973 to 1979. When he left that post, he was succeeded by Bob Trenkamp, now president of Tegra. Hale then became executive vice president, operations, for Sun Electric, supplier of computer-controlled automotive diagnostic systems. He has also served as president of Pertec Computer and Royal Business Machines. His most recent position was senior vice president of Scan-Optics.

At the time he left AM to join Sun, Hale wrote us a letter in which he commented, "As you can appreciate, I'll continue to be a very interested observer of the information processing industry, and no doubt our paths will cross in the future." We're glad to welcome him back.

But not printers

Kodak buys IBM copier business

Eastman Kodak has agreed to buy most of IBM's U.S. copier business. Kodak will take over sales and support of IBM's copier products. But IBM will *not* go out of the copier business. It will continue to build IBM copiers for Kodak to sell, as well as to develop copier technology—largely because this is the base for xerographic printer technology and IBM does not want to be totally dependent upon OEM purchases for laser printers. (It already buys the printer engines for most of its 6- to 90-ppm printers from Kentek, Ricoh, Minolta and Kodak.)

CG's complete fourth-wave solution

Distributed Network Publishing for CAPS

At the recent Seybold Seminars, John Duker of Compugraphic took exception to our fourth-wave model, misunderstanding it to mean that we believe *all* users can and want to assemble their own systems without help from system integrators. As we indicated in our coverage of his talk *(see p. 30)*, we believe that some people will want to "do it their way," but that the majority will want to work with a system integrator at least as a partner in the endeavor. At the time Duker laid out plans for additional products, such as more plain-paper printers and presentation graphics systems, but he didn't drop any hints that Compugraphic was about to plunge head first into a complete fourth-wave strategy of its own.

Distributed Network Publishing. When Compugraphic announced its Distributed Network Publishing (DNP) architecture for CAPS at the recent CEPS event in Chicago, not many of the attendees understood its significance. The highlight of the announcement was the ability to import WordPerfect manuscript files directly into CAPS without the need for inserting any manual markup.

It was also announced that the DNP will comprise an entire set of tools—utilities, translators, advanced menus and markup systems—as well as "system integration services."

Fourth-wave architecture. It wasn't until we saw a block diagram of Compugraphic's DNP that we understood the full significance. Compugraphic's DNP is nothing less than a complete fourth-wave system integration solution. DNP for CAPS consists of standard Sun workstations, PCs, Macs and laser printer proofers, all tied together using standard Sun Network File System and Tops protocols.

DNP begins with one or more CAPS systems linked to a network of desktop computers via the Sun PC-NFS. The PCs operate as if they were external workstations to CAPS, sending data to the system from remote locations. The new series of DNP tools can automatically prepare the data for composition, pagination and proofing output through CAPS designs—in the background, without the aid of CAPS operators.

The workstations themselves are tied together using Sun's NFS. Macs are linked in via Sun's Tops network. The WordPerfect translator handles the automatic creation of appropriate CAPS markup commands. (Although not announced at the show, Compugraphic officials indicated that additional translators for XyWrite, Quadex and Wang word processing formats will also be developed.) An SGML parser will be available to facilitate the exchange of revisable data files between systems.

Compugraphic also announced an Advanced Menu Facility (AMF) for CAPS, which simplifies file management and input/output functions with a menu/mouse graphic interface approach. The AMF removes one of the more serious weaknesses of the original CAPS approach—the necessity to interact with Unix "in the raw" for all system-level functions

Turnkey solutions? Just as Duker had said at the Seminars, Compugraphic indicated that, even though its system was firmly entrenched in fourth-wave architectures—which means that users can in theory buy all the hardware and network operating pieces "off the shelf" on the open market—it insists that customers buy all their hardware from Compugraphic. Although this can be partially justified for a new system sale (many users to whom we've talked are willing to let a vendor put in all the components of a fourth-wave system from scratch to simplify the installation process and minimize the chance of an incompatibility), it is a more problematic policy for customers who already have a large Sun/NFS installation and simply want to add the CAPS publishing component.

Compugraphic's motivation for insisting on selling the hardware is clear, because most vendors have indicated that they believe it will be difficult to maintain revenues without the revenue gained from hardware sales. Duker indicated that he had seen an increased awareness among customers of the "value" of system integration, service and support. At the Seminars this year, and in our discussions with users in general, we've noted an increased willingness to pay for the added value of system integration and support of a system, even when users own or purchase the hardware themselves. However, we also believe that vendors will be forced to price their services accordingly—rather than relying on hardware sales to provide the profit margins required—if they are to survive.

NBI bridges WP and publishing

We have contended for years that office word processing and publishing are really two points along the same technological continuum. NBI has just announced two important new products that drive home this point with considerable force.

OfficeWorks. First is a networked workgroup software environment called OfficeWorks. This will support PCs, Macintoshes and NBI OASys workstations connected via a network to an NBI 500 Series Unix file server. The facilities include:

- *Content Retrieval Service (CSR)*, a package that will retrieve documents that contain specified words, phrases or combinations of words and phrases.
- *Electronic Index*, which enables an operator to attach an "electronic index card" to a file to help identify it and define its behavior with respect to various OfficeWorks modules.
- *Document Creation Tools*, the first of which (NBI TIE), in a workgroup setting where different document processing packages are being used, converts documents from one word processing format to another. Future releases of OfficeWorks will include additional file conversion and application interchange capabilities.
- *Project Templates*, which are effectively "mini-applications," represented on the desktop by unique icons, providing more efficient ways to perform routine applications and ensuring consistency in the formatting, treatment, and processing of regularly used information products.
- *Revision Management*, which assists users in identifying and managing different versions of a file, such as a spreadsheet, which are frequently revised or are in continuous use.

Legend. Legend is a $695 package that runs on an MS-DOS computer under Microsoft Windows. In essence, it is a word processing/document procesing/page layout program that fits in the gap between Microsoft Word, Ventura Publisher and PageMaker. It includes full WYSIWYG word procesing functions (including mail merge and spelling checking), stored formats for determining styles, support for a variety of frames (including text frames, tabular frames and graphics frames). It even supports "linked updates" in which spreadsheets, text or graphics imported from another program can be automatically updated if the original source file is changed.

A more thorough rundown on this important product will appear in the May issue of our desktop publishing report.

Mid-range VAX family, VMS 5.0

DEC announcements

In what has become virtually a point-counterpoint in the workstation/minicomputer market, DEC fired a salvo at its competitors last week with the announcements of "significant enhancements" to its VMS operating system, as well as a new mid-range VAX series, the 6200. At the same time, DEC announced a new software pricing and licensing approach that is designed to "simplify licensing and lower the cost of software" in all VAXcluster systems. The announcements served notice to the industry that DEC has no intention of abandoning support for its proprietary VMS operating system and that it will continue to offer the widest breadth of machines incorporating a common processor architecture in the industry.

VMS 5.0. This latest release of the VMS operating system is being termed a "major functional enhancement" by DEC. Among its new features are improved processing throughput, the ability to combine Ethernet LAN-based VAXclusters and CI-based VAXclusters into a single configuration, improved system management features, enhancements for application programmers, a merger of the MicroVMS and VMS operating systems, and new internationalization features.

Perhaps most important among the new features announced is 5.0's support for full symmetric multiprocessing. Symmetric multiprocessing is a form of tightly coupled processing in which all processors perform operations concurrently, including all VAX access modes (user, supervisor, executive, and kernel). This approach offers additional flexibility over other architectures in that it allows customers to purchase system components in a granular fashion while being reassured that each additional increment "steps up" the processing horsepower available for compute-intensive applications.

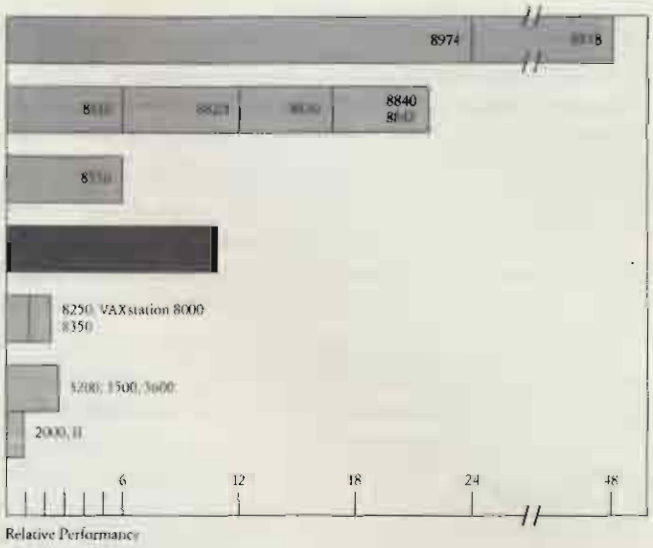
Interestingly, the new operating system software (along with a complete set of online documentation) will be available in CD-ROM disc format.

VMS 5.0 will be generally available in the summer of 1988. It will ship with the VAX 6200 Series immediately.

VAX 6200 Series. DEC plugged the price/performance gap that existed between its VAX 8250/8350 entry-level VAXBI/VAXcluster systems and its VAX8550 high-performance uniprocessor system with the introduction of the mid-range VAX 6200 Series. Configurable as one to four processors utilizing the new symmetric multiprocessing technology to "concatenate" its processing horsepower, the 6200 Series ranges from 2.8 to 11 times the performance of a VAX 11/780. It will support 32 to 256 MB of main memory, a maximum I/O bandwidth of 60 MB/second, 104 Ethernet ports, two to six VAXBI buses, one VAXcluster adapter, and in-cabinet expandability from the one-processor version (the 6210) to the four-processor version (the 6240).

The machines utilize CMOS technology to reduce power and heat dissipation requirements and to operate in an office computing environment. DEC is targeting the 6200 series at office and organization-wide computing applications, including R&D, CAD/CAM, financial portfolio management, and electronic publishing.

The tightly coupled multiprocessor design of the VAX 6200 Series allows processors to share a common main memory, resulting in better memory utilization and higher performance. "The performance increase that results when a processor is added is almost linear," a DEC official said, "because the system efficiently balances the workload among processors."



Compatible VAX Family: Relative Positioning

The VAX 6200 Series systems are priced from $131,600 to $653,200, depending on the configuration. The 6200 Series is available for quantity shipments immediately.

New software pricing. DEC has also revised its VAX software licensing and pricing. This restructuring includes a new pricing approach which allows DEC customers to use a layered product on the entire VAXcluster system at "a competitive price;" a per-user licensing fee for users on large systems; automation of license tracking and management tools; and the above-mentioned distribution of documentation and software on CD-ROM.

In essence, the new ClusterWide Layered Product Pricing is based on the rating of each processor type. Using these ratings, the total rating of the VAXcluster system can be calculated by adding together the rating of each CPU within the VAXcluster system. The price of the layered product is then based on the rating of the system.

For example, layered products for a high-end VAX 8820 are based on a rating of 1200. A comparable VAXcluster system could be configured with a VAX 8350, a VAX 8550, and a VAX 8530. This also would result in a rating of 1200.

The cost for layered products will be the same whether they are purchased to run on a single processor or on a VAXcluster of comparable power. In most multi-VAX situations this results in a price reduction for a layered application ranging between 11% and 52%. When new capacity is purchased, the customer purchases the difference between the license for his current rating and the one for the new aggregate rating.

The net results of the new pricing policy are that layered software prices are no longer dependent on the hardware on which they run, and entry-level pricing is much lower than before.

Significance. First, the VMS 5.0 announcement, this is decidedly much more than a maintenance upgrade it demonstrates DEC's continued strong commitment to VMS as its operating environment of choice for the future and its determination to enhance VMS sufficiently to be competitive with

the offerings from the workstation vendors. By introducing the symmetric multiprocessing capability, which gives VAXclusters some of the benefits afforded by parallel processing, DEC is also able to reinforce the advantages of the seamless integration afforded by its proprietary operating environment while answering the challenge from a number of small upstarts who were beginning to chip away at DEC's dominance in the engineering and R&D market with parallel processing architectures.

At the same time, the 6200 Series reinforces DEC's dominance in markets that benefit from having a complete micro-to-mainframe range of compatible-architectured products from which to choose.

And the new pricing strategy makes it easier for customers to add applications based on an aggregate cluster rating rather than on an individual processor basis, thereby lowering the net cost of the application for many customers.

We have long questioned the long-term viability of VMS as an operating environment locked into a proprietary hardware architecture, especially when compared with Unix and the wide range of architectures from which customers can choose to run their Unix applications. We do not think any of the announcements will permanently arrest Unix's inexorable march to dominance in the workstation marketplace. However, for applications that require and/or benefit from seamless integration between micros, mainframes and everything in between—and they are many, as evidenced by DEC's continued revenue growth—these products and enhancements should prove to be a winner.

Reorganizes engineering for standard platform push

SII names two vice presidents

In the wake of Al Edwards's announcement at the Seybold Seminars last month that the company intends to abandon further development on its proprietary Ring network operating system, SII recently announced the appointments of two new vice presidents, along with a reorganization of the company's engineering function.

Two long-term employees, Michael A. Reisenweber and Robert J. Strack, were named vice presidents of production and product operations, respectively. In their new positions, Reisenweber and Strack consolidate the functions that previously reported to John-Paul Menard, who resigned from his position as vice president of software and hardware engineering "to pursue other interests."

Hardware engineering layoffs. Reisenweber will be responsible for SII's hardware engineering and manufacturing divisions. His appointment came in the wake of a downsizing in the hardware engineering staff from 32 to a current level of 14. Consistent with the planned move to standard platforms, the remaining engineering staff has been reassigned to maintain and enhance the terminals and workstations already installed at customer sites as well as to "streamline current products," according to Charles Harney, chief financial officer. These roles are consistent with the charter of an organization that now reports to Manufacturing rather than to R&D.

Strack will be responsible for software product development, including AdMaker (which was shown running on a Compaq 386 at the Seminars), and for "managing the company's transition to computer-industry standard platforms." According to Harney, Strack's charter is to staff up to begin the porting of proprietary-hardware-bound applications to standard platforms in earnest.

Fourth-wave fallout. The recent layoff at SII, combined with the layoffs experienced at Atex and elsewhere in the graphics arts industry over the past 2-3 years, is clear evidence that the fourth-wave revolution is going to be a bloody one. We never said it would be easy or painless for anyone to make the transition to standard platforms—least of all the vendors that had previously maintained large staffs to develop, install, service and support their proprietary product offerings.

The question therefore is not whether vendors will have to downsize to compete in the future, but rather by how much. And even if they do survive the transition (and many of them will), how many will be able to afford to continue to provide the level of support and service to which newspapers have grown accustomed? How many newspapers will want—or be able to afford—to pay to obtain it?

Signals alliance?

Atex to use Monotype fonts

Atex has signed a type face licensing agreement with Monotype under which it will have access to 700 Monotype faces over the next two years for use with its Display Ad Terminal, News Layout and Interactive Page Make-up systems. When used in conjunction with Monotype output devices, the fonts will provide a true WYSIWYG display. Atex has been using ITC faces.

Monotype also will make available its typographic design, production and consultation services to Atex customers.

We think that if Atex is going to use Monotype fonts in its WYSIWYG terminal it is only logical to expect that it intends to make Monotype typesetters its output imagesetters of choice. Clearly, you would like to use the same fonts on a WYSIWYG screen that will be used for final output.

Company news

Dr.-Ing. Rudolf Hell, Intergrafica Group, of Zurich, Switzerland, has taken the exclusive agency for the entire range of products from Dr.-Ing. Rudolf Hell for Latin America. The agreement between Intergrafica and Crosfield Electronics for the same area has been terminated.

Barric Limited, a company set up by three executives of Xenotron, will take over the manufacturing of **Hell Xenotron's** existing range of XVC products. Danny Chapchal, Hell Xenotron's chief executive, stated that the rationale for this was that future generations of products would be based upon standard hardware platforms, and the agreement with Barric will ensure continuity of manufacture of the current range, and of hardware components to enable Hell Xenotron to maintain the highest level of both engineering and after-sales support of the customer base.

Intergraph and **Kurta** have signed an OEM agreement, valued at more than $2 million, under which Kurta will supply a tailored version of its IS/TWO graphics tablet to Intergraph as an option with its InterPro family of workstations. Users will have a choice of pointing devices, including Kurta's corded four-button or new 12-button cursor input devices.

Zeta Systems has opened a West Coast office at 5881 Crescent, Buena Park, CA, telephone (714) 761-2760. **Dell Turner**, former manager of CCI's hardware service division, will staff it.

America East: Start of the 'Newspaper Season'

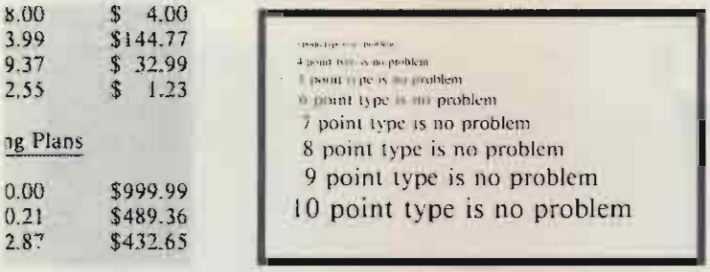
The annual America East newspaper equipment show in Hershey, PA, usually serves as the first opportunity for vendors to exhibit their products since the ANPA show nine or ten months earlier or the IFRA show five months previously. So there is generally something new in most booths. Often America East also serves as the forum for the introduction of a brand-new product that will be given a grander presentation at ANPA but is nonetheless making its official debut in Hershey.

Over the years Dewar has made good use of America East to unveil new developments in the display ad and pagination fields. This year it was Mycro-Tek's turn. As we reported in our last issue, Mycro-Tek has developed a display ad system for the Macintosh that is likely to go a long way, not only among the existing customer base of more than a thousand, but probably among many new users as well.

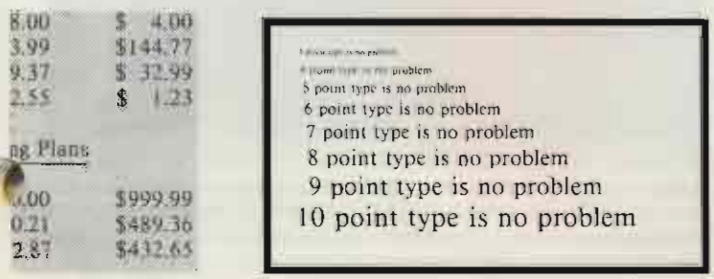
Because we reported on Mycro-Tek's AdWriter product in our last issue, we won't repeat that coverage here. But we will review the rest of the demonstrations in Hershey, including an early look at the Mac-based editorial system from **Digital Technology**; **Information International's** new archival system for the Morris product line and its adoption of a *truly* standard Sun Microsystems platform for its display ad system; **Autologic's** use of the PrintWare plain-paper recorder for 600-dpi proofing; **Dewar's** porting of its networking software to the MS-DOS environment; enhancements to **Camex's** Intertext classified system and **Harris's** 8300 and 8900; the latest features for **Compugraphic's** DAWN ad system under GEM and **CText's** Adept under Windows 2.0; new hardware and packaging for systems from **CPS** and **Cybergraphic**; an improved user interface for **Information Engineering's** PC-News Layout program; **Press's** final efforts to get its Tandem hardware and pagination software ready for ANPA; library systems from **Software Consulting Services** and **System Integrators**; and a PC wire service program from **Lorenze** (formerly Switch & Mux).

Autologic

The newest item in the Autologic booth was the 600-dpi Printware plain-paper laser printer than had been introduced at Imprinta. As we reported then, Autologic drives the engine at 600×600 dpi rather than 1200×600 in order to preserve a square aspect ratio for its Page Image Processors. The U.S. price is $18,500, available now.



Autologic output. *These were output by Autologic at the show, using the same Page Image Processor driving two different engines.* ***Above:*** *The Printware machine at 600×600 dpi.* ***Below:*** *The ECRM PelBox at 1016×1016 dpi.*



Also demonstrated was the ability to output 5½"-high type (which we would reproduce if we could afford the space) and 141-line screens from the APS-6.

On the news front, Autologic had two developments to report. First was the status of two large-format ImagiTex scanners installed with APS-6 imagesetters at the New York *Times*. The scanners are being used to train the *Times's* operators prior to starting production use.

The APS-6/800S output units are involved in full production, currently being used primarily to typeset classified ad pages, of which the *Times* produces about 250 pages every weekend. The *Times* reports that the 800S cuts nearly a minute off the time to output a full page of classified on an APS-5. (It takes about 100 seconds per page to build the page image in the PIP and about 90 seconds to output it. Since the PIP can build the next page while the previous one is being imaged, the total time to output a classified section averages slightly more than 100 seconds per page.)

The second news item was imagesetter sales to the Dallas *Morning News*, New Orleans *Times Picayune*, Unitron (NewYork), Universal Printing (CT) and Taylor Publishing (TX), which we will report in our next issue.

Camex

As is its custom these days, Camex used the show to demonstrate its broad range of system offerings. We'll report on the new developments.

Intertext. The Intertext system has been given some hardware and software enhancements. It now supports IBM PS/2 and Compaq computers. Disk storage (using Racet drives) can extend beyond a gigabyte, with multiple file servers configurable for large classified databases.

Camex has added some key enhancements to the classified system, some of which will later make their way to the editorial side. One key addition is the use of multiple windows to provide several types of useful information, including:

- Prompts to help the operator identify the classification of an ad being taken.
- Prompts for upselling ad space.
- A report on the depth of the ad as it is h&j'ed.
- Previously keyboarded blocks of text that can be brought into a new ad.

The windows can be sized by the operator and the text within them can be scrolled.

As a part of classified operations, the windowing feature has already been delivered to customers. We expect to see it as part of new editorial features at the ANPA show in June. Likely to be included in these editorial enhancements are the use of windows in broadcasting messages and split-screen functions to show notes or other stories. Intertext is adding the ability to turn off interactive composition when it isn't required by a reporter or editor.

Another new feature is a "learn mode" that records keystrokes for use later. It accommodates any sequence of keyboard commands or text, which are stored under a name to be accessed as needed. Demonstrated as part of classified software, it will be added to editorial as well.

Camex also has enhanced its capabilities in the area of checking customers' records and payments.

Classified pagination. Camex also demonstrated the classified pagination program developed by the Toronto *Star* and being enhanced in conjunction with NSSE, which acquired the marketing rights last year. The current product, which integrates display ads if the user has a Breeze workstation, has been installed in Santa Barbara, California. It paginates front to back or back to front, handles pyramid or stack layouts, and uses different colors to display different parts of the page (classifications, display ads, liners, etc.).

Although the system automatically adds lead between ads to fill a column, it also can display the excess space in each column for the operator to call for a filler instead of extra leading. (Fillers of the appropriate size are selected automatically from the database.)

If part of a page is satisfactorily paginated but another part needs reflowing, it is possible to lock in part of the page and reflow the rest.

Camex says pagination takes less than two minutes per page.

Compugraphic

We devoted a recent issue *(Vol. 17, No. 12)* to a discussion of Compugraphic's DAWN ad workstation and its competitors, so we will report here only on the latest software—release 1.2—that had been promised at the time of our article.

The key elements of release 1.2 are the ability to compose various parts of an ad from the same model and the ability to scale the components of scanned artwork or ads.

Composing from a model can be done interactively or by inserting delimiters in a raw text file. In the latter case, items can be brought in singly or in groups. There is no limit to the number of models that can be created or the number of items within each model.

Elements of scanned artwork (Publisher's Paintbrush format) or elements within an ad can be scaled by specifying a proportion or by changing the dimensions visually.

CG also has added a screen message to indicate how much RAM has been used.

With these enhancements implemented, Compugraphic is now getting ready for its next big release, due to be shown at ANPA.

Computer Peripheral Sciences

The Astrotek 2000 system that CPS announced at the Seybold Seminars *(see Vol. 17, No. 15, p. 7)* made its official debut at America East. The packaging is quite attractive *(see photo)*. As we reported from the Seminars, the 2000 is basically a modern version of the former 1000 system. It uses Winchester disks, a faster proprietary processor, and PCs as terminals (with support also for CPS terminals and, later, Macintosh IIs).

An entry-level system with two 80-MB disk drives, dual disk controllers, 32-bit bus, and software for editorial, classified and pagination (based on *x/y* positioning commands) costs $85,000, not including terminals, which require a $500 interface.

First deliveries are expected in July. The system in Hershey was to be shipped to the first customer in Athens, Greece.

Short-run plans include showing the Mac II on the system at ANPA in June, with Digital Technology's AdBuilder software supported as well as editorial and classified. H&j will continue to take place on the host CPU, rather than in the terminal, although eventual plans are to run the PCtype h&j program in the terminal, with the ability to duplicate the results on the system CPU, which will perform pagination. CPS reported that it has increased its h&j speed to 1,800 newspaper lines per minute (11-pica columns).

CPS announced that it is working on a display ad workstation based on its Display PostScript clone discussed in our last issue *(page 16)* and targeted for a fourth-quarter release, as well as pagination software, due in the second quarter of 1989. Other futures include a SCSI bus interface (fourth quarter, '88), Ethernet interface (first quarter, '89) and integration of the color system (second quarter, '89). All new features and future products will be supported on existing systems in the field, which total more than 200 sites in 21 countries.

Those are very ambitious undertakings. If they can be achieved, especially in the short time frame of a year, CPS will have done more to enhance that historic product line than the

Astrotek 2000. *The processors and disk drives are housed in cabinets under the table. Here the two doors have been opened to reveal the operator controls. These are Model 40 terminals, but PCs could be used. In the center is the noninteractive GDT preview monitor, which displays paginated text.*

other half a dozen or so companies that have tried over the last decade.

And, although these facts aren't likely to be useful in a trivia contest, we were interested to learn that CPS has 92 current users in 12 European countries, equipped with 253 CPUs, 2,290 terminals attached to the host, 223 remote terminals, and drivers for 13 different typesetters.

PCtype and Classad. PCtype was exhibited supporting four languages (Portuguese, French and Spanish, as well as English). Other news centered on the PC-based Classad program, including a sale to Harte-Hanks that could lead to additional sales *(see Installations in our last issue)* and some Classad enhancements (new rating table and extended run schedule).

We were told that Classad has been sold to an Itek Graphix PTW site in Mexico, which could lead to a formal arrangement with Itek. CPS also announced a deal under which Newspaper Electronics will become a dealer of Classad software exclusively with its own system.

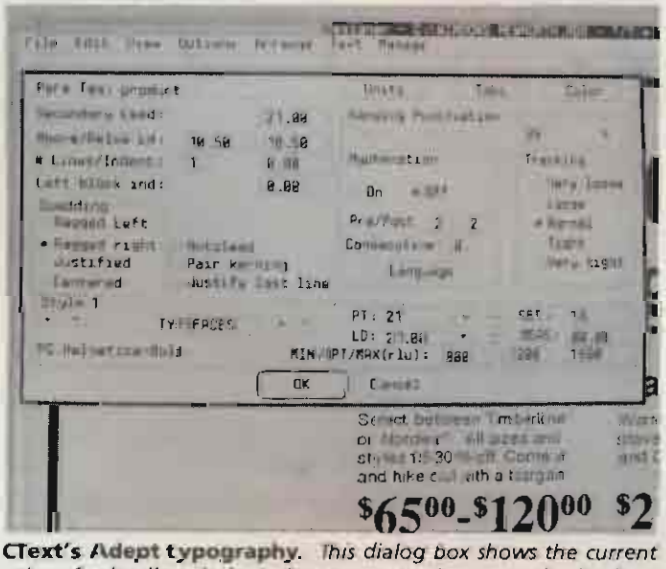
CText

The Adept display ad program (written by Archetype and first shown at ANPA last June) is now running under Windows 2.0. CText said that since March 1, it has installed the program at six sites.

CText showed a number of interesting features:

- Both reverse type and gray screened type are available.
- Irregular runarounds are done by drawing a polygon around the graphic; text stays outside the polygon. A number of desktop publishing programs handle runarounds automatically and don't require the user to draw the boundary, but this is simple enough that ad-makers won't be handicapped.
- Text formatting is handled by applying tags to blocks of text. A tag is made up of four styles, each of which specifies a font and size, and is selected from a menu (or by keyboard shortcut).

The display-ad subsystem, running on a '286 clone PC with a 40-MB disk and a 14" monitor, is priced at $8,995. Running on a '386 PC with a 19" display, the subsystem is priced at $15,995.



CText's Adept typography. *This dialog box shows the current values for leading, indents, hung punctuation, etc., plus hyphenation controls (consecutive lines that can be hyphenated and number of characters that must precede and follow a hyphen).*

Cybergraphic's new terminal. *Both the 150 and the 150G (for graphics) support pull-down and pop-up menus.*

Cybergraphic Systems

Cybergraphic previewed a small system supporting up to 32 devices, with the CPU and disk drives fitting in an 18" × 14" × 5½" briefcase. As yet unnamed, it supports all CGS terminals, software and output drivers. Cybergraphic's intention is to provide a system that can be moved around (for demonstration purposes) or that can serve for backup. It will come in two versions: one based on the DEC PDP-11/73 and one on the MicroVAX.

At the show it was sitting in a briefcase under a table, but the final packaging won't be exhibited until ANPA. It may end up being a small cabinet instead of a briefcase. (We wonder about carrying 80-MB Winchester disks in a briefcase.) Terminals plug into a connector that hangs out of the back of the case.

CGS 150. Also in the booth was the new CGS 150 terminal, but it wasn't operational due to a hardware problem related to the new system packaging. It, too, will be shown at ANPA, when a Macintosh II will also be configured on the system.

The 150 and the 150G graphics model (as well as the Mac) will serve as the standard system terminals. They are based on a Wyse terminal with a proprietary board inserted to provide an 8-MHz, 68000 processor with up to 4 MB of memory. Cybergraphic wasn't sure whether the machine will be able to run MS-DOS programs. The 83-key keyboard, which is made by Wyse, doesn't contain any function keys because all keys are programmable. The monitor measures 14" diagonally and can be zoomed between 10% and 1000%. The graphics resolution is stated to be 864 × 312 pixels.

The specifications claim h&j speeds of up to 2,200 characters per second in the terminal.

Dewar Information Systems

The big news from Dewar was the porting of its networking software to run on a standard PC on top of MS-DOS. The port

Dewar's new directory. *Note that this directory looks like the standard Discribe screen, not a typical MS-DOS system.*

wasn't complete—a later version was to be showed at Graph Expo *(see our next issue)*—but a two-PC system was demonstrating the fact that it was well on the way.

Dewar uses the same Arcnet hardware as previously, but runs 32-bit protected-mode software on top of MS-DOS. At the show, Dewar had a Compaq 386 running at 20-MHz with 3 MB of memory as a file server, with an AT attached.

Dewar claims that users won't recognize the difference between the new setup and its own LAND operation. The new directories add significantly to the typical MS-DOS directory to provide the information customarily available on Dewar's LAND (date file was last edited, version number, previous queue, h&j depth, etc.) And it provides a "move file" function that permits the user to move stories from one directory to another, rather than have to copy them to another directory and delete them from the first one.

One of the biggest problems, Dewar said, was input/output, since LAND units have five serial ports and it is possible to get only four on a '386 machine.

Dewar hopes to have the port complete by ANPA.

Digital Technology

This was the first showing of a Macintosh-based editorial system from Digital Technology. Designed to provide a writer or editor with page make-up capabilities as well as editing features, it is an interesting combination of both. It resembles the company's display ad system in its user interface (and display of true fonts) and in some of its functions (*e.g.*, the "divide and conquer" box creation, round corners, color separations, scaling graphics, and the ability to align elements horizontally or vertically), but it has added features to handle the requirements of making up news pages. Key elements for a writer or editor include an interactive spelling checker and thesaurus, multiple text windows, and a good search/replace routine.

The goal is to provide the writer or editor with facilities for making up individual stories modularly, as part of an overall pagination system based on the creation of dummies (called templates by Digital Technology). Each writer or editor will get the space requirements for any given story from the template. It will be his or her job to make the story fit.

The product on display at America East focused on the writer's or editor's task. A more complete version, with page templates, copy routing and database management facilities in place, is expected to be shown at ANPA.

Page layout and make-up. A dialog box is used to set up the page dimensions—margins, number of columns, gutter size, and on on. Guides and column boundaries can be "snapped to." Page layout is based on drawing frames or containers interactively on pages.

Containers can be of any size, but they must be rectangular. They are created by pointing with a mouse and stretching the boundary. The size or shape can be changed by grabbing a container's handles and moving them interactively.

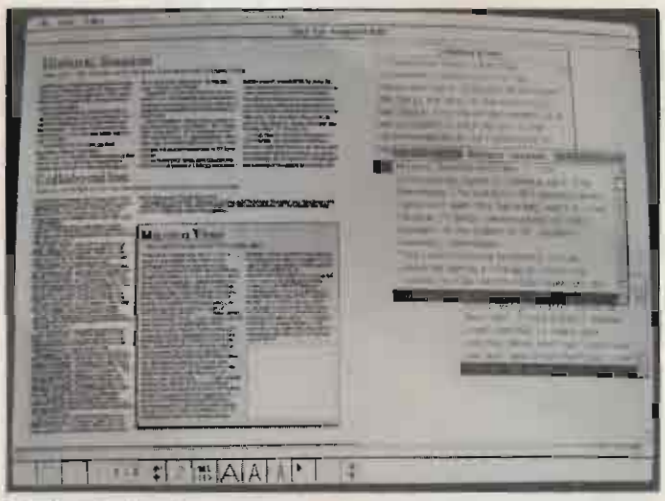
Text is flowed into containers from text windows displayed on the screen. Up to five windows can be displayed at any time, with only one active. As with most Macintosh programs, selecting a window activates it, so if text is to be brought in from an inactive window, the window must be brought to the front first.

Text flows interactively into the containers until it fills them. If more text remains after the container is full, the container displays a heavy rule at the bottom of the last column. The balance of the text can be assigned to another page or held until a place is designated.

Containers can repel text, so if a new container is drawn to overlap an existing one, the text in the existing container can be reflowed to avoid the new container. This reflowing isn't done automatically by the system, but rather by operator command, a container at a time.

Stories can't be called in unless they currently reside in a window. This means that if more than five stories are to be assigned to a page, only five at a time can be ready to flow into containers. A sixth or seventh story has to be brought into a window to replace an existing story. Digital Technology doesn't anticipate problems here, since its intention is to have writers and editors work individually by following the template. But if a newspaper plans to have one person working actively on the layout or corrections to an entire page, he will surely want to access more than five conveniently.

Creating and editing text. Stories are created in a window on the screen. All future editing takes place in that window, even after the story has been placed on a page. Up to five windows can be displayed at one time. For a writer, this would accommodate a file of notes, a couple of other stories from which material may be accessed, etc. Windows can be suppressed if desired, but remain available to be displayed by command. (A field at the bottom of the screen shows the beginning of the text appearing in the main window.)



Digital Technology's page and text windows. *The current page is displayed on the left at actual size. On the right are three text windows, with the middle one available for editing. The line at the bottom of each window shows the word count and, if the user has requested it, a depth estimate based on the number of characters.*

As text is input (either initially or in a later editing session), it fills the window in uncomposed form. *Text in the window is always uncomposed.* A status field provides a word count and copy depth based on actual h&j. But since text isn't h&j'ed interactively while it is input, the depth is only available after the story has been h&j'ed by command while the writer is working or after it has been flowed on the page.

The fact that the window never shows actual line endings may not matter for writers, but we think it inconveniences the production process. It means that making corrections to stories or pages after proofreading requires working on the screen with the story in a different form from what has been proofed.

Digital Technology offers two possibilities to ease this problem. First, if the operator highlights the location of a correction on the page, when he goes to the editing window he will see the same area of the page, rather than having to scroll from the beginning. Second, there is a search routine that can be used to locate the point to edit.

Editorial features. As we said, the writer or editor can open five windows as references while writing a story—a capability not found on most traditional editorial systems. Text can be cut from one window and move into another.

The thesaurus and spelling checker are nice also. Based on the Proximity product, the spelling checker runs interactively, underlining words that it doesn't find in its expandable, 80,000-word database. For these words the system proposes alternatives, which can replace the flagged word (once or globally), be added to the dictionary, or be skipped.

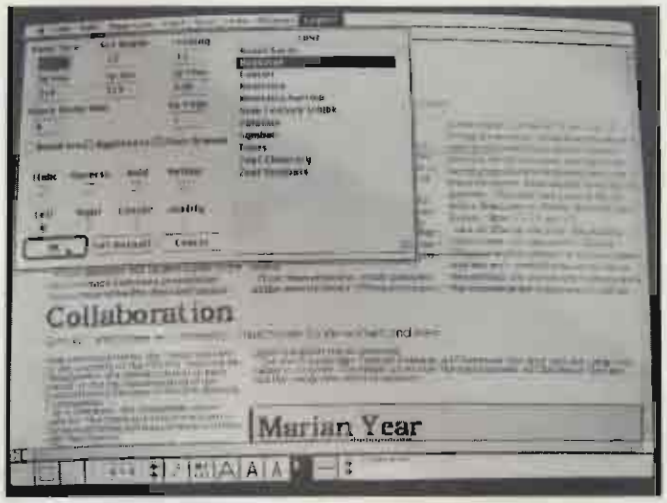
Digital Technology has obviously tried to make the editing features better than those found on most Macintosh programs. It supports the enhanced keyboard (although this wasn't shown at Hershey) and makes good use of its function keys (single keystrokes to cut, copy or paste an item; one key to change to bold or italic; etc.). The shift level of function keys is available for user programming. With the command and control keys, the arrow keys move word by word, sentence by sentence or paragraph by paragraph.

Composition. The system uses the same h&j program as the company's display ad system. It supports automatic and manual kerning, plus automatic white space adjustments. Stories can be broken into segments so that, for example, a headline can be brought in and recomposed over and over to make it fit, without having to work with the entire story.

The full formatting feature wasn't demonstrated, but the system permits the user to specify the font, size, leading, etc., of text in a container. The measure is inherited from the width of the container. At any time it is possible to access a dialog box showing the parameters currently in effect. These values can be modified and the text recomposed on the page, although editing of text isn't permitted in WYSIWYG mode.

In sum. We are generally impressed with the direction Digital Technology is taking. We look forward to ANPA to see a more complete system, with pagination templates, locking of individual stories (but not an entire page) while editors work on the stories, and copy routing.

We will look closely at a few questions: First, will the artificial limit of five open windows be a problem for production? Second, will the enhanced keyboard make heavy editing convenient (as it is with XyWrite on a PC)? Third, will the correction phase of the production cycle suffer from not seeing actual line endings in the editing window?



Format dialog box. *In the box are the parameters in effect: point size, set width, leading, word space, kerning, "flow around" (which makes one container repel another one), etc. The page displayed underneath is enlarged. Note the small container overlapping the middle and right columns. We are about to make text flow around the container.*

Pricing. The editorial system runs on a Macintosh II and is available for $10,995 with a 19" screen or $9,495 with a 12" screen.

E-Z Electronics

A number of our readers might remember Switch & Mux, a company that made switch-boxes and communication multiplexers and then went on to sell the Tandy laptop computer as a reporter's terminal. (The S&M version had an extra ROM with improved editing and communication software.) The firm turned up at Hershey with a new name, E-Z Electronics, reflecting the fact that switchboxes aren't very interesting nowadays.

It also had a new product: a PC-based wire capture program called Padcom. It handles the AP or UPI high-speed wire, filing stories into separate directories on the PC's hard disk according to the contents of the story header. Padcom runs in any standard PC clone. If you have enough memory, you can run it as a background task under the Desqview multi-tasking operating system; you can then run an interactive program like a text editor or desktop publishing program in the foreground.

Padcom lets you selectively enable or disable the capture by categories or service levels, and has provided a nice menu interface to make the selection process easy. It also provides a long directory (file name plus the first few lines of text) to aid in selecting stories to send on to the typesetter or import into your page make-up program. The long directory is an essential feature, because the file names on disk are the ANPA sequential story numbers. Unfortunately, if you want to use the story (perhaps to import it to another program), you'll have to write the ANPA numbers down on a scratchpad—there is no provision for the system to mark or remember the files you want to work with.

Padcom software is priced at $1,278. E-Z Electronics also can sell you a clone PC; prices depend on memory and disk options. Oh, and they still sell multiplexers and switches.

E-Z Electronics is located at 579 D.W. Highway, Merrimack, NH 03054, phone (603) 424-4161.

Harris

At the IFRA show in Amsterdam last fall, Harris was nearing completion of the 8700 display-ad/page make-up terminal. It also introduced a network of PCs running XyWrite III to feed an 8300 system *(see Vol. 17, No. 5, p. 13)*. At America East, it again showed the Remote Entry Network (XyWrite III connected to Harris-Net) but we took the opportunity to review the latest developments with Harris's ad and layout products.

8900. Harris has dropped the original remote-terminal configuration of the 8700 in favor of the more functional 8900 workstation. As readers may recall, this is a hybrid PC adaptation of the 8300 terminals, with the composition and make-up functions of the 8300 plunked onto an expansion card that plugs into the PC. Some functions, such as news flow, ad flow and graphics, remain on the host system. The 8900 configuration functions as both an on-line 8300 terminal, connected to the Harris-Net network and including its own output drivers, as well as an off-line remote terminal, which supports all functions except background batch processing.

The previous remote-only version (8700R) is now superseded by the 8900. The price remains just under $30,000, plus an additional $2,500 for the Harris-Net network adapter. The cost to upgrade from the 8700R to the 8900 is $5,000.

Up to eight workstations are supported by a single 8302 CPU, which is priced at $69,000.

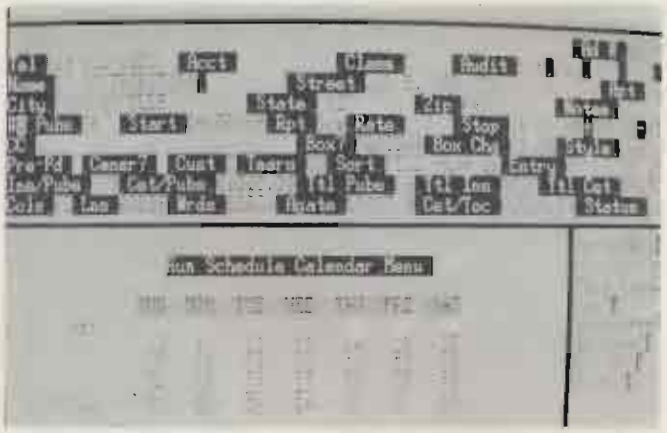
We applaud Harris's decision to offer the 8900 as the standard product at the same price as the remote terminal. It offers Harris customers a less expensive, completely compatible alternative to the higher-priced 8300 workstation. The product is now installed at the Boca Raton *News*, with the Cleveland *Sun* next on the list.

PLS 4.5. Harris demonstrated the latest release of its Page Layout System software, version 4.5. This is the second upgrade since ANPA last June, and most of the improvements have been polishng touches added at customer requests. To briefly summarize, version 4.0, which was shipped last October, added the following features:

- Copyfitting of headlines without the page open on the screen;
- Time and date file purging and the ability to mark a file as permanent, so it cannot be automatically purged;
- Automatic jumplines that can be turned on or off, and the removal of restrictions on the *to* and *from* messages of jump stories; and
- Several new graphic functions, such as duplication of tinted blocks.

At America East, Harris demonstrated version 4.5, which was shipped to customers in February. New features include:

- Horizontal and vertical "spacing out" of text, automatically or by specified amounts;
- Reverse type on Compugraphic 8400/8600 and Autologic APS5 series typesetters;
- Automatic inferior and superior characters, on the screen and at output;
- Enhancements to tablet functions, including the ability to select all graphics, text or rules independently of the other elements;
- Catalog price merge: custom software for the catalog industry, now offered as an option to the basic 8300 series.



Harris classified. *The calendar has been improved to allow skip patterns that are particularly useful for weekly publications.*

Classified 1.1. Like PLS, the latest release of the PC-based class-ad system is an interim version that includes rate and billing flexibility in changes made in response to customer requests. These include:

- Rate flexibilities, such as extra free days, consecutive inserts and charging per blank line; and
- Billing flexibilities, such as a line to check duplicate phone numbers, an on-screen skip pattern, and "run till further notice."

The Harris class-ad system was first installed at the New Philadelphia (OH) *Times Reporter* last September. It is now also up and running the Martha's Vineyard *Gazette* and Belleville (IL) *Democrat*.

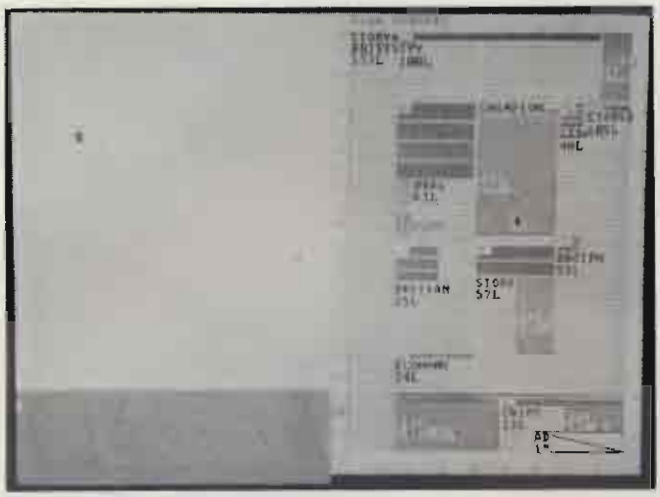
Monotype graphics subsystem. One final item of note from the Harris booth was the use of the Monotype graphic subsystem with Layout 80 or 8000. It is offered as a means of efficiently building different publications from the same ads. Ads are made up on the Harris system and passed to the Monotype, which crops, scales and outputs complete pages and maintains the graphic database. Harris said the Monotype graphic system is generating broadsheets, with graphics, at speeds of 82 to 100 seconds per page.

Information Engineering

We first reported on the PC-News Layout program a year ago *(Vol. 16, No. 15)*. At that time, we noted that the program was entirely command driven, and that a mouse would provide a major improvement in productivity. Information Engineering has now implemented mouse control, complete with popup menus, property sheets and rubber-band sizing of boxes. Of course, you can still use the keyboard for everything, and for some purposes you must use it.

When the program first appeared, it only supported Atex pagination commands. The authors have now generalized that with a user-definable lookup table, so that it will support a range of pagination systems. So far, only Atex and Cora (202 typesetter code) tables have been completed, but Information Engineering claims that a new table can be worked up in one or two days.

The tables include up to eight headline styles, including an option to force the headline depth to a multiple of the body-text leading, and eight box-ruling styles (a variable line weight can be passed as a command parameter). The system also has a feature called bastard measure: if the depth of a



PC News Layout. *The left side of the screen holds the command strings that the user manipulates to lay out the page. The right side shows a page dummy with story names, line counts, etc.*

story is not known yet, the layout program will simply guess a depth (you can revise it any time) so you can at least get the story assigned to a page. The program flags its guesswork by using a different crosshatching on the page diagram.

The program is not aimed at the novice. If you give it a command that will mess up the page (overlapping areas, printing off the edge, etc.), it will do it. But it will show you what you've done.

Price, including a good AT-class clone, is about $15,000 for a single-user configuration; multi-user systems are slightly cheaper on a per-seat basis. Contact Information Engineering at 7 Railroad Avenue, Bedford, MA 01730 or phone (617) 275-3870.

Information International

Triple-I introduced a new adjunct to the Morris editorial system and a new configuration of its display ad make-up station at Hershey. Both were on public display, although not formerly announced, as Triple-I prepares the products for their formal debut at ANPA.

PC archival software. The new archival software, called Publication Archive, provides a means for the editorial staff to archive a limited number of stories, presumably the local stories that would not be part of libraries available from on-line services such as VuText. Its limitations are primarily that of storage: right now Triple-I is using conventional PC disk drives ranging from 100 MB to 600 MB, sufficient space to archive the local news and sports editorial sections of a metropolitan daily for 2-3 years, Triple-I estimates. The primary advantage of the software over other library systems is that it is tightly integrated with the Morris editorial software, so that writers can review the archive, retrieve files and copy material into stories without leaving the editorial software.

Archiving may be manual, with system administrator or authorized editors specifying which stories will be archived; or automatic, with all files routed to the typesetter also specified for archiving. With automatic archiving, the library administrator would review the directory of files in the archive queue, and then delete any files not to be archived. Archiving can be done as a batch operation at specified times, such as off-peak hours.

The program builds an index of every "editorially significant" word, that is, every word over three letters. A small exception dictionary of words over three letters not to be indexed (prepositions, pronouns, etc.) is included, and it may be added to by the system administrator. A separate dictionary of two- and three-letter words that should be indexed (acronyms, places and people's names, etc.) is also built by the staff. There is no inherent limit to the size of the dictionaries other than disk space.

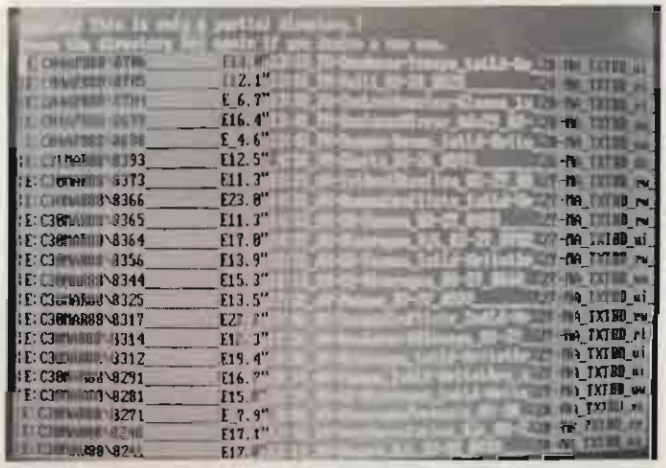
The program is invoked by command (Alt-F4) from within the editorial software. It calls up an alternate screen, from which the user specifies the search criteria, and the program automatically builds a directory of the stories that match the criteria. From the resulting directory, the user can browse the stories and freely copy text into a file open on the alternate screen.

The search criteria may be restricted by Boolean operators ("and," "or" and "but not"), date and wildcard text strings. It is not case sensitive.

The directory shows the name of the file, the estimated depth of the story, the tag line, date and author. Although the search is made on the index, which contains all of the significant words in every article, the tag line in the directory is keyed in by the reporter. To our eyes, the space for the tag line of the present directory left insufficient room for whole headlines. Furthermore, for longer pieces, it might be useful to also pull other key words or phrases into the tag line. The program provides no means of doing so, nor does the directory have room to display such references. Triple-I conceded that it is still developing the directory interface, and that, in fact, the released product may suppress the file name to afford more space for the editorial tags.

In general, the program is fast and easy to use. We found its seamless integration with the editorial system particularly attractive, because it enables the writer to access the archive while writing, rather than requiring a separate trip to the library terminal to do the research.

Compared to full-fledged library systems, it does lack some refinements, however. For example, although a particular search can be refined by further restricting the criteria, the program does not remember the previous search, and so



Morris Publication Archive. *From within the PC-based editorial software, the user builds a directory, such as the one shown, of files that match the search criteria. The writer browses the tag lines for stories that appear relevant and calls the stories into an alternate screen, from which they can be read or copied into the active file on an alternate screen.*

successive searches (Reagan; Reagan and Iran; Reagan and Iran Contra but not North) require the user to rekey the entire criteria. The ability to remember a previous search string, as well as to make the search case sensitive (distinguishing North from north) would be welcome additions.

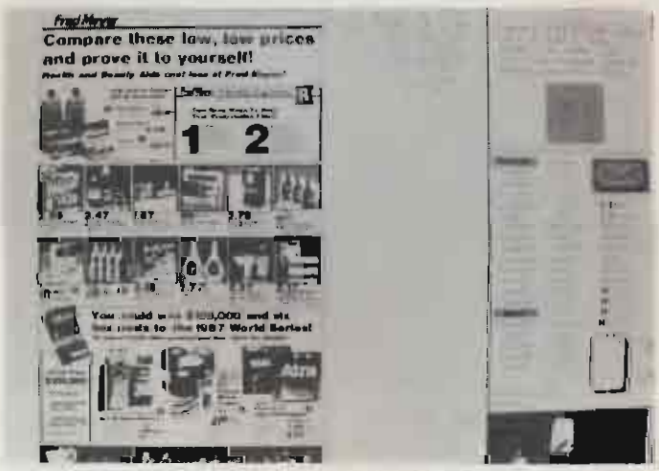
Improvements could also be made to the flexibility of the directory, which shows the complete file name, leaving little room for the tag line identifying the subject of each story. Because the format of the directory cannot be modified, there is no means of sorting the directory, such as a chronological listing of files that meet the criteria from a certain date. The program also does not automatically locate the reference to the search criteria within the story, nor does it rank the directory according to stories with the most references to the criteria.

These criticisms aside, Publication Archive is a sensible way for a Morris-based paper to implement an editorial archive without unreasonable expense or overhead. In its present state, it does not supplant a full library system for metropolitan dailies, but as Triple-I integrates better storage media (such as optical discs), it could evolve into a full in-house library system. For now, it is considerably better than the standalone PC archiving software introduced by Stauffer at last year's ANPA.

Triple-I charges a one-time license fee of $2,500, which includes the network card and the software for the archiving workstation, which can be any IBM-compatible AT or PS/2 with at least two 70-MB drives. The cost per seat is charged at 2% of the cost of the editorial system.

Publication Archive is currently being tested by the Augusta (GA) *Chronicle-Herald*, which has 80 terminals on the editorial network. Triple-I stated that the next installation, expected sometime this summer, will be the Jacksonville (FL) *Journal and Times*, which has roughly 170 editorial terminals.

Standard Sun display ad terminal. Triple-I also showed a new configuration of its Ad Makeup System, running on an unmodified Sun-3/50G or Sun-3/60G workstation. The software offers identical functionality and interface to the previous product, but with significant improvements in response times. The user has a choice of the Triple-I five-button puck or the three-button mouse that is standard with the workstation. Final pricing has not been established, but Triple-I indicated that it would be less than the $52,000 of its current product. The new configuration will be formally introduced shortly and should be ready for production shipments by ANPA in June.



AMS on standard Sun. *Triple-I will shortly be offering its ad make-up software on Sun-3/50 and 3/60 workstations at lower cost and with better performance than its current product.*

Lorenz Management Systems

Lorenz Management Systems sells and supports Macintosh-based systems for small papers, using a number of third-party software products in addition to some it has written itself. For instance, it sells Digital Technology's display-ad program and Knowledge Engineering's JustText code-driven composition program. The firm claims that it has over 60 user sites, most of them sold in the last six months.

LMSI wrote the wire-capture software in-house. The program sorts incoming stories into separate directories (Mac folders) based on the ANPA story header; if it can't find a folder corresponding to a header category, it creates one. Since the Mac supports long file names, the wire capture program adds the slug line to the ANPA sequential file number. It also provides a long-directory function showing the first 250 characters of each story. And it inserts JustText formatting codes directly into the file, so it is ready to typeset.

One aspect of the file management seemed to us rather awkward. The system does not automatically purge files. It's easy enough to do the purge manually—just drag the folder containing all your wire directories to the trash can, because new directories will be created when needed—but a real system should handle this for you, based on your retention criteria.

The wire capture program costs $2,395. There are separate versions for the high-speed and low-speed wires.

LMSI also sells a program called LaserLink that lets your old front-end system drive a PostScript printer. It uses a Mac as the translation box. Versions are available for Mycro-Tek, Harris MicroStor, One Systems, UTS, MDT and for any non-slave-mode Compugraphic machine.

LMSI is located at 117 N. First Street, Ann Arbor, MI 48104, phone (313) 662-9614.

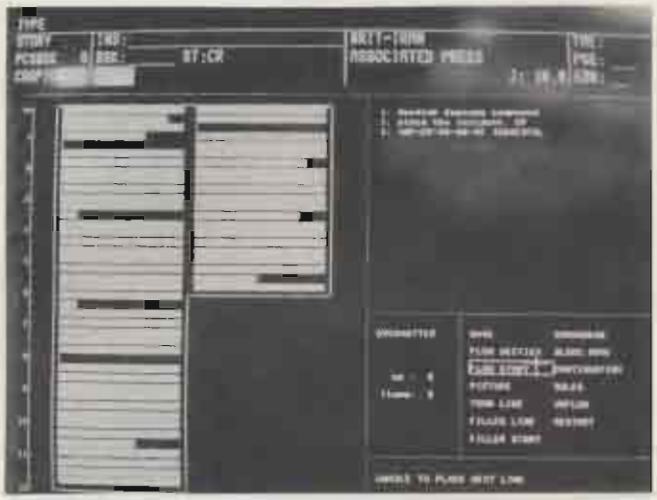
Press Computer

Press showed further progress in its news pagination software, which it hopes to have ready to show at ANPA. The Tandem minicomputer that will be the CPU for its new systems was in the booth, but it was not running any application software. Press hopes to have that ready by May in Europe; it will follow in the U.S. sometime later. Concurrent with the move toward Tandem, Press has temporarily suspended its U.S. marketing operations until the Tandem systems are ready to offer.

News pagination. As we reported from Newstec *(Vol. 17, No. 7, p. 27)*, Press is developing a two-way interface with the Harris 8300 layout system. The project is far from complete, but we were able to get a feel for how it will actually work.

A layout created on the Harris is sent to the PCS system, where it can be accessed from the Tandberg terminal. The screen splits into the layout area on the left and the command and status area on the right. The writer assigns a story to a particular layout block, and the system automatically composes the galley according to the parameters specified for that layout area. In the graphic preview, the composed galley is greeked as part of a miniature page. Any oversets are not shown. But on the right side of the screen, the under- or overset is given, both in number of lines and actual depth *(see photo)*.

Once the story fits the desired space, the editor can output the galley in the proper layout shape; continue to build the page, eventually sending the complete page to the typesetter, minus halftones and ads; or return the galley to the 8300, where final page make-up is done.



Press Computer news layout. *The copy cannot actually be seen in the composed galley display on the left of the screen. We therefore found it useful to refer to the overset reading (3 lines) at the lower left of the working area. The actual lines that are overset are displayed above.*

At the moment, most of this is still the theory of the product. At Hershey, Press created layout blocks on the Tandberg using a puck and composed the stories to a single layout. No transfer to the Harris was shown.

Spelling checker. Press also showed its new spell checker, which it developed itself, even building its own 70,000-word dictionary (with British spellings). It plans to eventually use the spelling dictionary for hyphenation as well. The first installation is the Wolverhampton Express and Star.

The program performs batch spelling checks of entire files or selected areas of a file. A list of properly spelled words is available for each misspelling. One unique feature of Press's spell check is that it automatically corrects words for which it finds only one substitution (without waiting for you to okay the substitution, a dangerous practice in our experieince with other spell checkers, which often omit word variants).

Another, and perhaps more useful, feature is a 10,000-word dictionary of the most frequently used words that the system automatically builds in a RAM cache. The system continually updates this dictionary as other spell checks are made. Press said the idea is that by the end of a year, the paper would have a RAM cache dictionary of the 10,000 words most often used by the paper, thereby minimizing the number of disk accesses and speeding up the spell check routine considerably.

Software Consulting Services

We saw a neat implementation of the SCS library system running under Windows 2.0. We had seen the database search functions before *(see Vol. 14, No. 20)*, but the windowing environment makes the retrieval package much easier to navigate, particularly for occasional users. SCS calls its PC version *Personal Librarian*.

Most library systems make you construct the database query by entering search terms connected by boolean operators (for example, Meese *and* malfeasance *or* indictment). The problem with such queries is that there is always a tradeoff between the completeness of the search and the relevance of the stories retrieved. On one hand, the keywords you supply may be too general, and you wind up wading through many stories only to discard them as irrelevant. On the other hand, there may be important stories you failed to find because the writer never used the particular words you searched for, even though the concepts are the same.

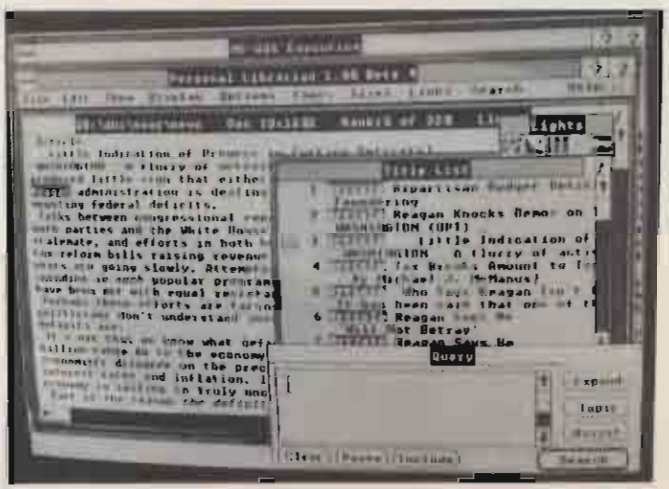
A number of systems use a progressive refinement strategy to help eliminate irrelevant stories. You try a query and if it returns too many stories (obviously containing many irrelevant items), the system lets you refine the search by adding more qualifier terms to the search. After a few tries, you obtain a small list of stories that you then call up and read. But this approach doesn't help with the problem of missing some important items.

The SCS approach does offer successive refinement. It also helps you out by ranking the retrieved stories by their relevance: it compares the frequency of your keywords in the story against their frequency of occurrence in the entire database. A word that is rare in the database, but abundant in one story, clearly marks that story as relevant to that topic. Conversely, a word that is common in the database has little value in selecting a story no matter how many times it occurs in that story.

SCS adds an expansion feature as well, to help you find stories by keys you might not have thought up on your own. The computer can take any word and tell you all the words that are associated with it anywhere in the database. It's rather like a thesaurus. The system can also expand the contents of an entire story, finding all documents that contain terms that are highly correlated with the words in your starting document. This can minimize the number of relevant stories you fail to find.

Personal Librarian runs on an AT-class computer. The program is priced at $600 for a single-user license; multi-user licenses are available. The program can add a megabyte of new data to an existing database in about 40 minutes (using a '386 computer with fast disks). SCS will also license the search engine portion of the program to information providers for distribution on CD-ROMs and other media.

SCS, also well known as the vendor of Layout 8000, announced that the software has been ported to '386 PCs, running under Xenix. Lest the reader feel that a PC is not enough computer to run Layout 8000, SCS points out that a 386-based PC has roughly three times the power of a MicroVAX.



SCS Personal Librarian. *The small window named Lights has icons activating the keyword query, document browsing, titles list, keyword expansion and relevance bargraph windows.*

SunType

When we last wrote about SunType's class-ad program, we criticized it for its lack of h&j *(see Vol. 17, No. 1)*. That lack has now been remedied. The program uses the Houghton-Mifflin dictionary for hyphenation, with an algorithm to back the dictionary up. In our demo, a simple five-line ad was h&j'ed reasonably fast, but not instantaneously.

The program also can offer upselling prompts now, based on the classification.

SunType runs either in a standalone PC or over a 3Com or preferably, a Novell network. A Mac version is being planned, and after that, an editorial system. SunType has always focused on the needs of very small papers, so we expect that the editorial software will emphasize simplicity of operation.

SunType is marketed by Synaptic Micro Solutions, 141 S. Main Street, Shawano, WI 54166, phone (715) 526-6547.

System Integrators

SII divided its focus between its display ad system running on a '386 PC and the library system previewed at ANPA last year.

AdMaker. There wasn't much change in the AdMaker workstation since we had seen it at the Seybold Seminars a month earlier *(see Vol. 17, No. 15, p. 26)*. But SII talked about its plans for the platform and future enhancements.

The '386 PC and SII's proprietary Tahoe workstation will be offered as platforms for AdMaker. In addition, the company is looking at the Macintosh and the MicroVAX.

Pricing is curious, to say the least. The complete hardware/software package including a Tahoe with 15" monitor is $15,000. The same software with a 20-MHz '386 PC and a 19" screen is $40,000. When we asked for the justification for such a large differential, we were told that the reason was that SII could charge less for hardware it was manufacturing itself than it could charge for other manufacturers' products. We will be very interested in how sales of the two systems compare. The Tahoe price isn't as low as the low-end systems based on Macintoshes or PCs, while the '386 price is less than what is charged for high-end ad workstations.

Regarding enhancements, SII said it had released version 3.2 on April 1, which included typesetter drivers, an indent command, the ability to define noncontiguous text elements from the keyboard, access to the ad header from the window, and some other features.

Release 3.3, due out May 1, will include an extra lead function, automatic snapshot, an expanded text status area, and the ability to go into monospaced mode from WYSIWYG.

Version 3.4, scheduled for June 1, will add round corners, cutting and pasting graphics from ArtMaker, and the ability to specify the ad size in columns. (ArtMaker, which was previewed at ANPA a year ago, hasn't been released as a product, but is being integrated with AdMaker.)

Release 3.5, planned for July 1, will provide tabular composition and a digitizing tablet.

We were told that some key sales were likely to be announced soon.

Library system. The SII library system is called LASR—Library Archive and Search Retrieval. Its initial version has been in use in Asbury Park, NJ, and at the Singapore *Straits Times* since last year. The latest version, demonstrated in Hershey, is now going live at the San Francisco *Examiner*.

LASR runs on the standard SII System/55 or System/25 hardware and can be accessed by reporters or editors as they write their stories on Coyote terminals, using the system's split-screen or alternate-screen functions. Included with the package is Getnet software that provides access to other libraries (Vu/Text, DataTimes, etc.) from within LASR. (Access to additional services requires knowledge of multiple user interfaces and access procedures.)

Pricing varies from $40,000 to $100,000, depending on the circulation of the paper. It requires a dedicated database. SII is looking into optical discs.

The system at the show had only 400 stories on the database, so it was difficult to evaluate its speed. In our demonstration, it took a few seconds to search the database and report the number of occurrences of the specified criteria.

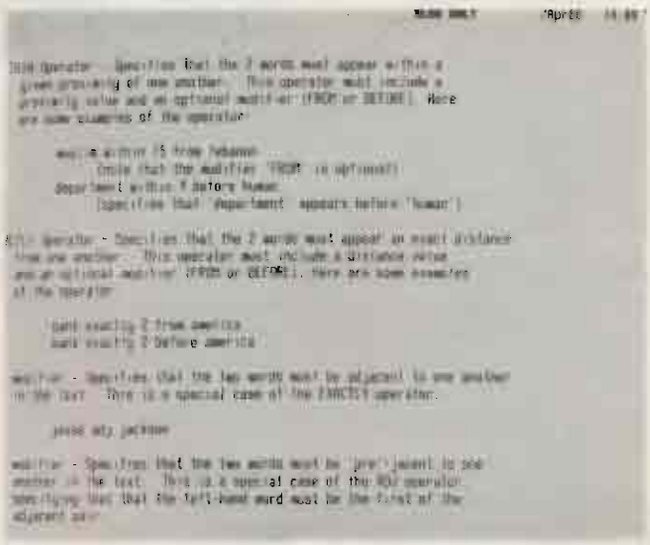
The database can be set up with multiple logical databases (national news, international news, sports, etc.) or with all stories in one database. Each site can customize its commands, prompts, help messages and display formats. Security features enable a site to prevent users of a certain level from accessing the database.

Words are entered in the database by putting them in an index basket and running a system program. Any errors that occur are reported. A customizable stop list is created at each site to tell the system to ignore certain words ("a," "and," "the" or other commonly used words that shouldn't be indexed).

Searches. Searches can be initiated on words in the body of a story, in the headline, in the byline or in a header field in which keywords have been entered, and over a certain period within the database (exact date, during a period, etc.).

Search operators. Search operators are comprehensve, including:

- AND—multiple words occur anywhere in the story.
- OR—either or both words appear anywhere in the story.
- BUT.NOT—story contains the first word but not the second (e.g., Jackson, but not Reggie).
- WITHIN—two words must appear within a given number of words (specified by the user), with the option of specifying that one word must come before the other word.
- EXACTLY—two words must appear an exact distance apart, with the option of specifying whether one must come before the other one (e.g., bank exactly 2 from america).



On-line help. *The operating instructions are available in hard-copy form or on the system. This screen—a read-only file—shows some of the search operators with examples.*

- ADJACENT—two words must be next to each other, with *preadjacent* requiring that one appear before the other.

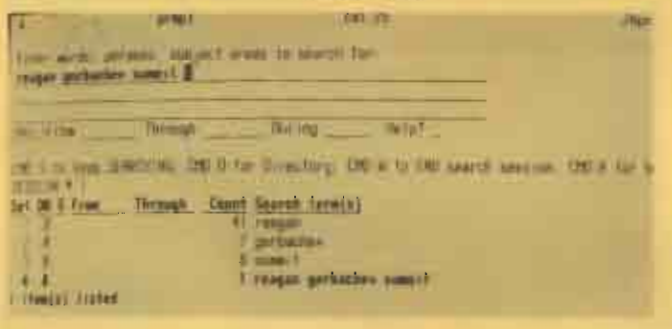
If no operator is selected, the system defaults to whatever the site has specified as its default.

If multiple operators are requested, they are treated in the order in which the site has specified. It is also possible to determine the order in which expressions are evaluated by entering parentheses around the ones to be handled first. For example, convicted AND (killer OR murderer) would select all stories with either "killer" or "murderer" and then eliminate all stories that don't have the word "convicted."

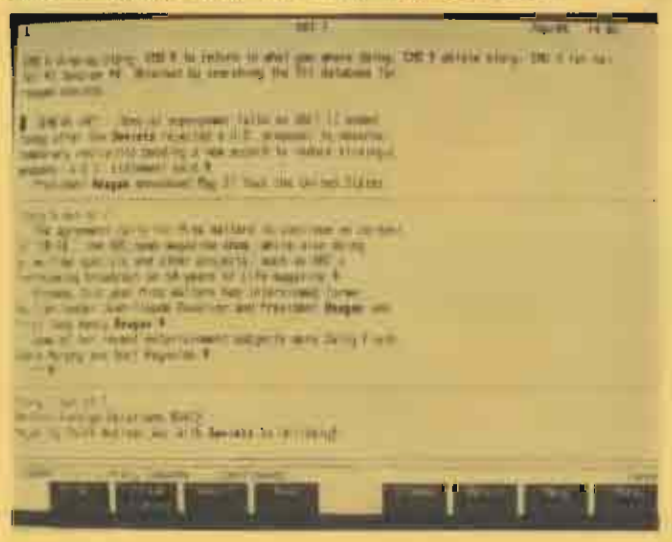
Other search features.

- A wildcard character (customizable by the site) can be used anywhere in a search word (*e.g.*, "inherit*" would encompass "inherits" and "inherited").
- The system can include or ignore plurals and possessives.
- To handle a phrase (*e.g.*, San Francisco Giants) the user encloses the phrase in quotation marks. The phrase can specify a proximity.
- Each site can set up a list of alternate words or phrases that will be treated as equivalent by the system (*e.g.*, "kadafy," "quadafi" and "khadafi," or "CIA," "C.I.A." and "Central Intelligence Agency."
- A previously defined set of stories can be searched to avoid researching the entire database.

Reports. The system generates a list of stories in which the search criteria was found *(see photo).*



Search completed. ***Above:*** *From our search criteria "reagan gorbachev summit" LASR produced this report showing 41 stories with reagan, 7 with gorbachev, 9 with summit and only one with all three. From this listing we could "browse" the list and generate a long directory.* ***Below:*** *The long directory shows searched words in boldface within the context they were located.*



Story directories. The user has a choice of directories of stories conforming to the search criteria, each including part of the header. Depending on the situation, various functions are available to read the next or previous story or to skip to a different one without returning to the directory. Directory choices display:

- The full text of the story.
- A quick display showing the text within seven lines of a search term, with each section of text separated by dots. (The user can ask to view the full text around any highlighted term.)
- A short directory containing one line per story.
- A long directory showing up to 10 lines of the story—either the first 10 lines or 10 lines around the search item. A "browse" command while viewing the report of stories found generates the long directory.

After the desired story is located, text can be cut from the database and brought into a file on the SII system. The story can be sent to a particular queue or printed out.

All in all, we are impressed with the flexibility and sophistication of LASR. We look forward to following its use in San Francisco.

3M

3M has extended its dry-silver photographic paper to the contact-proofing arena. Sheets of the heavy proofing stock are exposed through a litho negative in a standard arc or UV platemaker, then developed in room light through a heating process. We're no fans of dry silver for typesetter papers (though the material is very convenient at shows, since it needs no wet chemistry to develop, because the edges of the type are soft. This new proofing paper, though, yields reasonably sharp, hard edges.

We asked if the material could be used as a typesetter paper; 3M's representative said that the engineers have considered the matter and only slight modifications to the material should be necessary. However, whether such a product will be marketed is a subject for the future. We hope it is; it could redeem the dry-silver medium's reputation.

The proofing paper costs about 44 cents per square foot, we were told, and a 15" wide heat processor unit costs $1,300. A broadsheet-size heat processor will soon be out with a price tag of $2,500.

Realists who managed to keep their feet planted in clay while everyone else was being transported on a sea of celebration may argue that those blinding stars were only bursts from hundreds of flash cameras that went off in a standing crowd of True Believers with Frankie Viola's first pitch of the last and deciding outing of Minnesota's greatest-ever Octoberfest.

NICK COLEMAN

Dry-silver proof paper sample. *The edges of type are much sharper than we usually see on dry-silver papers. 3M hasn't decided whether to market a variant of the paper for typesetters.*

Board of directors restructured

Management changes at Miles 33

Recent days have seen a restructuring of the board of directors at Miles 33. Roger Holland is stepping down as chairman, but he remains a director. His involvement in the day-to-day running of the company had diminished over the past two to three years as Ian Richards took on more management responsibility. Richards replaces Holland as chairman; he is on the board of UEI plc, Miles 33's parent company, and is also chairman of Miles subsidiaries Pagitek and Databasix.

Nick Jones is the new managing director of Miles. He was previously director of the Legal Systems Division of Miles; before that, he was the firm's development director.

Two new board members have been appointed: Donald Sullivan, president of the U.S. subsidiary, and Tom Huckin, former director of sales and marketing for the Legal System Division, who joins the board as legal systems director. Sullivan's appointment reflects Miles's commitment to the U.S. market, which it believes will increase in significance.

After acquisition of IGC

CAP International acquired by Nynex

CAP International, a leading market research and consulting firm for the information industry, has joined the BIS Group Limited through an acquisition by Nynex Corporation. The BIS Group is a London-based subsidiary of Nynex Information Solutions Group, headquartered in White Plains, New York, a subsidiary of Nynex Corporation that oversees the operations of four information systems and software units.

CAP will join the Marketing Information Services Division, which also includes BIS Mackintosh, a European consulting group, and BIS Shrapnel, a forecasting and consulting firm for the Asia Pacific region.

CAP will continue its operations in Massachusetts under the leadership of its president, Charles Pesko, Jr. The company is currently moving its headquarters to Norwell, MA.

The new address is: 1 Longwater Circle, Norwell, MA 02061; telephone, (617) 892-9500.

CAP acquires IGC. Earlier CAP International acquired the Institute for Graphic Communication (IGC), which sponsors more than 30 conferences each year. In addition, IGC, in conjunction with MG Expositions Group, organizes and manages Electronic Imaging, an electronic imaging exposition and conference. IGC will continue to operate from its Boston office.

Friendly takeover; buyer not named

Datacopy to be sold

Datacopy recently disclosed that its board of directors has voted to accept a buyout offer. But it refused to name the buyer until negotiations are completed. According to Datacopy president Rolando Esteverena, the deal will be closed in a matter of weeks.

The unnamed buyer is offering $6 per share for all five million shares outstanding. Prior to the offer, Datacopy had been trading over the counter near $5½ (12-month high of 8⅝ and low of 3), but as we go to press with this issue, it closed at $5. We presume that this price, well below the proposed tender price, reflects Wall Street's uncertainty that the deal will actually be consummated anytime soon. And unless a bidding war breaks out (which now seems improbable), there is no reason to expect the price to exceed the offered $6.