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by David Kew and Dan Brill



hen Adobe launched the PostScript era in 1985, it would lead, as we all know, to a profound change in the way the printing industry dealt with type and graphics. Graphics — illustrations, scanned images, line art, digital art, color transformations — tended to draw most of the industry's attention as it made the changeover from old analog workflows to digital ones.

But the problems associated with type have remained largely in the background — despite the fact that over the past fifteen years fonts have been, and continue to be, the single most problematic element in the graphic arts workflow. Various industry surveys report that up to 80% of all jobs which fail to pass initial prepress preflighting, do so because of font-related problems.

There are no true standards within the font industry. Formats, versioning, licensing, naming conventions, clearly defined rules for user-defined font formatting — all these are effected on an ad hoc basis, and the only de facto standards which exist are tied to the specifications developed by font vendors led by Adobe with its Type 1 specs and TrueType, as originated by Apple and perpetuated by Microsoft.

Where formerly font use and definitions lay in the hands of graphic arts suppliers and the printing trade, today that responsibility has moved upstream to content creators who create, use, manage and manipulate fonts from any source virtually at will. Problems in the print production workflow have been exacerbated by the adoption of file formats such as EPS, TIFF and even PostScript itself, which are essentially locked and/or uneditable. Each presents its own challenges with respect to modifying or correcting errors. Adobe's Portable Document Format (PDF) straddles both sides of the fence, permitting creators to either lock in font information (through font embedding) or retain text editability (through embedding with subsetting).

For font designers and manufacturers the same thorny issues remain, namely, content creators' respect (or lack thereof) for font integrity, font metrics, quality of typography, ownership and legal usage.

And for content creators there are still many unresolved questions surrounding liability for errors within the print workflow. When a document is converted many times through many different file formats on its way to film or plate, what security does the prepress provider or printer offer that unexpected changes won't take place? And font mutation is a prime concern.

One of the most hotly debated features of a digital workflow is the ability to retain text editability right up to the end of the production process. Content creators view this as a primary benefit of desktop technologies, which they would be loathe to sacrifice; printers see it as arguably the most counterproductive and troublesome aspect of the new workflow — something which they would prefer to see exorcised, one way or another. These production issues are further complicated today by the introduction of font formats such as MultipleMasters and OpenType.

However prepress systems vendors are redesigning the production model using new PDF-based workflows, such as Creo's Prinergy and Agfa's Apogee, which through embedding, outlining and rasterizing methods circumvent the need for font inclusion.

If PDF-x — the newest ANSI-approved PDF standard for feeding proprietary prepress workflows — eliminates any requirement by printers and prepress houses to own fonts, what impact will this have on type foundries, who have traditionally relied on sales to the graphic arts trade as a core part of their business?

But the trade is still in desperate need of a bulletproof solution for handling fonts in a predictable, efficient fashion. Relying on customer-supplied font resources does not overcome all the potential troubles of text reflows, file corruption and inadvertent font substitutions, not to mention the legal licensing issues surrounding the potential use of fonts which may not be owned by the user or the trade supplier. But what are the alternatives?

Outlining fonts (a la Adobe Illustrator) can introduce variability in stroke widths and glyph imaging. Rasterizing text is still the best way to retain a font's integrity — but it also renders it unusable in the event of last minute changes.

Obviously it won't be a simple task to find an answer to handling fonts in the graphic arts workflow that simultaneously satisfies users, font designers, font vendors and the print community.

(below) Linn Boyd Benton, inventor of the Benton punchcutting machine; (bottom) the Linotype typesetting machine

#### A BRIEF HISTORY OF FONT MANUFACTURING



When Nicolas Jenson designed and manufactured his fonts in the last half of the fifteenth century, there was no doubt about who owned them. In fact, just before his death Jenson was careful to set out the exact terms of disposition of his earthly belongings, and first among them was his collection of fonts.

Until close to the end of the nineteenth century, fonts were produced much the same way they had been throughout the previous four hundred years. Despite innovations in font design, setting type was a tedious labour-intensive exercise, although still the foundation of print production.

Then, quite suddenly and in quick succession, a pair of technological breakthroughs rocked the type world. First, in 1884, Ottmar Mergenthaler's Linotype machine automated typesetting, eliminating both the process of setting type one letter at a time, and the need for type foundries to maintain large inventories of lead type; the following year Linn Boyd Benton's punchcutting machine was introduced, which would revolutionize the production of type through its ability to manufacture different font sizes quickly and precisely, driving down both production costs and prices in an already highly competitive market.

Reeling from this pair of threats to their profits and their livelihoods, twenty-three of the largest type foundries in the U.S. banded together in 1892 to form American Type Founders

(ATF), effectively ending the golden age of type foundries.

For more than seventy years the Linotype machine and its competitors such as the Monotype were state of the art in the typesetting world. However by the early 1960s the "hot type" of typesetting machines was being replaced by "cold type" generated by phototypesetters, a brand new family of electronic devices first invented by Frenchmen Rene Higonnet and Louis Moyroud in 1944. This was the heyday of companies like Compugraphic, Harris Intertype and Addressograph-Multigraph.

But even with advances in electronic technologies, it is critical to note that type production was still proprietary. Control of fonts still resided with the companies which produced the equipment.



A veteran typesetter, in his reminiscences on the Graphion typesetting website ([www.slip.net/~graphion](http://www.slip.net/~graphion)) about the “old days” back in the 1970s, recalls when “...most of the important typefaces were owned by, or under exclusive license to, Harris Intertype, Mergenthaler, and Monotype, so the growing new companies simply copied these fonts and renamed them. Phototypesetters like ourselves had to keep conversion lists so they’d know when a customer asked for ‘Toms Roman,’ he’d been dealing with a Compugraphic system. The same type would be called ‘London’ on a GSI or Singer machine, or

‘Times Roman’ on a Mergenthaler. The fonts were about as similar as anyone could make them, but the serif on the descender of a letter like Q might be longer or shorter, to justify this outright theft of type styles by claiming that they were unique new faces.”

In 1985, with graphic arts businesses booming, good typesetters were in heavy demand. But by 1990, it was clear that desktop technologies would wipe out traditional typesetting, and just ten years later, they were virtually extinct.

The PostScript era was upon us — and the battle lines were drawn.



René Higonnet and Louis Moyroud demonstrate their Photon machine — the world’s first phototypesetter, unveiled in 1944.

## THE FONT WARS

Surprising font designs was hardly a new phenomenon at the time PostScript was introduced. But the graphic arts industry was not prepared for the scale and scope of change in font availability and usage that desktop publishing would bring, nor did it grasp the shift in the dynamics of the workflow which would push responsibilities for prepress production — including the selection and management of fonts — upstream into the hands of the content creator.

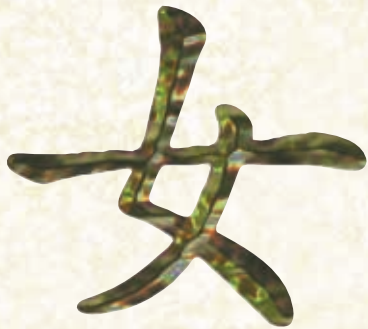
For five years an uneasy truce was maintained within the font industry, with proprietary font vendors groping to understand the implications of the new wave of technologies. Fonts became software, and the established major players (Agfa, Monotype, Linotype, etc.) responded to the new technologies by banding together with Adobe, using Adobe technology, to “pool” their font resources and jointly sell them to the desktop market (remember what happened 100 years earlier after the introduction of the Benton punchcutting machine?). Adobe reaped the benefits coming and going, both through font sales and through healthy PostScript licensing fees which prepress and printer vendors needed to pay in order to provide output capability. In fact, the Type 1 format was originally proprietary (although Type 3 specifications were open, albeit more complicated to hint and less efficient).

Demand for fonts grew with the rising tide of the desktop revolution. Some members of the “club” became increasingly competitive, sometimes even cutting prices to grab more sales (unheard of in the “old days”).

Then in 1990 the dam broke.

Apple, frustrated both with the cost of PostScript licensing fees and with Adobe’s control over a vital part of the burgeoning desktop publishing market on which the Mac was dependent, introduced System 7, which incorporated support for Apple’s own brand new font format, TrueType, right at the operating system





level. Suddenly fonts were no longer a specialized subset of tools for the graphic arts, but rather a “free” accessory to a computer system.

When Microsoft quickly licensed TrueType for inclusion in Windows 3.1, it set off the so-called “font wars”, the ideological and technological battle between Microsoft and Adobe to decide who would control type on the desktop.

Microsoft continued to refine TrueType for the PC, while Adobe continued to develop Type 1 fonts for the professional graphics market. However Microsoft also released TrueType specs to third party software developers, forcing Adobe to follow suit with Type 1.

The two font formats differed radically in construction. TrueType hinting algorithms are contained in the font, whereas Type 1 fonts depend on hinting built into the PostScript interpreter; all TrueType encoding tables and metrics (including kerning data) must be integrated at the time of creation, but the PostScript format permits re-encoding and editable metrics; TrueType requires only one file, enabling simpler installation, whereas PostScript fonts are comprised of two files, a bitmap screen font (for display) and an outline printer font (for output); TrueType curves are specified using quadratic polynomials, but PostScript fonts use cubic Bézier polynomials; TrueType fonts work directly with the operating system, but PostScript fonts require some sort of manager, such as Adobe Type Manager (ATM), Suitcase, or Font Reserve.

The line between TrueType and Type 1 was most clearly drawn in the print world; quite simply, PostScript output devices have no ability to interpret TrueType directly, and the majority of imagesetters and proofers were and are PostScript devices. TrueType fonts *may* be imaged through a print file *if* all bitmap information is present (including every font size and style used in a document). But they may still print poorly since the PostScript RIP can't perform subtle hinting and/or tracking adjustments tuned to the particular device. TrueType fonts may also be converted to “equivalent” PostScript fonts, but this, too, can lead to text reflows and character substitutions.

Microsoft continued to work on improvements to TrueType, and developed TrueType Open, which included extended typographic capabilities and cross-platform compatibility.

Then in 1996, Adobe and Microsoft arrived at

an uneasy truce to the font wars by announcing development of a new font format which would incorporate the features of both formats into one. Adobe calls its version OpenType, while Microsoft refers to it as TrueType Open version 2. To date, both availability and use of OpenType fonts has been negligible.

The OpenType initiative suffers from the same problem as other attempts to institute a system of vector fonts (Apple's failed attempt to convert users to QuickDraw GX being one notable example). Third party software developers of applications, font managers and utilities must rewrite their code to take advantage of the benefits of a new font format or, in some cases, even recognize it. But developers are not anxious to spend time and resources on such an endeavour unless users demand it, and up until now users have been satisfied to rely on established font technologies, i.e. Type 1 and TrueType.

Even Adobe has failed to make much of an impact with its MultipleMaster fonts. A MultipleMaster font is an enhanced form of Type 1 font which allows users to interpolate its weight, shape, size and style through a special ATM dialog box.

Production First Software ([ourworld.compuserve.com/homepages/profirst](http://ourworld.compuserve.com/homepages/profirst)) is a San Francisco-based type foundry which lays claim to several firsts for the PC font world, including being first to market Windows font management software. Production First was also the first (and still one of the few) type foundries to bundle and sell Mac, PC and Unix versions of all its fonts in one package.

John Fiscella of Production First is an expert on font technologies and the author of an extremely comprehensive encyclopedia of font and desktop technology terms and definitions, which can be found on the Production First website (a glossary of digital font terminology which was extracted from his work appears with this article). We asked Fiscella for his comments on OpenType, and he responded as follows:

“OpenType allows additional features for fonts, like auto ligature substitution, glyph variant management — say, for different languages under the same script — and additional style variants, like small caps, although these extensions could also have been added to PostScript. However, OpenType — and also TrueType — makes font piracy easier and also removes some flexibility for high-end professional users (both bad points).

“The impact of OpenType on font vendors is that they can more easily provide some of the niceties described above (for those vendors who don’t have the smarts to implement them within the older TrueType or PostScript formats) — an advantage to the small, technology-poor vendors. But because OpenType features can only be used if the application is OpenType-aware, OpenType also affords opportunities for font and software developers and sellers, since customers can only reap these OpenType benefits by upgrading or licensing new font and application software (a distinct negative impact on users).

“Therefore, I would say that OpenType has a somewhat positive impact for vendors and developers. For end users, OpenType removes some useful font features available in PostScript — such as metrics flexibility and MultipleMaster capability — and replaces them with other, simpler features, like easier variant glyph management, language selection from the OS level, more application-universal 2-byte capability, and others. In general, OpenType is a step forward for basic users who do not care about state-of-the-art typography (the word processor and small-time desktop publisher), but a step backward in the typographic state-of-the-art for advanced users (typographers and advertising agencies). It will

prove to be a boon to the Japanese publishing industry because OpenType can dispense with Japanese mixed and modal encoding of fonts and also handle the /PRC Chinese/ROC Chinese/Hong Kong Chinese/Japanese/Korean/Old Vietnamese/ideographic variant glyph problems, which are so exacerbated by the nationalistic requirements of east Asia.”

The Far East market is one which has had Adobe salivating for years. The type industry in Japan and China is immensely different than in North America. Attitudes about font integrity are much more discerning than in the West, and font manufacturers command a high level of loyalty. Outlined fonts are not accepted.

Asian languages consist of large sets of double byte characters. Typesetting is performed on proprietary equipment, using fonts which cost about US\$3,000 each. The selection of typefaces is typically no more than twenty — a situation which would doubtless stupefy most Western designers.

The large character sets would make them impractical to include with a job. But PDF 1.3 is able to recognize these characters, and the OpenType format is capable of handling full sets of characters. This means that the Pacific Rim printing industries now have the opportunity to adopt Adobe PDF.

## EMBEDDING, EXTRACTING, COPYING AND LICENSING



Every End User Licensing Agreement (EULA) from major font vendors is clear about what constitutes legal use of their products. Normally one font license covers usage for five CPUs. Virtually every EULA specifically prohibits copying and/or distributing fonts — including sending fonts to a prepress service provider, unless that provider has also purchased those same fonts. Yet, as we all know, this practice goes on every day.

In fact, misinformation on this subject continues to be dispensed liberally on the Web, as exemplified by this excerpt from [www.typeart.com/typesettertips.html](http://www.typeart.com/typesettertips.html): “Make sure that you provide your service bureau with any fonts which they may not have on file. With thousands of fonts out there, service bureaus are unable to stock legal copies of every font. You will often need to provide them with copies of the fonts you use, but you should establish an understanding with them (preferably in writing) that they will delete the fonts from their system upon completion of your job.”

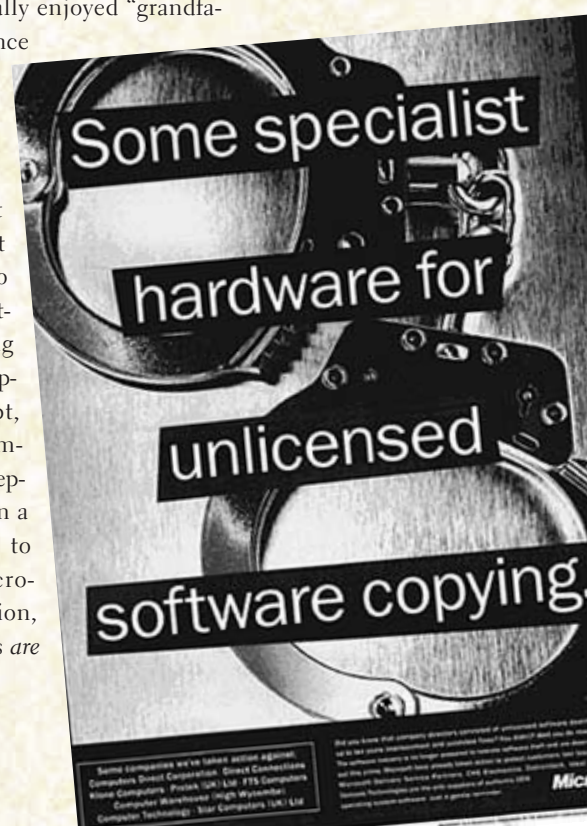
This advice is undoubtedly sound, practical, judicious — and totally in contravention of all major licensing agreements. Regardless of any agreement between user and service provider, fonts are only licensed for use to those who pay for them.

But the problem isn’t going away. How can every prepress service and printer own every font in the world? And how can every

content creator ensure that the font which he or she has carefully selected for use in a job will be “legal” for output?

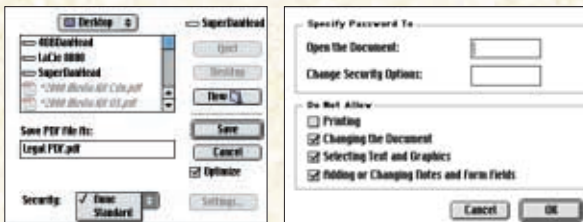
The graphic arts industry has been grappling with this issue for fifteen years, although it is worth noting that PostScript has essentially enjoyed “grandfather” protection since the inception of desktop publishing. To this day, fonts are embedded into PostScript print files without restriction. But do not confuse PostScript embedding with EPS, or Encapsulated PostScript, which does *not* embed fonts (the exception to this is when a PDF is exported to EPS through Acrobat’s Export function, in which case fonts *are* embedded).

In the past few years, font vendors have taken a tough stance on illegal font copying and usage, as exemplified by this Microsoft poster.





Embedding fonts legally in a PDF. First, you must set Distiller's Job Options>Fonts to Embed All Fonts and Subset All Embedded Fonts Below 100% (left); then you must save your PDF with Security on, set for Do Not Allow changing, selecting text or adding.



From the printer's perspective, there is another underlying inconsistency with this whole issue. After all, other types of digital assets move freely through their shops — photographic images, illustrations, page layout documents. Why should fonts be treated any differently? Fonts are the only component of a print job which must be purchased at every stage of the workflow — by the content creator, the prepress service, and the printer.

Of late, the printing industry appears to be moving steadily in the direction of resolving this dilemma through the adoption of

PDF in prepress workflow solutions. Many (but not all) font licenses now permit fonts to be embedded in PDF documents by licensed users and sent to an unlicensed service provider, typically with the following conditions:

- one copy only of the PDF file may be sent for the purpose of digital output, and no additional copies of the file may be made or distributed
- the PDF must be created as an uneditable file.

Fontworks, the largest font distributor in the United Kingdom, provides an extensive discussion of font legalities on its website at [www.fontworks1.type.co.uk](http://www.fontworks1.type.co.uk). On the subject of font embedding, Fontworks says: "Certain typeface manufacturers permit embedding certain fonts into documents for the purposes of viewing and printing only. Documents with embedded fonts may not be edited unless those embedded fonts are licensed to and installed on the computer doing the editing. The reason for this is that editing the file adds value to the file. For this, the customer is obtaining value from the fonts and is therefore required to have a valid licence for the fonts." This is almost identical to Adobe's wording on the same subject.

As part of its TrueType specifications, Microsoft developed a "flagging" code by which font designers may turn permission to embed off or on. Prior to Acrobat 4, Adobe Distiller did not recognize this flag and embedded all fonts, regardless of the font creator's intentions. Acrobat 4, however, now reads this font embedding permission code and if it detects a "do not embed" flag, it

## Online Font Resources

In case you thought that there were only a few font designers and distributors left in the world, this is just a partial list of font resources available online. All URLs were working as of May, 2000 (although we can't vouch for the quality of products being offered).

2 Rebels	<a href="http://www.2rebels.com">www.2rebels.com</a>
Ace Fonts	<a href="http://www.acefonts.com">www.acefonts.com</a>
Adobe Fonts	<a href="http://www.adobe.com/products/fontfolio/main.html">www.adobe.com/products/fontfolio/main.html</a>
Adobe Type Library	<a href="http://www.adobe.com/type">www.adobe.com/type</a>
Agfa Monotype	<a href="http://www.monotype.com">www.monotype.com</a>
Alphabet Design	<a href="http://www3.sympatico.ca/alphabet.design">www3.sympatico.ca/alphabet.design</a>
Andreas Lindkvist	<a href="http://www.lindkvist.com">www.lindkvist.com</a>
Antaviana Typeface Division	<a href="http://www.antaviana.com/typeface">www.antaviana.com/typeface</a>
Apollo Program	<a href="http://www.theapolloprogram.com">www.theapolloprogram.com</a>
Apple Fonts	<a href="http://fonts.apple.com">fonts.apple.com</a>
Astigmatic One Eye Foundry	<a href="http://www.astigmatic.com">www.astigmatic.com</a>
Beechman & Co.	<a href="http://www.beechman.co.uk">www.beechman.co.uk</a>
Berthold	<a href="http://www.bertholdtypes.com">www.bertholdtypes.com</a>

Bitstream	<a href="http://www.bitstream.com">www.bitstream.com</a>
Blambot Comic Fonts	<a href="http://www.piekosarts.com/blambotfonts">www.piekosarts.com/blambotfonts</a>
Blue Vinyl Fonts	<a href="http://www.bvfonts.com">www.bvfonts.com</a>
Bosch's Font Archive	<a href="http://come.to/bfa">come.to/bfa</a>
Bureau Destruct	<a href="http://www.bermuda.ch/bureaudestruct/fonts">www.bermuda.ch/bureaudestruct/fonts</a>
Buro	<a href="http://www.petr.nl/asp/page/buro/front/e">www.petr.nl/asp/page/buro/front/e</a>
Buttfaces	<a href="http://www.buttfaces.com">www.buttfaces.com</a>
BuyFonts	<a href="http://www.buyfonts.com">www.buyfonts.com</a>
CastleType	<a href="http://www.castletype.com">www.castletype.com</a>
Chank Fonts	<a href="http://www.chank.com">www.chank.com</a>
Club Type	<a href="http://www.clubtype.co.uk">www.clubtype.co.uk</a>
Comic Book Fonts	<a href="http://www.comicbookfonts.com">www.comicbookfonts.com</a>
Cool Fonts	<a href="http://www.cool-fonts.com">www.cool-fonts.com</a>
Delve Media Arts	<a href="http://www.delvemediaarts.com">www.delvemediaarts.com</a>
Deniart Systems	<a href="http://www.deniart.com">www.deniart.com</a>
Dennis Ortiz-Lopez	<a href="http://soho.ios.com/~sini4me2">soho.ios.com/~sini4me2</a>
DincType	<a href="http://www.girlswhowearglasses.com">www.girlswhowearglasses.com</a>
Dope Fonts	<a href="http://www.geocities.com/Paris/6513">www.geocities.com/Paris/6513</a>
DTP Software Albracht	<a href="http://www.dtpsoft.de">www.dtpsoft.de</a>
DTPTypes Limited	<a href="http://www.dtpypes.com">www.dtpypes.com</a>
E-Signature	<a href="http://www.e-signature.com">www.e-signature.com</a>
Elfring Fonts	<a href="http://www.elfring.com">www.elfring.com</a>
Emboss Design	<a href="http://www.embossdesign.com">www.embossdesign.com</a>
Emigre	<a href="http://www.emigre.com">www.emigre.com</a>
Everson Typography	<a href="http://www.egt.ie/celtscript">www.egt.ie/celtscript</a>
Eyewire	<a href="http://www.eyewire.com/products/type">www.eyewire.com/products/type</a>
Font Bureau	<a href="http://www.fontbureau.com">www.fontbureau.com</a>

Font Diner	<a href="http://www.fontdiner.com">www.fontdiner.com</a>
Font Emporium	<a href="http://www.fontemporium.com">www.fontemporium.com</a>
Font File	<a href="http://www.fontfile.com">www.fontfile.com</a>
Font Forest	<a href="http://members.aol.com/FontForest">members.aol.com/FontForest</a>
Font Frame	<a href="http://www.fontframe.com">www.fontframe.com</a>
Font Foundry	<a href="http://www.fontfoundry.com">www.fontfoundry.com</a>
Font Source	<a href="http://www.fontsource.com">www.fontsource.com</a>
Font Works	<a href="http://www.type.co.uk">www.type.co.uk</a>
Font World	<a href="http://www.fontworld.com">www.fontworld.com</a>
FontBoy	<a href="http://www.fontboy.com">www.fontboy.com</a>
Fontef	<a href="http://pfi.co.il/fontef">pfi.co.il/fontef</a>
FontFabrik	<a href="http://www.fontfabrik.com">www.fontfabrik.com</a>
FontFont	<a href="http://www.fontfont.de">www.fontfont.de</a>
Fonthead Design	<a href="http://www.fonthead.com">www.fonthead.com</a>
Fontosaurus Text	<a href="http://www.fontosaurus.com">www.fontosaurus.com</a>
Foundry Group	<a href="http://www.foundrygroup.com">www.foundrygroup.com</a>
Fountain Friendly Type Foundry	<a href="http://www.fountain.nu">www.fountain.nu</a>
Fraktur	<a href="http://www.fraktur.com">www.fraktur.com</a>
Fuel Fonts	<a href="http://www.fuelfonts.com">www.fuelfonts.com</a>
Galápagos Design Group	<a href="http://www.galapagosdesign.com">www.galapagosdesign.com</a>
Garage Fonts	<a href="http://www.garagefonts.com">www.garagefonts.com</a>
Gerard Mariscalchi	<a href="http://www3.sympatico.ca/gerard.mariscalchi/welcome.html">www3.sympatico.ca/gerard.mariscalchi/welcome.html</a>
Goblin Design	<a href="http://www.goblindesign.com">www.goblindesign.com</a>
Graphion Typesetting	<a href="http://www.slip.net/~graphion">www.slip.net/~graphion</a>
Grilled Cheese Fonts	<a href="http://www.grilledcheese.com">www.grilledcheese.com</a>
Harris Design	<a href="http://www.sonic.net/~hdfonts">www.sonic.net/~hdfonts</a>

will not distill the font.

Type 1 fonts do not have this embedding permission code in them; thus all Type 1 fonts may theoretically be embedded. Needless to say, Adobe supports the concept of embedding fonts in PDF. Adobe and certain of its foundry partners (Linotype, ITC, Monotype, Agfa, and Fundicion Tipografica Neufville) have no restrictions on the fonts it sells, whether Type 1 or TrueType. Other type vendors each have their own policies.

Nonetheless, as Adobe's Dov Isaacs points out, "Surprisingly enough, it is possible to construct a Type 1 font that effectively prohibits embedding by 'bypassing itself' if it has detected that it is being processed by the Distiller."

He also goes on to point out that, "It is true that the system fonts from Apple are set for 'no embedding'. When queried about this, Apple has informed Adobe that such embedding prohibitions are intentional."

At the heart of all these debates over embedding fonts is the fear on the part of font designers and vendors that, regardless of the good intentions of Adobe and others who are trying to toe the line, PDF will open the door to unrestricted font theft.

These fears may be well-founded. Some prepress software products, such as Preps imposition software, made by ScenicSoft, already include the ability to extract embedded fonts from a PDF document. Nor do embedding permission flags in themselves stop fonts from being embedded. Control over font embedding in PDF lies with the distiller, not the font itself. And there are over

half a dozen PDF distillers available today other than Acrobat Distiller, each with its own distilling interface.

Another approach to the question of unlicensed font extraction is that employed by Production First Software. Production First allows embedding but also builds what it calls "poisoning" into each font, whereby fonts which have been extracted from either PostScript or PDF cannot be used without the appropriate key to unlock them.

Balanced against the concerns of the font community is the graphics industry's need to find a predictable, flexible, editable mechanism for transporting and printing text, one that avoids dependency on "live" fonts. For the trade, the list of choices appears to be as follows:

- 1) outline all fonts,
- 2) rasterize all fonts,
- 3) embed all fonts,
- 4) subset some fonts,
- 5) extract all fonts and replace them,
- 6) edit fonts using third party tools, or
- 7) adopt a new standard for fonts that eliminates bitmap fonts entirely.

In any event, PDF in itself cannot solve all font problems; it still does not prevent damaged fonts from being embedded.

The industry is currently gravitating towards a new open standard for PDF in the prepress workflow, PDF-x, which in its various subflavours (PDF-x1, PDF-x2, Scitex PDF2Go) promises to

Hoefler Type Foundry	<a href="http://www.typography.com">www.typography.com</a>
House Industries	<a href="http://www.houseind.com">www.houseind.com</a>
Immortal Graphics	<a href="http://www.immortalgraphics.com">www.immortalgraphics.com</a>
Ingramayne	<a href="http://ingrimayne.saintjoe.edu">ingrimayne.saintjoe.edu</a>
International Typeface Corporation	<a href="http://www.itcfonts.com">www.itcfonts.com</a>
Izosoft	<a href="http://www.izosoft.com">www.izosoft.com</a>
Jack Yan and Associates	<a href="http://www.jyanet.com">www.jyanet.com</a>
Killer Fonts	<a href="http://www.killerfonts.com">www.killerfonts.com</a>
Laurie McCanna	<a href="http://www.mccannas.com">www.mccannas.com</a>
Letraset	<a href="http://www.letraset.com/letraset">www.letraset.com/letraset</a>
LetterPerfect	<a href="http://www.letterspace.com">www.letterspace.com</a>
LettError	<a href="http://www.lettererror.com">www.lettererror.com</a>
Light Weight	<a href="http://www.litewait.demon.co.uk">www.litewait.demon.co.uk</a>
Linotype	<a href="http://www.fonts.de">www.fonts.de</a>
Lsfonts	<a href="http://www.lsfonts.com">www.lsfonts.com</a>
Lunchbox Studios	<a href="http://www.lunchboxstudios.com">www.lunchboxstudios.com</a>
Lust Typography	<a href="http://www.xs4all.nl/~lust">www.xs4all.nl/~lust</a>
MacFonts	<a href="http://www.macfonts.com">www.macfonts.com</a>
Margo Chase Design	<a href="http://www.margochase.com">www.margochase.com</a>
Match Fonts	<a href="http://hometown.aol.com/MatchSoft">hometown.aol.com/MatchSoft</a>
Match Software	<a href="http://www.matchfonts.com">www.matchfonts.com</a>
MetaDesign	<a href="http://www.metadesign.com">www.metadesign.com</a>
Microsoft TrueType Fonts & Utilities	<a href="http://www.microsoft.com/typography/free.htm">www.microsoft.com/typography/free.htm</a>
Mind Candy Design	<a href="http://www.mindcandy.com">www.mindcandy.com</a>
Munchfonts	<a href="http://members.aol.com/GMajuscule">members.aol.com/GMajuscule</a>
My Fonts	<a href="http://www.myfonts.com">www.myfonts.com</a>
New Fonts	<a href="http://www.newfonts.com">www.newfonts.com</a>

No Bodoni Typography	<a href="http://nobodoni.com">nobodoni.com</a>
Omnibus	<a href="http://www.omnibus.se">www.omnibus.se</a>
Orangeflux	<a href="http://www.orangeflux.com">www.orangeflux.com</a>
P22 Type Foundry	<a href="http://www.p22.com">www.p22.com</a>
ParaType	<a href="http://www.paratype.com">www.paratype.com</a>
Patricia Lillie	<a href="http://www.knownet.net/users/plillie">www.knownet.net/users/plillie</a>
PenUltimate Digital Type Foundry	<a href="http://users.aol.com/penultimte">users.aol.com/penultimte</a>
Phil's Font's Search	<a href="http://philsfonts.com">philsfonts.com</a>
Point-Central	<a href="http://www.point-central.com/travail/pages/finder/search/search.cfm">www.point-central.com/travail/pages/finder/search/search.cfm</a>
Porchez Type Foundry	<a href="http://www.porcheztypo.com">www.porcheztypo.com</a>
Precision Type	<a href="http://www.precisiontype.com">www.precisiontype.com</a>
Production First Software	<a href="http://ourworld.compuserve.com/homepages/profirst">ourworld.compuserve.com/homepages/profirst</a>
Prototype	<a href="http://www.prototype-typeo.com">www.prototype-typeo.com</a>
PSY/OPS	<a href="http://www.psyops.com">www.psyops.com</a>
Quadrat Communications	<a href="http://www.quadrat.com">www.quadrat.com</a>
Really Loud Font Company	<a href="http://hometown.aol.com/loudfonts">hometown.aol.com/loudfonts</a>
Riversedge Fonts	<a href="http://www.riversedge.com">www.riversedge.com</a>
Scooter Graphics	<a href="http://www.scootergraphics.com">www.scootergraphics.com</a>
Secret Fontasies	<a href="http://www.secretfontasies.com">www.secretfontasies.com</a>
Serif Inc.	<a href="http://www.serif.com">www.serif.com</a>
Shift Type	<a href="http://www.shifttype.com">www.shifttype.com</a>
ShinnType	<a href="http://www.shinntype.com">www.shinntype.com</a>
ShyFonts Type Foundry	<a href="http://welcome.to/ShyFonts">welcome.to/ShyFonts</a>
Signature Software	<a href="http://www.sigsft.com">www.sigsft.com</a>

Snailworks	<a href="http://snailworks.com">snailworks.com</a>
Sooy Type Foundry	<a href="http://www.bsooy.com">www.bsooy.com</a>
Southern Software Inc	<a href="http://www.ssifonts.com">www.ssifonts.com</a>
SynFonts	<a href="http://www.synfonts.com">www.synfonts.com</a>
Tangram Studio	<a href="http://www.bmts.com/~tangram">www.bmts.com/~tangram</a>
TechnoFace	<a href="http://Home.InfoRamp.Net/~tface">Home.InfoRamp.Net/~tface</a>
Tealeaf Digital Type Foundry	<a href="http://www.littleredcircles.co.uk/tealeaf">www.littleredcircles.co.uk/tealeaf</a>
Test Pilot Collective	<a href="http://www.testpilotcollective.com">www.testpilotcollective.com</a>
The Fonts Zone	<a href="http://www.geocities.com/SoHo/Gallery/8992">www.geocities.com/SoHo/Gallery/8992</a>
The Types	<a href="http://www.thetypes.com">www.thetypes.com</a>
Thirstype	<a href="http://www.thirstype.com">www.thirstype.com</a>
Timberwolf Type	<a href="http://www.timberwolf.a.se">www.timberwolf.a.se</a>
Tiro Typeworks	<a href="http://www.portal.ca/~tiro">www.portal.ca/~tiro</a>
Totally Fonts!	<a href="http://www.totallyfonts.com">www.totallyfonts.com</a>
Treacyfaces	<a href="http://www.treacyfaces.com">www.treacyfaces.com</a>
Type Quarry	<a href="http://www.zip.com/typequarry.html">www.zip.com/typequarry.html</a>
Type 1	<a href="http://www.type1.com">www.type1.com</a>
Type [A] Digital Foundry	<a href="http://www.typeA.com.au">www.typeA.com.au</a>
Type*chimerique	<a href="http://www.truetype.demon.co.uk">www.truetype.demon.co.uk</a>
Typearound	<a href="http://www.typearound.com">www.typearound.com</a>
TypeArt Foundry	<a href="http://www.typeart.com">www.typeart.com</a>
Typeguy Font Studio	<a href="http://www.typeguy.com">www.typeguy.com</a>
Typofile Magazine	<a href="http://www.will-harris.com/type.htm">www.will-harris.com/type.htm</a>
U-Design Type Foundry	<a href="http://gsi.com/UTF">gsi.com/UTF</a>
URW++	<a href="http://www.urwpp.de">www.urwpp.de</a>
Vintage Type Foundry	<a href="http://www.vintagetype.com">www.vintagetype.com</a>
Vitatype	<a href="http://www.primenet.com/~jeffib">www.primenet.com/~jeffib</a>



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lock down the variables in font conversions and deliver “digital film” (like the TIFF-IT format which preceded it) which satisfies printer’s demands while still retaining options for editability and degrees of rasterization. For now, PDF-x is a high end CEPS tool; integration into the desktop environment is yet to be developed.

### THE VALUE OF A FONT



toronto type designer Nick Shinn doesn’t mince words when he talks about the damage inflicted on the font market by the major desktop players.

“Software won’t work without fonts,” he begins, “Apple, Adobe and Microsoft have devalued fonts by giving them away in order to make it easy for people to

use their software applications. Just look at the free fonts that come bundled with a PC’s operating system (e.g. Palatino, Times), and other hardware such as printers, or the Adobe Illustrator 5.0 CD, with 67 free fonts (e.g. Gill Sans family), or Microsoft’s “Internet” free fonts (Verdana, Sand, Cartoon, etc.)”

A font is a library of glyphs and generally refers to a complete alphabet of one typeface, traditionally in one point size but in digital terms, including a range of sizes; in the case of a PostScript font, this would consist of a package of files comprised of a screen font (bitmap), a printer font (outline), and metrics files.

## Glossary of Digital Font Terminology

Courtesy J. M. Fiscella, “Encyclopaedia of Typography and Electronic Communication,” Production First Software (2000)

**AAT** abbreviation for Apple Advanced Typography, technology in newer Macintosh OS which eliminates reliance on QuickDraw GX  
**.ACF file** abbreviation for ASCII Composite Font; text file format which uses only human-readable characters  
**.AFM file** abbreviation for ASCII Font Metrics; data file used to determine proper spacing of type charac-

ter glyphs on a page by an application  
**anamorphic effect** well-behaved distortion of an image or an arrangement of glyph images implemented in such a way as to be reversible by carrying out an inverse or adjoint process  
**anti-aliasing** in electronic communication and typography, the term refers to the adding of additional images or parts of images so as to decoy the eye into seeing something that cannot be represented digitally  
**Apple Type Services (ATS)** font management interface on newer Macintosh operating systems  
**ASCII text** text comprised only of characters representable using 7 bits  
**ATM** abbreviation for Adobe Type Manager, type manager utility program which displays the image of a character glyph on a computer monitor screen on-the-fly by obtaining its shape from a PostScript outline printer font above a certain type size, rather than a screen font  
**ATSUI** abbreviation for Apple Type Services for Unicode Interface; technology in newer Macintosh operating systems which eliminates reliance on QuickDraw GX and provides Unicode or UTF-16 com-

Fonts represent a special category of software. They can be distinguished from virtually all other types of software in three key regards. First, they can be used with no special instructions or manual; second, they are collectible items; and third, they may be used almost indefinitely, regardless of advances or updates to hardware, operating systems and applications.

Good quality fonts still carry the same intrinsic value as they always did. Proper metrics and kerning, complete character sets (including punctuation, accents, etc.), hinting (which Microsoft calls “instructing” — the important process of adding or subtracting pixels to outlines in order to print smoother, cleaner letters), cross-platform compatibility, analphabetic characters, suitable encoding — although to some people some of these benefits may be transparent, design professionals should have an appreciation for the value of all these features, for this is what represents the true value in the purchase price of a good font.

Blurred in the blizzard of QuarkXPress, InDesign, Photoshop and Illustrator pulldown menus and toolbars full of buttons and settings that let designers skew, track, extrude, scale, stretch, condense, rotate, and generally wreak havoc on a font’s original design is the fact that good typography remains an art, good font design a craft, and good design with just the right typeface a marketable service. A well-chosen font can communicate just as much as the right picture or the right paper. Original, unusual fonts add value to a design; conversely, standard stock fonts like Helvetica, Times, or Futura produce a generic look and feel that can detract from the message.

Font vendors divide fairly easily into four distinct segments:

legacy owners of classic type from the pre-desktop era, such as Monotype, Linotype, ITC, and Berthold; the original digital pioneers, Adobe and Bitstream; the new original foundries like Emigre, Font Bureau, Chunk, Garage, Thirst, T-26, and Virus 4; and the hundreds of individual type designers and tiny foundries spread around the world such as Canadian suppliers ShinnType, Giampa, Tiro, 2 Rebels, and Stylus.

Shinn offers a few words of advice on researching and buying fonts: 1) Bite the bullet: You have to use your client’s corporate fonts and pay top dollar for them. It’s legit, so pass on the expense. 2) Check the EULA. Many fonts are not licensed for embedding in PDFs or websites. Multiple site licenses vary in pricing, too. 3) Get retail advice — technical and aesthetic. Hey, it *is* rocket science. 4) See something you like in an ad or magazine? Ask the advertiser what it is. 5) Then add your own spin. 6) Surf for something that will drive a design, something that will interact with some crazy idea you’ve had or really enhance an effect you’ve been experimenting with in Photoshop. 7) Check the foundry links at Phil’s Fonts and Makambo sites. Visit the Thirstype and Emigre sites for an extreme contrast. 8) Buy from the designer. 9) Read “eye”, it’s where the best foundries advertise.

And although programs such as Macromedia’s Fontographer let almost anyone create a font, it doesn’t mean that anyone who can master Fontographer is a font designer.

For any designer, the investment in a comprehensive library of fonts will often attract more clients and more jobs. And the cost of fonts will more often than not be amortized over a longer useful life than many software applications.

pliance and usability **autohinting** process of hinting a font performed automatically by a computer software program **banja** term denoting 2-byte Roman script characters **big font** Microsoft terminology for a multibyte (TrueType) font which includes a large number of scripts **bitmap font** font containing glyph images produced using bitmaps **.BMAP file** Macintosh screen font file (also contains metrics data) **bounding box** largest imaginary box that can be drawn around a PostScript graphic element which just touches on all sides; bounding box which can contain all the character glyphs and glyph combinations in a font is called a “font bounding box” (usually expressed in PostScript points) **CFF** abbreviation for Compact Font Format **character subsetting** part of the collection of different characters that an application, font, or keyboard can represent or produce **ClearType** Microsoft driver and rasterizer technology, based on subpixel anti-aliasing, which enables fonts to render more clearly on LCD screens **DBCS** abbre-

viation for Double Byte Character Set **delta hinting** technique used in TrueType fonts which alters hinting instructions for bitmaps generated at certain point sizes and display resolutions by adding additional instructions (not applicable in PostScript) **display list** list of reorganized and codified PostScript instructions for rendering a page, produced internally by a PostScript raster image processor and stored on an internal disk (used almost exclusively by very high resolution output devices) **Display PostScript** form of PostScript whose purpose is to display on a computer monitor screen instead of generating hard copy output **dynamic range** term referring to entire range of adjustment of a design axis in a MultipleMaster PostScript font **.EOT file** Web font format proposed by Microsoft **exception dictionary** database or data file of words whose syllables are already separated by hyphens. (example: hy-phen-ate) **.FON file** screen font file in Microsoft Windows format **FastFont** proprietary outline font format developed by Atech Software **FDL** abbrevi-

ation for Font Description Language **fixed-width encoding** encoding whose entire character repertoire is represented by identical byte widths **font (or font)** traditionally a complete set of characters in a typeface, or collection of bit-mapped data or computer language instructions (software) which render glyph images on some output device; often used more loosely as a synonym for “typeface”; collection of metal castings of letterforms and related figures (“hot type”) in one typeface, style, and point size **font authoring tool** application software designed to construct or create completely new fonts (examples: Altsys Fontographer, Production First Software Electric Designer and FontMaker, Pyrus FontLab, and URW Ikarus) **font bounding box** bounding box big enough to include all superimposed bounding boxes of every character in the font located with all character origins coinciding **font cache** storage area in computer memory, printer memory, or on a hard disk where bitmaps of font character outlines are kept **font converter** (utility) utility pro-

gram which converts from one outline printer font format to another (usually Type 1, Type 3, and TrueType) **Font Description Language** source language format, abbreviated FDL, for the construction of fonts, used as input to font compilers and font authoring tools, which produce a final font **font embedding** process whereby a font resource is added to a page description or document file (either application file or print file), so that when the file is transported and subsequently processed, the fonts included are available **font embedding permission** methodology, originated by Microsoft, of assigning different levels of permission to a font in order to control its use when embedded within a page description or document file **font instance** specific chosen installed configuration of a font which can be selected for use **font manager** utility computer program which allows access to large font libraries on the systems level in systems which normally have access to a limited number of fonts (usually 99 to 256) **font resource** term applied to a file or

## MANAGING YOUR FONTS EFFECTIVELY



As we have repeated in so many ways throughout this discussion, fonts are almost as sensitive to their environments as people.

Replacing fonts is one almost certain way to introduce changes into a document; even fonts with the same name and source can have different metrics which might alter text flow. Substituting a Type 1 font for a TrueType font is another classic method of altering text for the worse. PC fonts have data forks, while Mac fonts have resource forks; different headers from one platform to the other can easily cause unwanted variations.

Another place where inadvertent modifications might occur is where the application is allowed to select the fonts or font versions for a particular job. A safe method of avoiding this potential problem is to download the specific job fonts to the RIP prior to ripping the job. Although PostScript 3 RIPs can hold over a thousand fonts, PostScript Level 2 RIPs are limited to 128. You can in-

crease your font capacity with a Level 2 RIP simply by replacing the installed fonts with your job fonts.

Be cognisant of the fact that when outputting a job, your system maintains a hierarchy for searching down missing fonts. First, the font will be drawn from your font manager; if not resident there, it will look in the System folder; as a final resort it will look for fonts at the device.

Here are some basic tips on font use and management:

- Always use original fonts if at all possible. By working from a master font library you eliminate one source of variability.
- Keep the size of your working master library of fonts down to a minimum: Make a copy of the library, then create a “skinny” set by deleting all font sizes except 10 and 24 point (which will provide sufficient scalability to cover normal usage); then throw away the ATM files for each font family. This will streamline the size of your font library considerably.
- When troubleshooting a job, it’s useful to know which copy of a font was used. Was it the master font or was it a client font? If you create a unique label color for all master fonts, you will always be able to easily identify which font you’re opening.
- Never work with fonts off the server. Instead, go to the server,

## Glossary of Digital Font Terminology (cont.)

group of files which constitute an installable font on a computer system **Font Resource Management** feature installable for use with PostScript fonts which allows automatic font substitution for fonts used in a publication but missing to the output device **font signature** character set, supported codepage, and other information that characterizes a font to an operating system **forced justification** refers to algorithm built into software which always adjusts the width of the line of text to the width of a column, no matter how short the line may be (by adjusting space between words, space between letters, or widths of letterforms themselves, or combination of all three) **Frutiger number** two-digit numbering scheme developed by Adrian Frutiger, applied across a typeface family, which describes typeface weight and width **glyph** generally, a glyph (Greek: *glyphe* [carving]) is a one-color graphic image; specifically, a one-color graphic image which is coded and stored in a font; one or more glyphs may represent an entity, which is a purely numerical placeholder, referred to as a “character.” **golden ratio** rule devised to give proportions of height to width when laying out text and illustrations to produce the most optically

pleasing result; the ideal proportion according to the ancient Greeks, visualized as the division of a line into two unequal segments in such a way that the ratio of the smaller segment to the larger segment is equal to the ratio of the larger to the whole (usually defined as 21:34, that is, 21/34 and 34/(21+34) both equal approximately 0.618) **grunge font** structural style classification and term used for the 1990’s fad of freeform, dirtied, almost graffiti-like typeface designs **hairline rule** thinnest rule that can be printed **hinting** term applied mainly to scalable outline printer fonts, used to describe the process of altering the location and/or shape of a character outline so as to improve its appearance when represented by low to medium resolution pixel-based or raster output devices **hyphenation dictionary** database of words separated into syllables **Infinifont** lossy outline font representation format and font generation engine used by Hewlett-Packard in conjunction with PCL6 to store and regenerate internal outline fonts **instructing** Microsoft term for hinting **Intellifont** outline font format originated by Agfa Compu-graphic and used in conjunction with HPGL and PCL printer description languages in Hewlett-Packard output devices **Intelligent Character Recognition** software technology which can decipher and decode handwriting, hand printing, and cursive writing (precursor

to ICR was OCR, or Optical Character Recognition) **interfont pair kerning** feature where pair kerning can be automatically applied between two glyphs, adjacent in text, obtained from different fonts **Japanese Type 1 font** a misnomer: a Japanese Type 1 font is a composite font whose components are all Type 1 fonts or Type 1 font data **JIS-Roman** Japanese equivalent of the ASCII character set **jumbo font** colloquial term for an OpenType font having both PostScript CFF glyph outline data and TrueType glyph outline data **Kanbun** marks used to indicate reading order of Chinese texts in Japanese **kanji** ideographs originating from Chinese used to represent Japanese words (about 30% of characters used in Japanese are kanji) **linear scaling** common practice of scaling the size of type uniformly in width, height, and spacing **.MMM file** file containing the “axis map” of a MultipleMaster PostScript font **master design** one of the Type 1 font components comprising a MultipleMaster font **MBCS** abbreviation for MultiByte Character Set **metrics** term used to indicate data relating to character or glyph width and spacing for a specific typeface or font **mirroring** property of characters indicating whether or not they belong to a character pair whose substitution can be switched depending on the writing direction **mixed mode** method of installing and using fonts which enables a TrueType font to be

used for screen display and a PostScript font to be used with an output device **multibyte character** character whose character number requires 2 bytes or longer for representation **MultipleMaster** enhanced PostScript Type 1 format developed by Adobe Systems which enables a font to be created, through a special ATM menu, with glyph outlines which are interpolated from up to 16 installed Type 1 fonts **multiple axis font** font having capability of adjustable design parameters; each adjustable design parameter is called an axis **non-linear scaling** Microsoft term for hinting technique which adjusts scaled size of a glyph partially so as to improve the appearance at low resolution representation **.OTE file** Web font format proposed by Microsoft **.OTF file** OpenType font constructed with only PostScript glyph data **OCR font** special typeface style developed for Optical Character Readers (which were hardware devices) and, later, Optical Character Recognition software **Open Font Architecture or OFA** font management architecture developed by Apple Computer for its newer operating systems (OS 8.5 and beyond) which provides native support for PostScript Type 1, TrueType/OpenType, and GX in a QuickDraw-like environment **OpenType** “universal” font format under development by Adobe and Microsoft which handles PostScript character glyph descriptions (procedures, Type 1



download the fonts to the local desktop, then trash them after use (which also guarantees that you'll be using the most current master font at all times). This avoids inadvertent font replacement, reduces network traffic, and eliminates potential crashing from accessing the network.

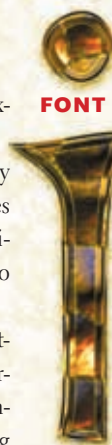
- Look for a font manager that's easy to use and suits your workflow. Our favorite is Font Reserve 2.5, which has a very intuitive Mac Finder-like interface, good extensions for automatically opening and collecting fonts in QuarkXPress and other applications, a useful error log, great preview and specimen sheet tools, and well-designed sort and find features. Other

choices include Adobe Type Manager, Extensis Suitcase and MasterJuggler.

- Remember that fonts can be easily damaged by copying them too many times — and problems are not always immediately apparent (until, for instance, you go to use the letter “w”).

Finally, don't forget that preflight software can't spot corrupt fonts, so it's important to maintain your fonts in pristine condition. There's nothing more frustrating than knowing you have a bad font somewhere but not being able to find it — or worse yet, discovering your problem when your job is at the service bureau trying to output it. The best remedy is prevention.

## FONT PROBLEMS ARE EVERYONE'S RESPONSIBILITY



In an interview a year ago with Adobe CEO John Warnock, we asked how long he thought it would take to resolve current font issues. His reply was, “I don't know if it will ever sort itself out...I would love to talk everyone into a single standard. That would make a lot of sense.”

But the truth is that there *is* no single standard for font technologies — and no single standard for font usage either.

Prepress systems vendors need to get on with developing PDF workflows — even if

## Glossary of Digital Font Terminology (cont.)

CharStrings, or Type 2 CharStrings) and TrueType character glyph descriptions internally and uniformly

- OpenType Layout or OTL** support of complex font processing features on Microsoft Windows operating systems which support OpenType
- optical kerning** performing pair or track kerning by eye
- outline typeface** in which characters are formed with only the outline defined rather than from solid strokes
- outline printer font** font file whose purpose is to generate character shapes on an output device using object-oriented computer language instructions
- overprint** in PostScript, allowing parts of a process color image to superimpose on the parts of another process color
- .PFB file** Type 1 binary encrypted PostScript outline printer font file
- .PFD file** Type 4 binary encrypted PostScript outline printer font file used by IBM Personal PagePrinter 1 version 1.3.1-1.3.2 software
- .PFM file** Microsoft Windows metrics file
- .PFR file** TrueDoc format font file (can be used as a “Web font”)
- .PFX file** ASCII text encrypted PostScript outline printer font file
- .PSF file** Ventura/GEM format screen font file
- Panose classification system** typeface design classification system developed at ElseWare Corporation which enables an operating system or application to match the design characteristics of typefaces for the purpose of substitution
- pi fonts** characters not usually included in a font, but which

are added specially (examples: timetable symbols and mathematical signs)

- pica** printing industry unit of measurement; 12 points to a pica, one pica is approximately 0.166in; traditionally equal to about 1/6 inch
- plain text** text which can be represented by ASCII text 1-byte characters or multi-byte basic script characters alone
- point** unit used to measure the size of type; there are several definitions of “point” which are all slightly different: didot point, pica point, or PostScript point
- printer description language** protocol or set of commands which directs composing of a page by a microcomputer inside a printer
- proportional (font)** font whose character glyphs have different widths
- raster font** another name for bitmap font
- replacement character** character designated for use if requested character does not exist in a font character set or a font encoding
- resident font** font which is effectively always resident in printer memory (opposite to soft font, which must be downloaded at the time of use)
- resolution** measurement used to express quality of output, measured in dots per inch
- retro type (face)** any typeface design which was popular and widely used in the past, not currently enjoying significant usage in the present, but is being brought back
- .SCN file** Macintosh screen font file (also contains metrics data)
- screen font** font file containing bit-map images at one or more type sizes of every character in an outline printer font
- sfnt** font resource template, first used on Macintosh operating systems, now also used within font resource formats on the PC
- single**

- byte character set** character set comprised of single-byte characters and accessible by a single-byte encoding
- single master font** Adobe Systems' nomenclature for a standard Type 1 PostScript font
- soft (or discretionary) hyphen** specially coded hyphen only displayed when formatting of hyphenated word puts it at end of a line
- Speedo** outline font format, with hinting, developed by Bitstream for MS-DOS
- spell check** facility contained in certain word processing and page makeup programs to enable a spelling error check to be carried out (dictionaries usually contain 60,000-100,000 words)
- tags** various formats which make up a style sheet — paragraph settings, margins and columns, page layouts, hyphenation and justification, widow and orphan control and automatic section numbering
- tabular setting** text set in columns such as timetables
- text** content of human-readable language, as displayed on a page or on-screen
- text block** block of text formed in a page layout application which is manipulated as a whole, or can be cut up, joined, copied, or pasted in a different position
- text element** data element which makes text characters part of a document
- text file** data file consisting only of ASCII text characters
- text type** typefaces used for main text of written material, generally no larger than 14 point in size
- text wrap (or runaround)** feature of page layout programs which enables text to automatically wrap around a graphic element
- track kerning** adjustment of space between characters by adding or subtracting the same arbitrary amount of space between all

- characters
- TrueDoc** lossy font compression technology developed by Bitstream which creates hinted, compressed letterform outlines from a bitmap display of the letterform of a font
- TrueImage** PostScript clone being marketed by Microsoft having ability to handle both PostScript and TrueType fonts
- TrueType** font format with fundamental differences from PostScript font formats related to hinting algorithm instructions, size of character sets, lack of ability to perform reencoding (all encoding tables and schemes must be built-in at font creation), automatic optical scaling protocol, absence of variable scaling, built-in metrics, and curves specifications which do not use cubic Bézier polynomials; file sizes are often considerably larger than PostScript font file sizes
- TrueType Collections** TrueType font having Microsoft extensions to implement sharing of characters
- TrueType GX** extended implementation by Apple of the original TrueType which allows enhanced type features such as automatic ligature substitution, conjoins, alternate characters, enhanced document formatting
- TrueType Open** extended implementation by Microsoft of the original TrueType which allows enhanced features such as automatic ligature substitution, conjoins, and alternate characters
- TrueType Open version 2** another name for the OpenType font format
- twip** measuring unit equal to 1/20 point. 1440 twips = 1 inch and approximately 567 twips = 1 centimeter
- Type o** PostScript composite font format which is comprised of a root font and a number of Type 1 base fonts; can only be used with Post-

it means incorporating blanket licensing fees to font vendors into the cost of their systems.

Font vendors need to stop talking like policing authorities and start doing a better job of showing users why there is long term value and tangible benefits in buying their typefaces.

Designers need to recognize that the creative business requires budgeting for fonts as much as for computers and software applications — and learn to use them as a competitive advantage.

And most important of all, clients must learn to recognize that quality type makes a quality presentation, so that when their designers say, “We should invest in some new fonts,” they won’t have to say, “Why?”

Then maybe printers and prepress service providers will be able to focus on delivering print jobs better and faster, instead of on type fixes and quicker proofing cycles.

F is for “fonts” — as well as “future”, where the answers lie. ■

Script implementations with a composite font extension; not ATM-compatible; an open standard  
**Type 1** PostScript base font format which must adhere to a strict lexical format with restricted PostScript capabilities  
**Type 1 GX** extended implementation of the original Macintosh format Type 1 font format which allows enhanced features such as automatic ligature substitution, conjoins, alternate characters, enhanced document formatting  
**Type 2** proprietary PostScript font format not currently commercialized  
**Type 3** PostScript base font format which cannot use encrypted binary encoded process strings and cannot invoke the hinting algorithms built into a PostScript interpreter  
**Type 32** PostScript base font format for a font containing only device-dependent bitmap glyph descriptions (faster performing and more compact than Type 3)  
**Type 4** PostScript base font format to which Type 1 fonts are converted when downloaded by an Adobe downloader to a hard disk storage system directly accessible to a PostScript interpreter (converted back to Type 1 fonts when downloaded into printer memory)  
**type color** distinctive visual characteristic or appearance of text set on a page which is solely due to adjustments to spacing between characters and between words  
**type page** area of page which includes all printed matter, including running heads, running footers, and folios, but not including margins  
**type savoring** process whereby a typeface is

viewed and its visual characteristics and impact have an effect on, and are evaluated by, a person  
**type size** size of type, measured in points between bottom of descender and top of ascender  
**typeface** specific, unified, characteristic design across all characters in a font which is given a name  
**typo** (US) abbreviation for typographical error  
**vector font** font containing glyph images constructed using vector line drawing operations  
**vertical justification** ability to adjust the interline spacing (leading) and manipulation of text in fine increments to make columns and pages end at the same vertical point on a page  
**.WFM file** Microsoft Windows metrics file used for multibyte bitmap fonts  
**word wrap** in word processing, the automatic adjustment of the number of words on a line of text to match the margin settings  
**WorldScript I** Macintosh System extension that implements various 1-byte scripts and writing systems such as Arabic, Hebrew, and Thai  
**WorldScript II** Macintosh System extension that implements Chinese, Japanese, Korean, and other 2-byte scripts, writing systems, and encodings  
**WYSIWYG** “What-you-see-is-what-you-get” (pronounced “wizywig”); used to describe systems that preview full pages on screen with text and graphics  
**x-height** height of the lower case x, measured from the baseline, which is close to the average height of all lower case characters not including their ascenders  
**x-line** imaginary line at the x-height running parallel with the baseline

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