The XƎTEX reference guide

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Contents

1 Introduction

This document serves to summarise XƎTEX's additional features without being so much as a 'users' guide'. Note that much of the functionality addressed here is provided in abstracted form in various LATEX packages and ConTEXt modules.

Part I

XƎTEX specifics

2 The \font command

The \font command has seen significant addition in XƎTEX to facilitate rich font feature selection. Under TEX, fonts were selected like so: \font\1="⟨*font name*⟩" with various options appended such as 'at 10pt' or 'scaled 1.2'. This syntax has been extended in XƎTEX by passing additions options through the ⟨*font name*⟩.

    This syntax looks something like

        \font\1="⟨*font name*⟩⟨*font options*⟩:⟨*font features*⟩" ⟨*TEX font features*⟩

The ⟨*font name*⟩ is the actual name of the font; e.g., 'Charis SIL'.

    When using the xdvipdfmx driver (not yet the default in Mac OS X), it is possible to use fonts that aren't installed in the operating system by surrounding their name with square brackets. The current directory and the texmf trees are searched for files named in this way, or the path may be embedded in the font declaration. *E.g.,*

\font\1="[fp9r8a]"	*Selects 'FPL Neu' in the current directory*
\font\1="[/myfonts/fp9r8a]"	*Selects 'FPL Neu' somewhere else*
\font\1="[lmroman10-regular]"	*Selects a Latin Modern font in the* TDS

The other arguments are optional and described subsequently.

2.1 Font options

‹Font options› may be an concatenation of the following:

/B   Use the bold version of the selected font.
/I   Use the italic version of the selected font.
/BI   Use the bold italic version of the selected font.
/IB   Same as /BI.
/S=x Use the version of the selected font corresponding to the optical size x pt.
/AAT   Explicitly use the ATSUI renderer (Mac OS X only).
/ICU   Explicitly use the ICU OpenType renderer (only useful on Mac OS X).

Font options aren't applicable when the font is selected locally (*i.e.*, with square brackets).

2.2 Font features

The *‹font features›* is a comma or semi-colon separated list activating or deactivating various AAT or OpenType font features, which will vary by font. The X_ETEX documentation files `aat-info.tex` and `opentype-info.tex` provide per-font lists of supported features.

2.2.1 Arbitrary AAT or OpenType features.

OpenType font features are chosen with standard tags, registered with Adobe or Microsoft: see this link[1].

> *Example:*
>
> ```
> \font\warnock="Warnock Pro/I/S=5:+smcp" at 12pt
> \warnock This is the OpenType font Warnock Pro in italic
>          with small caps at a small optical size.
> ```
>
> THIS IS THE OPENTYPE FONT WARNOCK PRO IN ITALIC WITH SMALL CAPS AT A SMALL OPTICAL SIZE.

AAT font features are specified by strings within each font. Therefore, even equivalent features between different fonts can have different names.

> *Example:*
>
> ```
> \font\hoefler="Hoefler Text/B:Letter Case=Small Caps" at 12pt
> \hoefler This is the AAT font Hoefler Text in bold with small caps.
> ```
>
> **THIS IS THE AAT FONT HOEFLER TEXT IN BOLD WITH SMALL CAPS.**

Some font features may be applied for any font. These are

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[1] `http://www.microsoft.com/typography/otspec/featuretags.htm`

```
mapping=<font map>
```
Uses the specified font mapping for this font.
```
color=RRGGBB[TT]
```
Triple pair of hex values to specify the colour in RGB space, with an optional value for the transparency.
```
letterspace=x
```
Adds x/S space between letters in words, where S is the font size.

2.2.2 OpenType script and language support

OpenType font features can vary by script ('alphabet') and by language.
```
script=<script tag>
```
See this link[2].
```
language=<lang tag>
```
See this link[3].

2.2.3 Multiple Master and Variable Axes AAT font support

```
weight=x
```
Selects the normalised font weight, x.
```
width=x
```
Selects the normalised font width, x.
```
optical size=x
```
Selects the optical size, x. Note the difference between the /S font option, which selects discrete fonts.

3 X∃TEX's \specials

To be addressed. Hopefully not by me.

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[2]`http://www.microsoft.com/typography/otspec/scripttags.htm`
[3]`http://www.microsoft.com/typography/otspec/languagetags.htm`

Part II

New commands

4   Font primitives

\XeTeXuseglyphmetrics ‹*Integer*›
Boolean to specify if the height and depth of characters are taken into account ($\geq$ 1). Otherwise ($<$ 1), a single height and depth for the entire alphabet is used. When activated, by default, gives better output but is slower.

> *Example:*
>
> ```
> \XeTeXuseglyphmetrics=0 \fbox{a}\fbox{A}\fbox{j}\fbox{J} vs.
> \XeTeXuseglyphmetrics=1 \fbox{a}\fbox{A}\fbox{j}\fbox{J}
> ```
>
> a A j J vs. a A j J
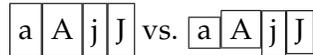
\XeTeXglyph ‹*Glyph slot*›
Inserts the glyph in ‹*slot*› of the current font. **Font specific**, so will give different output for different fonts.

\XeTeXglyphindex ‹*Glyph name*›
Returns the ‹*glyph slot*› corresponding to the (possibly font specific) ‹*glyph name*› in the currently selected font. Only works for TrueType fonts (or TrueType-based OpenType fonts) at present. Use fontforge or similar to discover glyph names.

\XeTeXcharglyph ‹*Char code*›
Returns the default glyph number of character ‹*Char code*› in the current font, or 0 if the character is not available in the font.

Example:

```
\font\1="Charis SIL"\1
The glyph slot in Charis SIL for the Yen symbol is:
    \the\XeTeXglyphindex"yen". % the font-specific glyph name
Or: \the\XeTeXcharglyph"00A5.  % the unicode character slot

This glyph may be typeset with the font-specific glyph slot:
\XeTeXglyph1458,
or the unicode character slot:
\char"00A5.
```

The glyph slot in Charis SIL for the Yen symbol is: 0Or: 1458.
This glyph may be typeset with the font-specific glyph slot: ¥, or the unicode character slot: ¥.

\XeTeXfonttype ‹*font*›
Returns what renderer is used for a ‹*font*›:
0   for TEX (a legacy TFM-based font);
1   for ATSUI (usually an AAT font);
2   for ICU (an OpenType font).

Example:

```
\newcommand\whattype[1]{%
  \texttt{\fontname#1} is rendered by
  \ifcase\XeTeXfonttype#1\TeX\or ATSUI\or ICU\fi.\par}
\font\1="cmr10"
\font\2="Hoefler Text"
\font\3="Charis SIL"
\font\4="Charis SIL/AAT"
\whattype\1\whattype\2\whattype\3\whattype\4
```

cmr10 is rendered by TEX.
"Hoefler Text" is rendered by ATSUI.
"Charis SIL" is rendered by ICU.
"Charis SIL/AAT" is rendered by ATSUI.

4.1   OpenType fonts

\XeTeXOTcountscripts ‹*Font*›
Returns the number of scripts in a font.

`\XeTeXOTscripttag` ‹*Font*› ‹*Integer, n*›
Returns the n-th script tag of a font.

`\XeTeXOTcountlanguages` ‹*Font*› ‹*Script tag*›
Returns the number of languages in the script of a font.

`\XeTeXOTlanguagetag` ‹*Font*› ‹*Script tag*› ‹*Integer, n*›
Returns the n-th language tag in the script of a font.

`\XeTeXOTcountfeatures` ‹*Font*› ‹*Script tag*› ‹*Language tag*›
Returns the number of features in the language of a script of a font.

`\XeTeXOTfeaturetag` ‹*Font*› ‹*Script tag*› ‹*Language tag*› ‹*Integer, n*›
Returns the n-th feature tag in the language of a script of a font.

4.2   AAT fonts

4.2.1   Features

`\XeTeXcountfeatures` ‹*font*›
Returns the number of features in the ‹*font*›.

`\XeTeXfeaturecode` ‹*font*› ‹*integer, n*›
Returns the feature code for the n-th feature in the ‹*font*›.

`\XeTeXfeaturename` ‹*font*› ‹*feature code*›
Returns the name corresponding to the ‹*feature code*› in the ‹*font*›.

`\XeTeXisexclusivefeature` ‹*font*› ‹*feature code*›
Returns greater than zero if the feature of a font is exclusive (can only take a single selector).

4.2.2   Feature selectors

`\XeTeXcountselectors` ‹*font*› ‹*feature*›
Returns the number of selectors in a ‹*feature*› of a ‹*font*›.

`\XeTeXselectorcode` ‹*font*› ‹*feature code*› ‹*integer, n*›
Returns the selector code for the n-th selector in a ‹*feature*› of a ‹*font*›.

`\XeTeXselectorname` ‹*font*› ‹*feature code*› ‹*selector code*›
Returns the name corresponding to the ‹*selector code*› of a feature of a ‹*font*›.

`\XeTeXisdefaultselector` ‹*font*› ‹*feature code*› ‹*selector code*›
Returns greater than zero if the selector of a feature of a font is on by default.

4.2.3 Variation axes

`\XeTeXcountvariations` *‹font›*
Returns the number of variation axes in the *‹font›*.

`\XeTeXvariation` *‹font›* *‹integer, n›*
Returns the variation code for the n-th feature in the *‹font›*.

`\XeTeXvariationname` *‹font›* *‹variation code›*
Returns the name corresponding to the *‹feature code›* in the *‹font›*.

`\XeTeXvariationmin` *‹font›* *‹variation code›*
Returns the minimum value of the variation corresponding to the *‹variation code›* in the *‹font›*.

`\XeTeXvariationmax` *‹font›* *‹variation code›*
Returns the maximum value of the variation corresponding to the *‹variation code›* in the *‹font›*.

`\XeTeXvariationdefault` *‹font›* *‹variation code›*
Returns the default value of the variation corresponding to the *‹variation code›* in the *‹font›*.

4.3 Maths fonts

To be addressed. Still incomplete in X͟ETEX.

5 Encodings

`\XeTeXinputencoding` *‹Charset name›*
Defines the input encoding of the following text.

`\XeTeXdefaultencoding` *‹Charset name›*
Defines the input encoding of subsequent files to be read.

6 Line breaking

`\XeTeXdashbreakstate` *‹Integer›*
Specify whether line breaks after en- and em-dashes are allowed. On, 1, by default.

`\XeTeXlinebreaklocale` *‹Locale ID›*
Defines how to break lines for multilingual text.

`\XeTeXlinebreakskip` ‹*Glue*›
Inter-character linebreak stretch

`\XeTeXlinebreakpenalty` ‹*Integer*›
Inter-character linebreak penalty

`\XeTeXupwardsmode` ‹*Integer*›
If positive, successive lines of text (and rules, boxes, etc.) will be stacked upwards instead of downwards.

7 Graphics

`\XeTeXpicfile` ‹*filename*› ‹*optional options*›
Insert an image.

`\XeTeXpdffile` ‹*filename*› ‹*optional options*›
Insert (pages of) a PDF.

7.1 Parity with pdfTeX

`\pdfpageheight` ‹*Number*›
The height of the PDF page.

`\pdfpagewidth` ‹*Number*›
The width of the PDF page.

`\pdfsavepos`
Saves the current location of the page in the typesetting stream.

`\pdflastxpos`
Retrieves the horizontal position saved by the above.

`\pdflastypos`
Retrieves the vertical position saved by the above.

8 Misc.

`\XeTeXversion`
A number corresponding to the XƎTEX version.

`\XeTeXrevision`
A string corresponding to the XƎTEX revision number.

Example:

```
The \XeTeX\ version is: \the\XeTeXversion\XeTeXrevision
```

The XƎTEX version is: 0.995