

OpenType Fonts

The Next Level of Digital Typography in a True Cross-platform Font Format

BY MARK EASTMAN

Anyone working in the design-related realm has most likely heard about the new font format OpenType. Initially OpenType may sound like another upgrade or font format to contend with, that might further complicate workflow. With software and personal computers, most users tend to be resistant to change—the old “If it ain’t broke, don’t fix it” attitude. Everyone usually waits until they absolutely can’t continue to function efficiently to change or upgrade software, or they buy new computers that come with new software already installed.

OpenType isn’t really a new font format, it’s a hybrid of existing formats with additional extensions that will help users to set type more efficiently and allow more type-related features not possible with previous font formats. Here is an overview of OpenType and why it’s a good thing, especially if you set a lot of type.

The OpenType format is a project, begun in 1995, developed jointly by Microsoft and Adobe. It combines outline, metric and bitmap data in Adobe’s Type 1 PostScript format with Microsoft’s TrueType SFNT format to form one compact font file. The same OpenType font file can be used on both Mac OS, Windows, and with FreeType (an open source font engine) in Unix. OpenType fonts use Unicode encoding (the mapping of character codes to glyphs in a font). Unicode is an international encoding standard that applies a unique code number for specific characters for many different languages. Unicode has sufficient codes for approximately one million characters and individual OpenType fonts can contain as many as 65,000 glyphs in a relatively small-sized file. This is not only an asset for non-Latin typefaces with very large glyph sets, such as Arabic, Hindi, Chinese, Japanese and Korean, but also for standard ISO-Latin encoded typefaces.

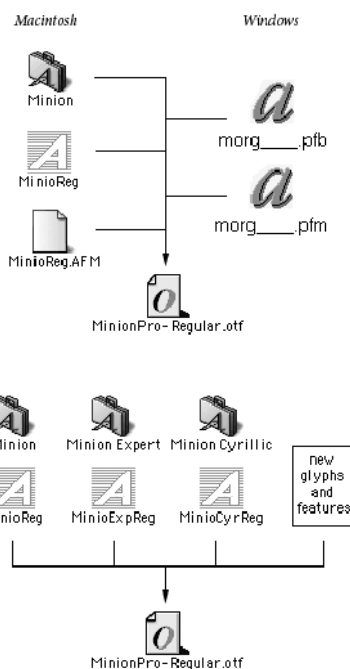
So by now you might be wondering, just what is a glyph anyway? A glyph is a visual representation of a character. A font is a collection of glyphs, and OpenType provides

numerous options for mapping glyphs to characters encoded in Unicode. For example, a single character such as a lowercase “a” might be represented by several different glyphs in a font: the default form, the small cap, the ordinal for Spanish numerals, and perhaps some other stylistic alternates such as swash forms. Only the default form is directly mapped to the Unicode character code-point for the lowercase “a.” All the other variant glyphs are mapped indirectly

via typographic features that perform on-the-fly glyph substitution. For example, the small cap variant of the lowercase “a” is accessed by a small cap function in the user’s page-layout application. Because OpenType is based on glyphs processing and not a “one character equals one glyph” model, these various representations of the same character can be made available in a single font.

In the past, digital font formats for personal computers have had certain limitations that directly influenced how they can be used in software programs. Fonts in Type 1 PostScript format in standard ISO-Latin encodings used in the West have a maximum of 256 characters per font, although a font may not necessarily contain this many glyphs. These fonts were also plagued with platform conflicts

between character encodings and file formats for the Mac and for the PC. If you had a very large text type family that included small caps, old style figures, tabular numbers, ligatures (fitted character combinations that are joined), titling



Title Type: Adobe Warnock Pro Regular Display and Italic Subhead with Swash Alternate caps, designed by Robert Slimbach, Adobe Systems, Inc. (www.adobe.com/type). Adobe fonts in OpenType format incorporating extended character sets are designated by “Pro” in their naming.

OpenType format fonts combine outline metric and bitmap data into a single font file usable on both Macintosh, Windows and Unix platforms.

Because OpenType fonts are based on Unicode encoding, a single font can contain as many as 65,000 glyphs. This allows for many different character sets for one style and weight of a typeface to be consolidated into a single compact font file.

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Hamburgers

36 point Adobe Warnock Pro Italic Caption

Hamburgers

36 point Adobe Warnock Pro Italic Text

Hamburgers

36 point Adobe Warnock Pro Italic Subhead

Hamburgers

36 point Adobe Warnock Pro Italic Display

fi fl ff ffi ffl fj ffj
ct sp st Th

Adobe Warnock Pro Italic Caption, Text, Subhead and Display. Each of these faces is optically designed for use at a specific size range. Type for small sizes generally is slightly bolder in weight and with wider widths—total width of the glyph and space on each side called sidebearings. Display type is generally lighter in weight to appear more proportioned at large sizes and has narrower widths. Incorporating optical designs in OpenType fonts allows fonts designed for a specific size range to be easily implemented by style menu in a layout program with advanced OpenType support.

Detail of standard and discretionary ligatures in Warnock Pro Regular Text.

caps, swash alternates, ornaments, etc., these had to be broken up into separate fonts. Hence, the standard and expert character set fonts that comprise large traditional text typeface families. This has made trying to implement ligatures, small caps, old style figures or alternates (used in traditional typography), from different fonts and character sets a real pain—especially with limited features in many existing layout software programs. In addition, for all these separate PostScript fonts you have two files on a Mac, one for the outlines, one for bitmap screen display. This has led to many headaches managing fonts and workflows.

All of this has changed with OpenType format fonts. Now all of the glyphs for one weight and style of a typeface, including the different subsets a large text typeface might have, can be consolidated into one font file. And since it's based on Unicode, a single OpenType font can provide support for dozens of different languages, and even different scripts. For example, Eastern European accents previously difficult, or not possible, to access, can be incorporated into OpenType format fonts.

Adobe has taken a radical step forward in incorporating OpenType enhanced features utilizing Unicode encoding in

its layout program InDesign, which they have built from the ground up.

With InDesign, glyph variants such as small caps, ligatures, old style figures and fractions, can be applied from an OpenType feature menu in the character dialog box and those glyphs available in the font will be automatically substituted as you type in the corresponding characters. If a ligature is at the end of a line break, InDesign will properly break the ligature and return to individual characters. This is possible because Unicode has a code assigned to the individual characters represented by the ligature glyph and InDesign looks at the character codes to determine hyphenation, not the visual representation. While character keyboard combinations can be used to set accented glyphs as before, InDesign also allows for special characters to be selected and inserted directly from a glyph palette (a comprehensive visual index of the font—think supercharged KeyCap chart). This provides visual access to the entire glyph set of the font or to glyph subsets corresponding to layout features: for example, you can choose to view all the small cap glyphs in a font or all the ligatures. Double-click on a glyph in the palette and that glyph is inserted wherever the cursor is in your text. By selecting and holding down the mouse on a marked glyph in the palette, you can view and select other alternate forms for that glyph in a pop-up box.

Not all Adobe programs have support for OpenType features yet. (Photoshop 6 and 7 have a Unicode text engine and some OpenType advanced features and multi-language support, but the current releases of Illustrator do not.) This is because incorporating Unicode encoding support requires completely rewriting how these programs handle text. Quark says it has plans to add OpenType advanced support to its layout program QuarkXPress and that development is already underway, with availability yet to be determined.

In programs that don't have OpenType advanced support, only the standard one-to-one relation between character and glyph is available, with no capability for enhanced features or ability to access the complete glyph set available in OpenType format fonts.

Adobe stopped producing Type 1 PostScript fonts three years ago—although they still support these fonts and have been concentrating fully on OpenType—and are currently releasing new type designs in this format as well as conversions of fonts in the Adobe Type Library. Availability of their entire library in OpenType format is slated for the fourth quarter of this year. Linotype, Monotype and other type foundries also produce OpenType fonts. Emigre has recently released an OpenType version of their Mrs Eaves family.

Microsoft has been incorporating OpenType features into its programs as well, but their focus has been on supporting complex scripts such as Arabic and the many Indic writing

