The Development of Adobe-Japan1-4 OpenType Fonts

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Why Adobe-Japan1-4 & OpenType?

• The development of an “open” glyph set that serves most of the professional and commercial printing needs in Japan
  — Adobe-Japan1-4

• A truly cross-platform font format that is suitable for sophisticated users
  — OpenType with Unicode encoding as default

• Ultimate success depends on *both* Adobe-Japan1-4 and OpenType
  — Larger glyph complement
  — Advanced typographic features
  — Other important font tables and overrides
  — Original typeface designs, such as Kozuka Mincho & Gothic
History of Adobe-Japan1-4

• Began as Supplement 0 (Adobe-Japan1-0) in 1992–1993
  — Equivalent to OCF (Original Composite Font) glyph set
  — 8,284 CIDs (Character IDs)

• Supplements 1 and 2 (Adobe-Japan1-1 & Adobe-Japan1-2) defined simultaneously in 1994–1995
  — Supplement 1 (+75 CIDs) added support for JIS90 and the KanjiTalk7 character set
  — Supplement 2 (+361 CIDs) added support for the IBM extensions

• Supplement 3 (Adobe-Japan1-3) defined in 1998 to support OpenType
  — Added 634 pre-rotated forms of all non–full-width glyphs
History of Adobe-Japan1-4 (Cont’d)

• Supplement 4 (Adobe-Japan1-4) defined in early 2000
  — Satisfies most of the professional/commercial printing needs
  — Added 6,090 glyphs
  — Complete set of genuine italic Latin glyphs
  — Two styles of fractions
  — Nearly 2,000 annotated forms
  — Latin, kana, and kanji ligatures
  — Additional punctuation and symbols
  — Horizontally- and vertically-optimized kana glyphs
  — Ruby glyphs
  — Over 2,000 kanji and kanji variants

• Documented in Adobe Technical Note #5078
  http://partners.adobe.com/asn/developer/technotes.html
History of Adobe-Japan1-4 (Cont’d)

- Adobe-Japan1-0 (8,284 CIDs)
- Adobe-Japan1-1 (+75 CIDs)
- Adobe-Japan1-2 (+361 CIDs)
- Adobe-Japan1-3 (+634 CIDs)
- Adobe-Japan1-4 (+6,090 CIDs)
OpenType Typographic Features

- **Glyph substitution** (‘GSUB’ table)
  - One-to-one substitution (such as ‘jp78’ and ‘jp83’)
  - Many-to-one substitution (‘dlig’, ‘frac’, and ‘liga’)
  - One-from-\(n\) substitution (‘aalt’, ‘nalt’, and ‘trad’)

- **Glyph positioning** (‘GPOS’ table)
  - Half-width and proportional alternate metrics features—‘halt’, ‘palt’, ‘vhal’, and ‘vpal’
  - Kerning features—‘kern’ and ‘vkrn’

- **Features are made accessible through applications**
  - User-invoked features (such as ‘ital’ and ‘trad’)
  - Application-invoked features (such as ‘vert’ and ‘vrt2’)

Adobe
Italic Substitution ('ital')

Efficiency

Efficiency
Traditional Substitution (‘trad’)
OpenType Tables & Overrides

• 16 ‘sfnt’ tables:
  — BASE, CFF, DSIG, GPOS, GSUB, OS/2, VORG
  — cmap, head, hhea, hmtx, maxp, name, post, vhea, vmtx

• Typographic features defined in ‘GSUB’ and ‘GPOS’ tables
  — GSUB: aalt, frac, numr, dnom, dlig, expt, fwid, hkna, hwid, 
    jp78, jp83, nalt, pwid, ital, liga, qwid, ruby, sinf, sups, trad, 
    twid, zero, vert, vkna, vrt2
  — GPOS: halt, kern, palt, vhal, vkrn, vpal

• PostScript outlines in ‘CFF ’ table (‘glyf’ table for TrueType 
  outlines)

• Useful overrides in ‘BASE’, ‘OS/2’, and ‘vmtx’ tables

• Underlying encoding in ‘cmap’ table is Unicode
‘BASE’ & ‘OS/2’ Overrides

• Ideographic Character Face (ICF) values stored in ‘BASE’ table
  — For setting text on margins
  — InDesign 1.0J uses this information for better typography

• Design space (aka, em-box) information stored in the ‘BASE’ and ‘OS/2’ tables
  — Necessary for consistent (and correct) vertical behavior
  — Handles non-square design space (newspaper fonts)
  — The use of the ‘BASE’ table is preferred over the ‘OS/2’ table (design space in ‘OS/2’ table for backward compatibility)
  — Stored as ‘BASE’ table’s ‘ideo’ tag, and optionally as ‘idtp’ tag
‘BASE’ & ‘OS/2’ Overrides (Cont’d)

y=880

= 1000×1000 Design Space

= Ideographic Character Face (ICF)
‘vmtx’ Overrides

- For adjusting the vertical placement of glyphs that rest on the Latin baseline
  - Latin, Greek, and Cyrillic glyphs
  - Some symbols

- Implemented as ‘vmtx’ (vertical metrics) table overrides, and in the ‘VORG’ (vertical origins) table

- Affects default behavior
‘vmtx’ Overrides (Cont’d)
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Application & OS Support

• Mac OS X & Windows 2000
  — ATM not required—built-in renderer

• Mac OS 9 and earlier, Windows NT4 & Windows 98
  — ATM required—no built-in renderer

• Adobe InDesign 1.0J
  — OpenType rendering built-in
  — Supports most OpenType features
  — Cross-platform

• Adobe Acrobat 5.0
  — OpenType font embedding
OpenType Font Development

- Adobe is developing Kozuka Mincho and Kozuka Gothic designs based on Adobe-Japan1-4
  - Six weights of Kozuka Mincho Pro being tested

- OpenType FDK (Font Developer Kit) available from Adobe for font and font tools developers, at no charge
  - OpenType compiler
  - OpenType proofing tools
  - OpenType table editing tools
  - Sample OpenType fonts and their sources
  - Tools run on Mac OS & Windows

- Digital signature (‘DSIG’ table) tools available from Microsoft
Future Prospects & More Info

• Adding support for JIS X 0213:2000 is being considered for Supplement 5 (Adobe-Japan1-5)

• More information about OpenType:
  http://partners.adobe.com/asn/developer/opentype/

• More information about OpenType features:
  http://partners.adobe.com/asn/developer/opentype/feattags.htm