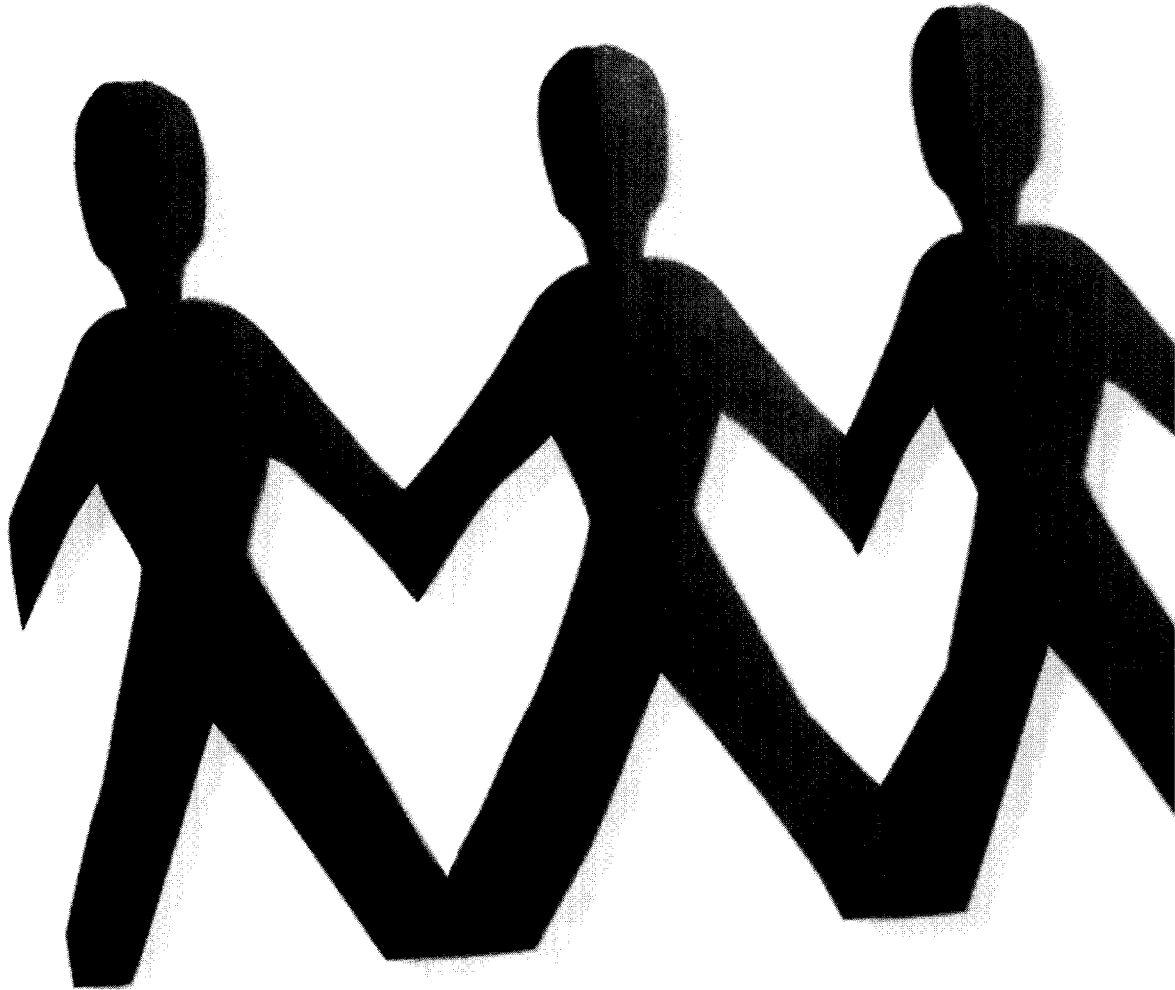


MIMICRY SOFTWARE



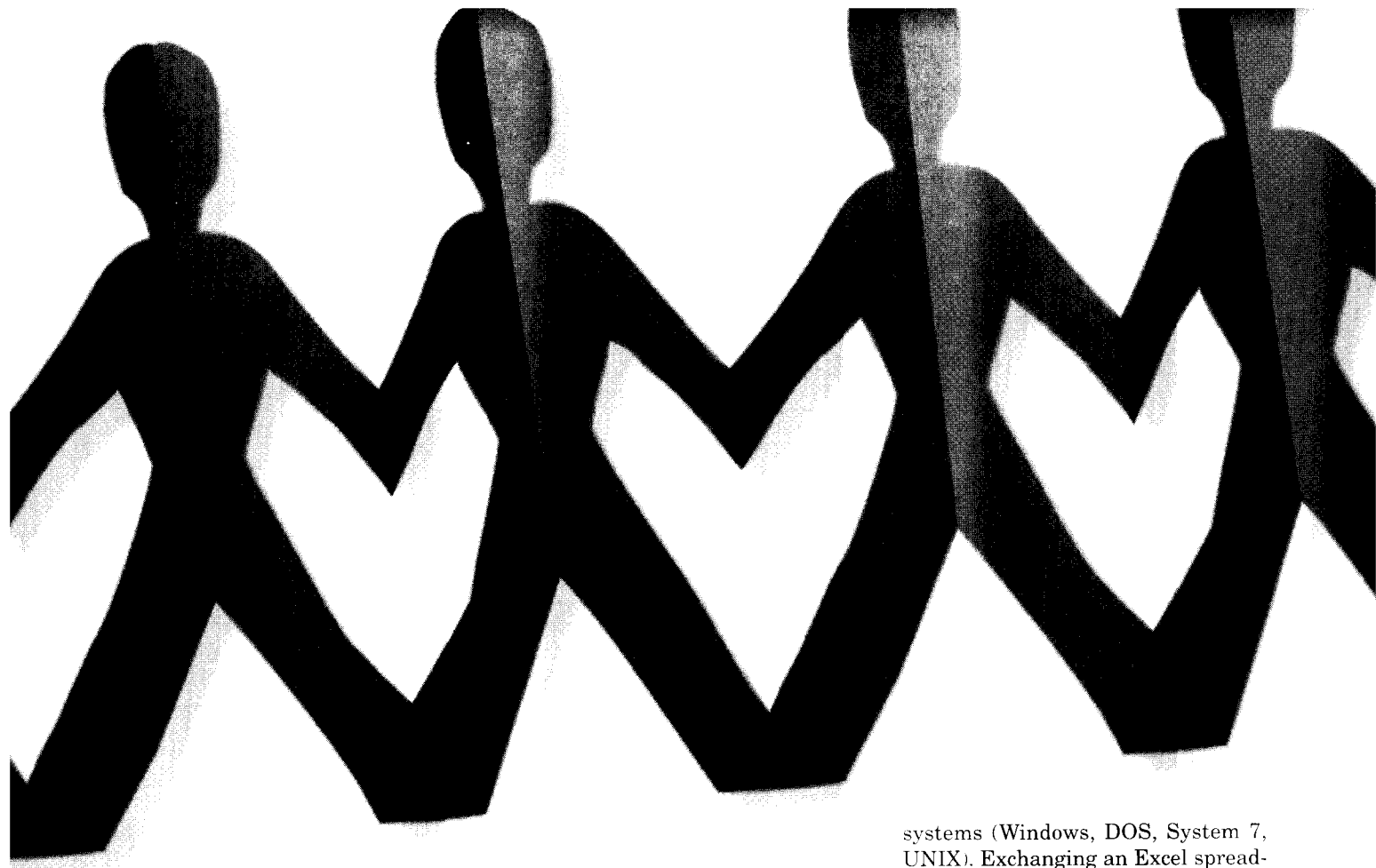
A New Option For Electronic Document Delivery And Transfer

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Don't reach for your computer dictionary. The term "mimicry software" describes a new genre of software that may solve the most nagging problem in electronic document delivery today. Mimicry software mimics—through free viewer programs—the look and feel of an original document. Using mimicry software, a document can be opened and viewed by anyone—the recipient does not need to have the same hardware or operating system, the same application software, or even the same fonts that the originator of the document has used.

Some mimicry software not only lets recipients display and print a document with the same typography, layout and content, but also allows them to search the document for a word or a phrase or to copy text and illustrations.

Mimicry software is long overdue. The solution is here, reasonably priced and almost perfected with two of the four mimicry software packages discussed in this article. With modern word processing, graphics and desktop publishing software, we have improved our document-formatting tools and expanded our font choices



to convey our messages better. We worship e-mail and the Internet, even if it mostly means sending and receiving documents without formatting and special fonts. But when it comes to distributing our beautifully-formatted documents, we still fall back on printing and mailing them, or mailing a disk and hoping the recipient has the same platform, suite of applications and fonts.

Although snail mail on paper or disk is neither economical nor fast, it is often more satisfactory than distributing formatted and graphically rich documents online. This anachronism exists because distributing formatted documents electronically courts disaster, or at least frustration. While sprinkling documents with special fonts and images is often excessive, using distinctive fonts and styles can facilitate the reading of documents. Special fonts are sometimes required to encompass diacritics and symbols outside the standard character sets, such as the name of my employer with the glottal stop sign (Hawai'i) and the macron (Mānoa). Even putting the accent in my name is impossible with

some software. Purchasing a font that handles such characters helps me create documents, but the fonts cannot be distributed along with the document.

DIFFERENT PLATFORMS, DIFFERENT SOFTWARE...

The underlying problem with distributing a document (online, floppy disk or CD-ROM) from word processing, spreadsheet, presentation, or desktop publishing software is that the recipients may not be able to view the document that you have created.

systems (Windows, DOS, System 7, UNIX). Exchanging an Excel spreadsheet with a Quattro Pro user is fraught with problems. Even reading my DOS Quattro Pro files with a Windows version of the same program is difficult—the spreadsheets are askew because the two versions use different fonts and even different codes for bullets.

The consequences of these differences are that line breaks, column breaks and page breaks are lost; the original formatting is lost; the look and feel of the document is lost; even some of the content may be lost as well. For instance, sending a

The common “solution”...is to strip the document...and save it as unformatted “text”—plain ASCII.

Why? Because different people have different hardware, different operating systems, different application programs and different fonts.

The most obvious problem is different hardware and operating

fully-formatted document to someone else from a page layout program such as Pagemaker or Quark Xpress is hopeless unless they, too, have the same suite of software and fonts.



EFFORTS AND PSEUDO SOLUTIONS

The common "solution" to document transfer and translation problems is to strip the document of its special features and save it as unformatted "text"—plain ASCII. This happens when you convert a Word for Windows document into an ASCII file, for example. Some programs use special filters to translate files created with different software, but often some formatting is lost in the process. A better solution is when the receiving software is on direct speaking terms with the originating software, and is capable of retaining many of the original embellishments. The problem is that this capability is typically one generation or software version behind the times. Version 4 of Excel now reads DOS Quattro Pro files but not Windows QPro files, for example. Another variation is that some software enables saving files to many different file formats, again with varying results at the recipient's end.

TrueType and Adobe Type 1 fonts were meant to alleviate the problem of proprietary font formats, which are at the root of many of these problems. TrueType fonts are application-software-independent. The same fonts are also used in the Windows versions of Word Perfect, Lotus 1-2-3, Power Point and Harvard Graphics. And, although TrueType font implementations are not the same on the Mac and on the PC, there is progress on that front as well.

In these cases of document transfer and translation, however, it must not be forgotten that specific fonts still have to reside on the recipient's computer. The document originators may not distribute fonts along with documents unless they have the copyright or a license to do so. This is the case with the CD-ROM databases of the American Chemical Society, and with the American Heritage Dictionary, which includes its own special fonts of chemical and phonetic symbols, respectively with the database.

ENTER MIMICRY SOFTWARE

The best approach to this problem is offered by a new category of programs that I have labeled "mimicry software." The purpose of

mimicry software is to preserve the look and feel of an original document for others whose hardware, operating system, application software and font collection may be different from those of the document originator. Some of these programs also allow further manipulation of the documents, such as annotating, hyper-linking and searching the document. The searching is not the kind of searching that *ONLINE* readers are accustomed to, because there are no indexes. The software "reads" the document to match the character string entered by the user. It is slow, but with an eight to ten-page document it is perfectly acceptable.

Currently, there are four mimicry software programs on the market:

- Acrobat (Adobe)
- Common Ground (No Hands Software)
- Envoy (WordPerfect)
- Replica (Farallon)

Each has at least two distinct components: the document publisher and the document viewer. The term "document viewer" is somewhat of a misnomer since you may also print, copy, search and with some viewers, even annotate and mark the documents received. When you purchase the mimicry software, you get the document publisher and one or more *free* document viewer(s) for different platforms. The document viewing,

searching and editing capabilities that are part of the document publisher are superior to the free viewer, but the free viewer is adequate for most users. Some of the free viewer programs can be downloaded from CompuServe as freeware.

Adobe has only recently allowed free viewer distribution. Envoy does not have a free standalone viewer. Instead, the viewer must be packaged with each document sent, unless the recipient has the full version of Envoy. This solution is cumbersome and potentially costly. Replica offers the most flexible solution: the viewer can be sent separately, bundled with the document, and even extracted by the recipient from a bundle to use it with other Replica documents. With Common Ground, a free Mini-Viewer can be bundled with the document, but not be extracted from it. Acrobat Reader cannot be bundled with the document, but can be distributed freely.

THE LOGISTICS

All mimicry software uses the same basic technique, but the implementation is different. The software is installed as a printer device driver, then it is selected as a printer just as a Hewlett Packard or dot-matrix printer would be selected. The application program believes that it prints to a printer, but actually prints to a special file (Figure 1). The

FIGURE 1
Selecting Printer Driver From
the Printer Setup Menu

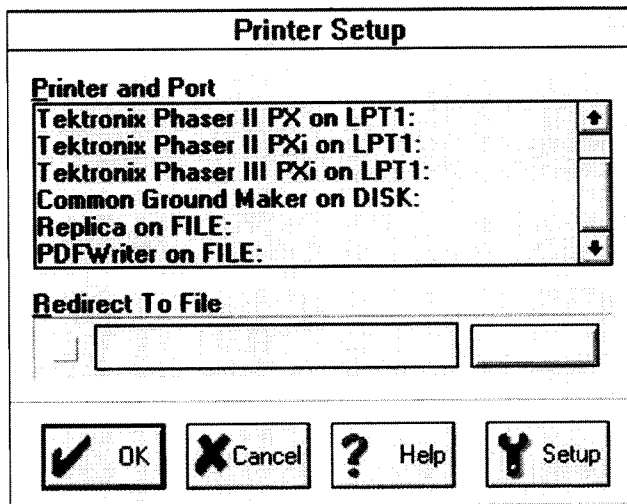
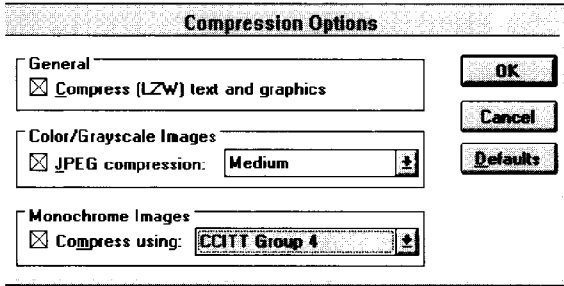


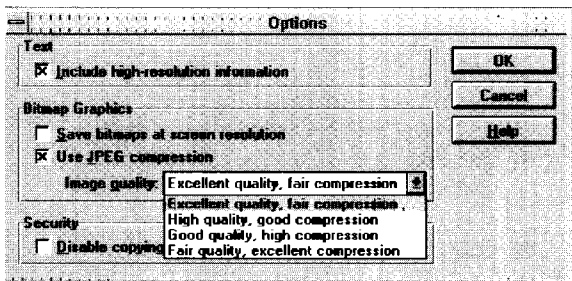
FIGURE 2
Specifying and Setup Options

2a



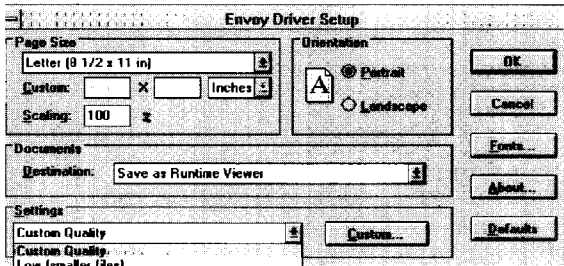
Acrobat

2b



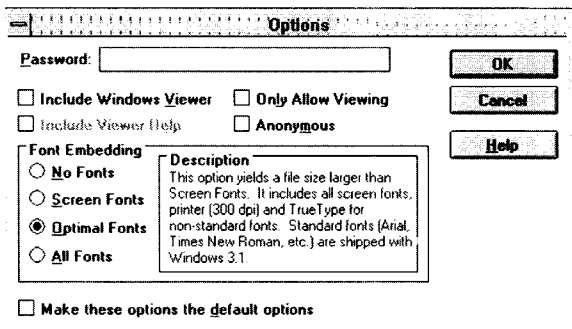
Common Ground

2c



Envoy

2d



Replica

FIGURE 3
Common Ground Document Information Page

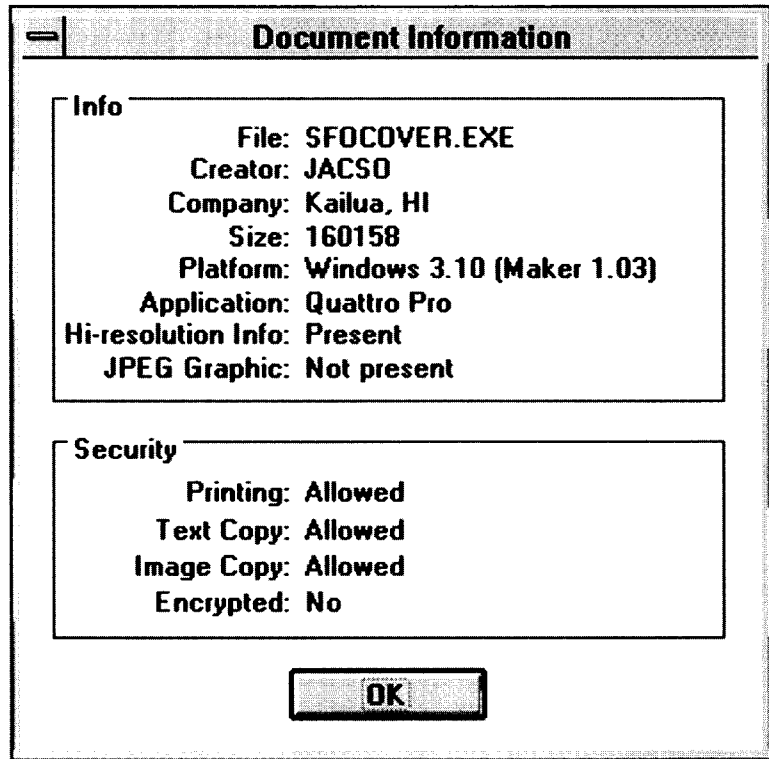


FIGURE 4
Comparison of Publication Features of Mimicry Software

	Adobe Acrobat	Common Ground	Envoy	Replica
Optional Bundling with Viewer		•		•
Password Protection	•	•	•	•
Copy Prevention	•	•	•	•
Above in Separate Function	•	•	•	•
Thumbnail Creation	•		•	
Bookmark Creation	•		•	
Sticky Note Creation	•		•	
Highlighting			•	
Hyperlink Creation	•		•	
Built-in Postscript Processor		•		
Direct E-mail			•	•
List Price	\$195	\$189	\$189	\$99

FIGURE 5
Comparison of Free Viewer Features of Mimicry Software

	Adobe Acrobat	Common Ground	Envoy	Replica
Free Viewer Program				
Windows	•	•	•	•
DOS	•			
Mac	•	•	•	•
UNIX	•			
Extractable Viewer Program				•
Extractable Document		•	•	•
Bookmark (Outline) View	•		•	
Thumbnail View	•		•	•
Copying Multiple Column				•
Copying Rectangular Area	•		•	•
Copying Non-Rectangular Area				•
Searching For				
Word	•		•	•
Phrase	•		•	
Text in Graphics	•			
Bookmark			•	
Sticky Notes	•		•	
Hyperlink			•	
Zooming				
Predefined Rates	•	•	•	•
Any Magnification Rate			•	
Of Thumbnails			•	
Saving File in				
ASCII			•	•
Word Processing Format				
Rich Text Format (RTF)				

mimicry programs take a snapshot of the page, capturing the images, the text, the font metrics information and other data needed to mimic the exact appearance of the page. Other options may include document packaging and extra privileges, such as:

- a) assigning a password to the resulting file
- b) choosing among different levels of fidelity in the recreation of the fonts and documents
- c) balancing fidelity with levels of compression (e.g., excellent quality/fair compression versus fair quality/excellent compression in Common Ground)

- d) preventing copying and/or printing
- e) bundling the document with the free viewer program and a help file

Figure 2 illustrates the options screens of Acrobat, Common Ground, Replica and Envoy.

Once special options are identified, the mimicry programs begin their act of magic behind the scenes. They compress the file, mix it with the free viewer software (if that was requested or is possible), assign a password, etc. It all happens very quickly. The resulting mimicry files have proprietary file formats that only their own viewers can read.

If you choose to include the viewer in Common Ground and Replica, the print file becomes an executable file with an .EXE extension. In Envoy, you must include the viewer program with the file unless the recipient has the full Envoy program. In the cases of Replica and Envoy, instead of printing to file you may also choose to send it directly as e-mail (through Lotus CC Mail or Microsoft Mail). After the conversion, you may request the display of a document information page (Figure 3). The major differences among the publishing functions of the mimicry software alternatives are summarized in the table in Figure 4.

DOCUMENT ACCESS

The recipient receives the document with or without the free viewer program embedded in the file. If it is included, the file is a self-launching program that displays the document and offers several possibilities for manipulating it. Without an embedded viewer, the recipient invokes the previously installed viewer program and opens the specially-formatted mimicry file.

There are significant differences in document access among the free viewer programs (Figure 5). The major evaluating criteria include:

- For what hardware and operating platforms are viewer software available?
- Can the software and/or the document be extracted from the bundle received?
- Can you see a thumbnail and outline view of all the pages, and zoom in and out?
- Can you copy text from multiple columns or a non-rectangular area into the clipboard?
- Can you save the document into plain ASCII or into one or more word processing formats?
- Can you search for words and phrases in the text or image portions of the documents, or for the next sticky note or bookmark?
- How does the size of the document formatted with the mimicry software compare to the size of the native document?

- Is the printing slower or faster than from the native application?

The size of a mimicked document versus the original varies tremendously depending on a) the type of software (word processing, spreadsheets, etc.); b) the brand of software; and c) the number and style of the fonts and images. Replica and Acrobat seem to be the most frugal. From a Microsoft Word document, Replica and Acrobat produced a file almost identical in size to the original, Common Ground quadrupled the size, and Envoy yielded a ten-fold increase. For a 5K Excel spreadsheet, the sizes of a mimicked document without an embedded viewer were: Acrobat (21K), Common Ground (27K), Replica (22K), and Envoy (220K—yes, 220K!). These data are from a study in *InfoWorld*, but my experiences were similar.

FIDELITY OF REPRODUCTION

The acid test for mimicry software is, of course, the fidelity with which the original document is

reproduced on the screen and in print. This cannot be answered by a simple yes or no. Some judgment may be subjective, and the results may also be influenced by the options chosen during the original document preparation (quality versus compression level).

For a fair comparison for this article, quality optimization was preferred over compression for all the packages, and font embedding was chosen in all the samples. Instead of a somewhat subjective grading, the readers of *ONLINE* can decide for themselves which program does the best mimicking. As checkpoints of fidelity, Figure 6 demonstrates how ten TrueType decorative and symbol fonts are mimicked by the different software. I also tested ten similar Postscript fonts. The results are not shown here, but they were similar—with two exceptions. Acrobat fared much better with the Postscript symbol fonts, and Replica had very low print and display quality.

Beyond the obvious inability to mimic the look and style of a font is

the problem of poor substitution, such as the lack of ability to preserve the width and the height of the font. This is a key issue for high-fidelity reproduction of a document. The grossly oversized substitute of the Technical font in Replica illustrates this well (Figure 6).

In a tightly laid-out document, these problems accumulate and can wreak havoc on the layout. To test this, I mimicked the original manuscript of this article. It was laid out in three columns and included some special characters, symbols, and decorative fonts. Some did not make it to the final article but served well for testing. Figure 7 shows a collage of the most problematic segments of the printouts so all four can be compared at a glance.

There was no need to include an illustration of the original document, because Common Ground was so perfect that not even a mother could have told it from the original. Envoy also performed well, though it could not mimic the font of the title, the subtitle, the author's name and the postscript dingbats in the second illustration.



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FIGURE 6
TrueType Fonts Test Results

	Native Application with TrueType Fonts	Envoy	Acrobat	Replica	Common Ground
Wingdings2	①②③④	①②③④	••••	①②③④	①②③④
Intersymb	Ⓔ Ⓕ Ⓖ Ⓗ	Ⓔ Ⓕ Ⓖ Ⓗ	H, +2	Ⓔ Ⓕ Ⓖ Ⓗ	Ⓔ Ⓕ Ⓖ Ⓗ
RRKeycaps	Alt Ctrl Tab	Alt Ctrl Tab	ACF	Alt Ctrl Tab	Alt Ctrl Tab
Bassoon	ONLINE	ONLINE	ONLINE	ONLINE	ONLINE
Bedrock	ONLINE	ONLINE	ONLINE	ONLINE	ONLINE
Briem	Péter Jacsó	Péter Jacsó	Péter Jacsó	Péter Jacsó	Péter Jacsó
Technical	Péter Jacsó	Péter Jacsó	Péter Jacsó	Péter Jacsó	Péter Jacsó
Envision	MIMICRY	Mimicry	MIMICRY	Mimicry	MIMICRY
Arabia	Mimicry	Mimicry	Mimicry	Mimicry	Mimicry
Tubular Hollow	Mimicry	Mimicry	Mimicry	Mimicry	Mimicry

Replica was able to reproduce all the fonts, but the print quality was very poor, similar to a cheap fax transmission. It did not retain the exact size of the fonts, and the text shifted across lines, columns and even pages. This can be a problem with multicolumn and side-by-side documents that have captions or tables and charts aligned with text.

Acrobat had high print quality, but had the greatest problem with TrueType fonts and symbols. It simply ignored the subtitle, could not handle the glottal stop and the macron, nor the dingbats of the first illustration, the keycap symbols or the diacritical characters. It had no problem, however, with the second illustration at all.

EVALUATION AND COMPARISON

Common Ground produced perfect mimicry of documents, but regrettably has the fewest document management features. Hopefully version 2.0, due for release in early 1995, will add many of those features. The Mini-Viewer also has only very frugal capabilities. Nevertheless, for someone who uses decorative fonts and non-English character sets, Common Ground is a good solution.

Without a need for decorative fonts or special symbols, Acrobat is a

good choice, particularly for long documents or sets of interrelated documents, due to its hyperlinking feature. Its unique feature is that free viewer software is also available for UNIX and DOS users. Adobe also offers a number of other programs in the Acrobat family that can convert Postscript files to the Acrobat proprietary format and index such files (Acrobat Distiller and Acrobat Catalog—each priced at about \$500-\$600). Files indexed by Acrobat Catalog can then be searched by Acrobat Search, part of the full Acrobat Exchange software (but not of the free viewer program), using full Boolean, proximity and soundex search capabilities.

Replica is the least expensive in this group of software, and can be a contender for those who use only TrueType fonts. It offers a direct e-mail option (as does Envoy) that can be very appealing to those who want to send documents through certain electronic mail channels. Its software distribution option is ideal, and the viewer software has some unique features, such as the copying of non-rectangular areas of a document.

Envoy has good mimicking capabilities and powerful document management features (even in the bundled viewer). However, the requirement to embed the viewer with each document

is unacceptable for many publishers. Regularly uploading and downloading or copying 500K is costly and inconvenient.

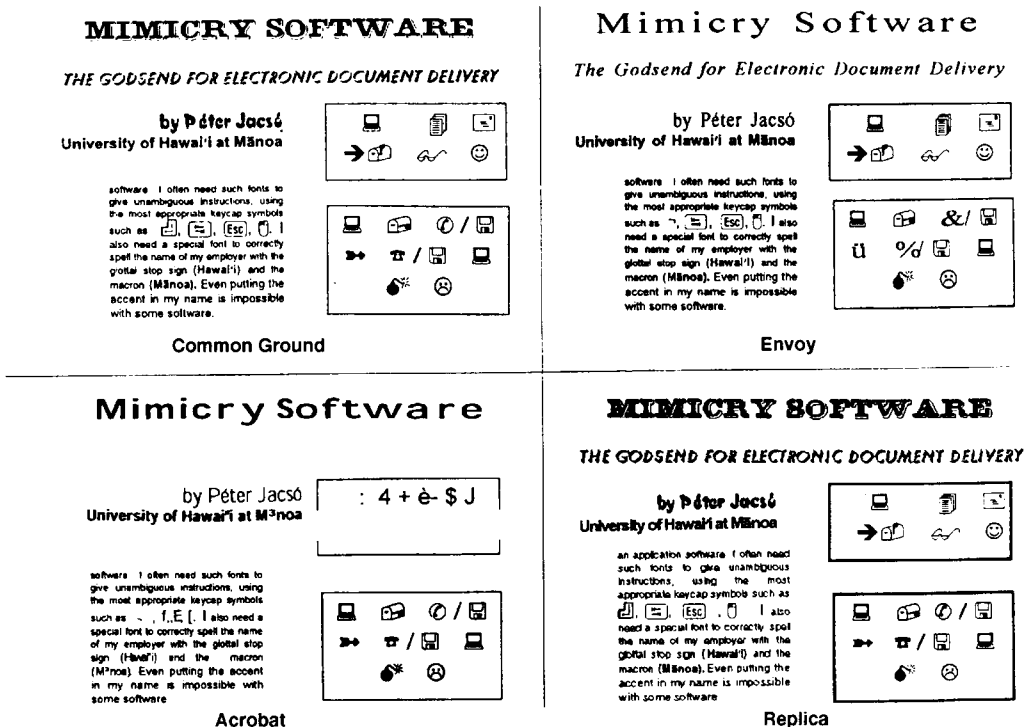
I also tested the reproduction quality of various graphic formats (TIF, BMP, WMF) with the mimicry software. All passed this test. There are, however, significant differences in the quality of mimicking Encapsulated Postscript (EPS) graphics, often found in high-end presentation, desktop publishing and drawing programs.

I looked at (but did not test) six EPS files created by Illustrator, FrameMaker and Corel Draw. Only Acrobat Postscript Distiller (a \$595 add-on) could handle them flawlessly. The other packages omitted one or more components and had trouble with text in EPS graphics, even when they produced gigantic files. Handling EPS files is of great concern for professional publishers who should closely examine the Postscript-related capabilities of each of the programs.

NEW OPPORTUNITIES

Despite some criticism and reservation, I am convinced that mimicry software will bring a new era to electronic document delivery and transfer. Mimicry software has significant implications for online, floppy-based

FIGURE 7
Sample Output from Mimicry Software



and CD-ROM electronic document delivery. Given free availability of the viewer components of these software products, document publishers (both individuals and professional bodies) are certain to produce and disseminate large numbers of documents in these special formats. The process already has begun and you can find a growing number of tax forms and other documents on CompuServe or the Internet in one of the special formats, along with freely downloadable viewer software.

UMI has put some sample dissertations in Replica format on the Internet. *PC Magazine*, in its CD-ROM issued at the end of 1994, used Envoy to mimic some of its illustrations.

We can expect that publishers of online and CD-ROM databases will hop on this mimicry bandwagon and will replace many plain vanilla ASCII files with files in mimicry formats. Licensing the viewers for commercial use on CD-ROM and online is already becoming a lucrative

market. Non-commercial use on the Internet and on campus-wide networks will make it possible to electronically circulate formatted forms, questionnaires, preprints and other documents. Mimicry software is likely to be one of the most widely embraced innovations in the information industry in 1995.

Péter Jacsó is a frequent contributor to professional magazines, including DATABASE and ONLINE, and he has two monthly columns in Information Today. He won the Excellence in Writing Award from UMI and Learned Information, Ltd. in 1993 with his two-part article about database quality evaluation, which was published in DATABASE. He is a frequent speaker at national and international conferences, and regularly offers his CD-ROM workshop series.

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Products In Brief

Adobe Acrobat

Adobe Systems Inc.
 1585 Charleston Road
 P.O. Box 7900
 Mountain View, CA 94039-7900
 415/961-4400
 800/272-3623
 Fax: 408/562-6775
 \$195

Common Ground

No Hands Software
 1301 ShoreWay Road, #220
 Belmont, CA 94002
 800/598-3821
 415/802-5800
 Fax: 415/593-6868
 \$189

Envoy

WordPerfect
 1555 North Technology Way
 Orem, UT 84057
 800/451-5151
 \$189

Replica

Farallon Computing Inc.
 2470 Mariner Square Loop
 Alameda, CA 94501
 510/814-5000
 Fax: 510/814-5023
 \$99

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