

The xltextra package

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I Introduction

This document describes the xltextra package. It implements some odds-and-ends features and improved functionality for broken or sub-standard L^AT_EX methods when using the X_YL^AT_EX format.

I.1 Usage

Easy: `\usepackage{xltextra}`. This package automatically loads the following packages: `fixltx2e`, `etex`, `xunicode`, `fontspec`.

There are some package options to disable various functionality that could clash with other things:

`no-sscript` Swaps the definitions of `\textsubscript` and `\textsuperscript` with their respective starred versions, as described in section 2.1.

`no-emph` Disables the redefinition of `\emph` and `\em` described in section 2.2.

`no-logos` Disables the redefinition of `\TeX`, etc. described in section 2.4, but *does* still define the `\XeTeX` and `\XeLaTeX` logo commands.

`no-hyphen` Disables the redefinition of `\-` (probably harmless anyway) described in section 2.5.

2 Features

2.1 `\textsuperscript` and `\textsubscript`

These two macros have been redefined to take advantage, if possible, of actual superior or inferior glyphs in the main document font. This is very important for high-quality typesetting — compare this first example to the third; yes, they are the same font.

<code>\textsuperscript</code>	abcdefghijklmnopqrstuvwxyz1234567890
<code>\textsubscript</code>	abcdefghijklmnopqrstuvwxyz1234567890

But will fall back on ‘faked’ ones if they don’t exist: (this is Didot)

<code>\textsuperscript</code>	abcdefghijklmnopqrstuvwxyz1234567890
<code>\textsubscript</code>	abcdefghijklmnopqrstuvwxyz1234567890

The original definitions are available in starred versions of the commands:

<code>\textsuperscript*</code>	abcdefghijklmnopqrstuvwxyz1234567890
<code>\textsubscript*</code>	abcdefghijklmnopqrstuvwxyz1234567890

But beware fonts lacking the full repertoire: (this is Adobe Jenson Pro)

<code>\textsuperscript</code>	abcdefghijklmnopqrstuvwxyz ¹²³⁴⁵⁶⁷⁸⁹⁰
<code>\textsubscript</code>	abcdefghijklmnopqrstuvwxyz ₁₂₃₄₅₆₇₈₉₀

The `[no-sscript]` package option will swap the definitions of the starred and non-starred versions of the commands described above if the new definitions are undesirable.

The macros `\realsubscript`, `\realsuperscript`, `\fakesubscript`, and `\fakesuperscript` may be used to access the ‘new’ and ‘old’ functionalities regardless of the `[no-sscript]` package option.

2.2 Inner emphasis

`fixltx2e`’s method for checking for “inner” emphasis is a little fragile in \LaTeX , because font slant information might be missing from the font. Therefore, we use \LaTeX ’s `NFSS` information, which is more likely to be correct.

Nested *emphasis is now fixed*.

```
\renewcommand\eminnershape{\scshape}
\fontspec{Didot}
Nested {\em emphasis is
        \emph{now} fixed.}
```

The [no-emph] package option will disable this redefinition.

2.3 Unicode footnote symbols

By default L^AT_EX defines symbolic footnote characters in terms of commands that don't resolve well; better results can be achieved by using specific unicode characters or proper LICRs with the xunicode package.

This problem has been solved by loading the fixltx2e and xunicode packages in xltextra.

2.4 Logos

This part of the package essentially exists to define the \XeTeX and \XeLaTeX logos. Here're some examples. The default:

```
TeX XeTeX LATeX XeLATeX      \TeX\ \XeTeX\ \LaTeX\ \XeLaTeX
```

Notice it's a bit tight compared to not using Computer Modern, for which the logos were designed:

```
TeX XeTeX LATeX XeLATeX      \usefont{OT1}{cmr}{m}{n}
\TeX\ \XeTeX\ \LaTeX\ \XeLaTeX
```

Look in the implementation corresponding to this section to see how to customise the spacings in these logos, but be warned it's fairly crude and may change in the future.

The [no-logos] package option will not redefine `\TeX` or `\LaTeX` but will still define `\XeTeX` and `\XeLaTeX`. (The only advantage for not doing this is more consistency when customising the spacing, which isn't really recommended anyway...)

2.5 Discretionary hyphenation: `\-`

\LaTeX defines the macro `\-` to insert discretionary hyphenation points. However, it is hard-coded in \LaTeX to use the hyphen - character. Since `fontspec` makes it easy to change the hyphenation character on a per font basis, it would be nice if `\-` adjusted automatically — and now it does.

2.6 Vulgar fractions

The `\vfrac` command for setting ‘vulgar’ fractions based on AAT or OpenType font features. Not really recommended for many purposes, depending on your text, but it's a good example of how to program such things using `fontspec`.

AAT: $\frac{123}{456}$
 ICU: $\frac{123}{456}$

`\fontspec{Hoefler Text}`
 AAT: `\vfrac{123}{456}\par`
`\fontspec{Warnock Pro}`
 ICU: `\vfrac{123}{456}`

(This can be achieved in regular \LaTeX with the `nicefrac` package, but don't believe its name: these fractions aren't nice!)

Only use it when you know it will work; no warnings are given if the font doesn't support it.

2.7 Named glyphs

Along the way somewhere, \XeTeX added support for selecting glyphs from a TrueType-based OpenType font based on their internal glyph name. Jonathan Kew posted the following definition as a nice interface to it.

¥ [smile]

`\fontspec{Charis SIL}`
`\namedglyph{yen}`
`\namedglyph{smile}`

2.8 The `\showhyphens` command

The default definition doesn't work in XeTeX. A new version, written by Jonathan Kew, is included in the package that *does* work. Minor differences with the original: the showing of hyphens in the console output will be marked with explanatory text. Also, multiple words, separated by commas, will end up in separate instances of 'showing hyphens'.

File I

The xltextra package

This is the package implementation.

```
1 \ProvidesPackage{xltextra}
2 [2007/05/30 v0.3 Improvements for the "XeLaTeX" format]
```

Change History

vo.1

<code>\-:</code> Implemented; from the L ^A T _E X 2 _ε sources.	11
<code>\fakesuperscript:</code> Implemented.	11
<code>\realsubscript:</code> Implemented.	12
<code>\realsuperscript:</code> Implemented.	13
<code>\TeX@logo@spacing:</code> Implemented.	10
<code>\textsuperscript*:</code> Implemented.	12
<code>\vfrac:</code> Implemented.	14

vo.2

<code>\@makefnmark:</code> Footnotes patched to use new <code>\textsuperscript</code> .	13
<code>\emph:</code> Migrated from <code>fontspec</code> .	10
<code>\namedglyph:</code> Implemented.	14

<code>\TeX@logo@spacing: \TeX@logo@spacing</code> made “private” and added an arg for <code>\XeLaTeX</code> .	10
Added TFM font check.	10
<code>\xxt@namedglyph@fallback</code> : Implemented.	14
vo.3	
<code>\@makefnmark</code> : Footnote symbol put in an mbox.	13
General: Added no- package options to restrict functionality.	5
Added proper documentation.	5
<code>\fakesuperscript</code> : Name change from <code>\fakesubscript</code> . Made robust.	11
<code>\realsubscript</code> : Fixes to catch up with fontspec. Name change.	12
<code>\realsuperscript</code> : Fixes to catch up with fontspec. Name change.	13
<code>\showhyphens</code> : Implemented.	15
<code>\textsubscript</code> : Adjusted, made robust (with friends ‘super’ and starred).	12

Option processing

```

3 \newif\if@xxt@nosscript@
4 \newif\if@xxt@nologos@
5 \newif\if@xxt@nohyphen@
6 \newif\if@xxt@noemph@
7 \DeclareOption{no-sscript}{\@xxt@nosscript@true}
8 \DeclareOption{no-logos}{\@xxt@nologos@true}
9 \DeclareOption{no-hyphen}{\@xxt@nohyphen@true}
10 \DeclareOption{no-emph}{\@xxt@noemph@true}
11 \ProcessOptions*

```

Required packages

```

12 \RequirePackage{ifxetex}
13 \RequireXeTeX
14 \RequirePackage{graphicx}
15 \RequirePackage{fontspec}
16 \RequirePackage{xunicode}

```

3 Programmimg bits and pieces

4 Logos

`\XeTeX` The `TeX`-related logos people insist upon using need to be tuned on a
`\XeLaTeX` per-font basis. This package will (might!) eventually allow this, but for
now, it's baby steps. The `XYTeX` and `XYLATeX` logos are provided.

The various `TeX`-like logos that extend outside the regular vertical alphabetic bounds of running text have the unfortunate side-effects in `XYTeX` of often overrunning the `\baselineskip`. Putting the logos in zero-height boxes prevents this problem. Actually, this problem doesn't happen anymore.

To do:

- adapt `\LaTeX` to use small caps if available...
- ...otherwise, need a scaling factor, and maybe a vertical nudge factor
- add other logos
- per-font parameters, with some defaults for common fonts
- add 'low contrast' small caps versions, et al.
- probably break out the whole thing into its own package, if it works

`\TeX@logo@spacing` #1: Kern between T & eX
#2: Kern between Te & X
#3: Lowering amount for E in TeX
#4: Kerning between L & aTeX
#5: Kerning between La & TeX
#6: Kerning between Xe & LaTeX

This macro defines new `\TeX` and `\XeTeX` logos. Parameters must be tuned on a per-font basis:

`TeX XYTeX LATeX XYLATeX`

`\TeX@logo@spacing{-0.12em}{-0.12em}%
{0.5ex}{-0.3em}{-0.12em}{-0.1em}
\TeX\ \XeTeX\ \LaTeX\ \XeLaTeX`

Warning! This macro will **definitely** change in the future. If you care about backwards compatibility in your documents, copy+paste the definitions below rather than using `\TeX@logo@spacing`.

```

17 \newlength\xxt@kern@Te
18 \newlength\xxt@kern@eX
19 \newlength\xxt@lower@e
20 \newlength\xxt@kern@La
21 \newlength\xxt@kern@aT
22 \newlength\xxt@kern@eL
23 \newcommand*\TeX@logo@spacing[6]{%
24   \setlength\xxt@kern@Te{#1}%
25   \setlength\xxt@kern@eX{#2}%
26   \setlength\xxt@lower@e{#3}%
27   \setlength\xxt@kern@La{#4}%
28   \setlength\xxt@kern@aT{#5}%
29   \setlength\xxt@kern@eL{#6}%
30 }
31 \unless\if@xxt@nologos@
32 \DeclareRobustCommand\TeX{%
33   \leavevmode
34   \smash{%
35     T\kern\xxt@kern@Te
36     \lower\xxt@lower@e\hbox{E}\kern\xxt@kern@eX X}%
37   \spacefactor1000\relax}
38 \DeclareRobustCommand{\LaTeX}{%
39   \leavevmode
40   \smash{%
41     L\kern\xxt@kern@La
42     {\sbox\z@ T%
43       \vbox to\ht\z@{\hbox{\check@mathfonts
44         \fontsize\sf@size\z@
45         \math@fontsfalse\selectfont
46         A}%
47       \vss}%
48     }%
49     \kern\xxt@kern@aT
50     \TeX}}
51 \fi

```



```

52 \DeclareRobustCommand\XeTeX{%
53   \leavevmode
54   \smash{%
55     X\lower\xtt@lower@e
56     \hbox{\kern\xtt@kern@eX
57       \ifnum\XeTeXfonttype\font>0
58         \ifnum\XeTeXcharglyph"018E>0
59           \char"018E\relax
60         \else
61           \ifdim\fontdimen1\font=0pt
62             \reflectbox{E}%
63           \else
64             \XeTeXuseglyphmetrics=1%
65             \setbox0=\hbox{E}\dimen0=\ht0\advance\dimen0by\dp0%
66             \raise\dimen0\hbox{\rotatebox{180}{\box0}}%
67           \fi
68         \fi
69       \else
70         \setbox0=\hbox{E}\dimen0=\ht0\advance\dimen0by\dp0%
71         \raise\dimen0\hbox{\rotatebox{180}{\box0}}%
72       \fi
73     }\kern\xtt@kern@Te\TeX}}%
74 \DeclareRobustCommand\XeLaTeX{%
75   \leavevmode
76   \smash{%
77     X\lower\xtt@lower@e
78     \hbox{\kern\xtt@kern@eX
79       \ifnum\XeTeXfonttype\font>0\relax
80       \ifnum\XeTeXcharglyph"018E>0\relax
81       \char"018E\relax
82     \else
83       \ifdim\fontdimen1\font=0pt\relax
84       \reflectbox{E}%
85     \else
86       \XeTeXuseglyphmetrics=1\relax
87       \setbox0=\hbox{E}\dimen0=\ht0\advance\dimen0by\dp0\relax
88       \raise\dimen0\hbox{\rotatebox{180}{\box0}}%
89     \fi

```

```

90     \fi
91     \else
92         \setbox0=\hbox{E}\dimen0=\ht0\advance\dimen0by\dp0\relax
93         \raise\dimen0\hbox{\rotatebox{180}{\box0}}}%
94     \fi}\kern\xxt@kern@eL\LaTeX}}
95 \TeX@logo@spacing{-0.15em}{-0.15em}{0.5ex}{-0.36em}{-0.15em}{-0.1em}

```

5 ε -TEX functionality

Because it's just sensible, we load the package that actually allows L^AT_EX to access the extra registers, etc., provided by ε -TEX.

```

96 \RequirePackage{etex}

```

5.1 Unicode footnote symbols

```

97 \RequirePackage{fixltx2e}[2006/03/24]

```

5.2 Emph

```

98 \unless\if@xxt@noemph@

```

$\backslash em$ Redefinition of $\{\backslash em \dots\}$ and $\backslash emph\{\dots\}$ to use NFSS info to detect
 $\backslash emph$ when the inner shape should be used.

```

99 \DeclareRobustCommand\em
100   {\@nomath\em
101     \edef\@tempa{\f@shape}%
102     \edef\@tempb{\itdefault}%
103     \ifx\@tempa\@tempb
104         \eminnershape
105     \else
106         \emshape
107     \fi}
108 \DeclareTextFontCommand{\emph}{\em}
109 \let\emshape\itshape
110 \let\eminnershape\upshape
111 \fi

```

5.3 `\-`

112 `\unless\if@xxt@nohyphen@`

`\-` This macro is courtesy of Frank Mittelbach and the L^AT_EX 2_ε source code.

```
113 \DeclareRobustCommand{\-}{%
114   \discretionary{%
115     \char\ifnum\hyphenchar\font<\z@
116       \xlx@defaultthyphenchar
117     \else
118       \hyphenchar\font
119     \fi}{}{}}
120 \def\xlx@defaultthyphenchar{`\-}
```

121 `\fi`

5.4 Subscript and superscript

For OpenType fonts, the subscript feature (subs) is used, but if that doesn't exist then the scientific inferior feature (sinf) is used on the assumption that something's better than nothing. This matches current trends in OpenType font design.

Footnotes are patched to use this better `\textsuperscript`.

`\fakesubscript` The old ('fake') methods:

```
\fakesubscript 122 \DeclareRobustCommand*\fakesubscript[1]{%
123   \@textsubscript{\selectfont#1}}
124 \DeclareRobustCommand*\fakesuperscript[1]{%
125   \@textsuperscript{\selectfont#1}}
```

`\textsubscript` These commands are either defined to create fake or real sub-/super-
`\textsubscript*` scripts if they are starred or not, respectively. This swaps if the [no-
`\textsuperscript` ssript] package option is in effect. Text subscripts:
`\textsuperscript*`

```
126 \if@xxt@nosscript@
127   \DeclareRobustCommand*\textsubscript{%
128     \@ifstar{\realsubscript}{\fakesubscript}}
129   \DeclareRobustCommand*\textsuperscript{%
130     \@ifstar{\realsuperscript}{\fakesuperscript}}
```

```

131 \else
132   \DeclareRobustCommand*\textsubscript{%
133     \@ifstar{\fakesubscript}{\realsubscript}}
134   \DeclareRobustCommand*\textsuperscript{%
135     \@ifstar{\fakesuperscript}{\realuperscript}}
136 \fi

```

`\realsubscript`

```

137 \DeclareRobustCommand*\realsubscript[1]{%
138   \begingroup
139     \c@zf@script 1818326126\relax
140     \font\zf@basefont="\csname zf@family@fontdef\f@family\endcsname" at \f@size pt
141     \zf@set@font@type
142     \ifzf@atsui
143       \zf@make@aat@feature@string{10}{2}%
144       \unless\ifx\@tempa\@empty
145         {\addfontfeature{VerticalPosition=Inferior}#1}%
146       \else
147         \fakesubscript{#1}%
148       \fi
149     \fi
150     \ifzf@icu
151       \zf@check@ot@feat{+subs}%
152       \if@tempswa
153         {\addfontfeature{VerticalPosition=Inferior}#1}%
154       \else
155         \zf@check@ot@feat{+sinf}%
156         \if@tempswa
157           {\addfontfeature{VerticalPosition=ScientificInferior}#1}%
158         \else
159           \fakesubscript{#1}%
160         \fi
161       \fi
162     \fi
163   \endgroup}

```

`\realuperscript` Text superscripts:

```

164 \DeclareRobustCommand*\realuperscript[1]{%

```

```

165 \begingroup
166   \c@zf@script 1818326126\relax
167   \font\zf@basefont="\csname zf@family@fontdef\@family\endcsname" at \f@size pt
168   \zf@set@font@type
169   \ifzf@atsui
170     \zf@make@aat@feature@string{10}{1}%
171     \unless\ifx\@tempa\@empty
172       {\addfontfeature{VerticalPosition=Superior}#1}%
173     \else
174       \fakesuperscript{#1}%
175     \fi
176   \fi
177   \ifzf@icu
178     \zf@check@ot@feat{+sups}%
179     \if@tempwa
180       {\addfontfeature{VerticalPosition=Superior}#1}%
181     \else
182       \fakesuperscript{#1}%
183     \fi
184   \fi
185 \endgroup}

```

Patching footnotes:

\@makefnmark

```

186 \def\@makefnmark{\mbox{\normalfont\textsuperscript{\@thefnmark}}}

```

\vfrac #1: Numerator

#2: Denominator

No error checking is done to ensure that the font actually has the necessary features. Requires the xunicode package for \textfraction-solidus.

```

187 \newcommand*\vfrac[2]{%
188   \begingroup
189     \c@zf@script 1818326126\relax
190     \font\zf@basefont="\csname zf@family@fontdef\@family\endcsname" at \f@size pt
191     \zf@set@font@type
192     \ifzf@atsui

```

```

193     {\addfontfeature{VerticalPosition=Superior}#1}%
194     \textfractionsolidus
195     {\addfontfeature{VerticalPosition=Inferior}#2}%
196   \fi
197   \ifzf@icu
198     {\addfontfeature{VerticalPosition=Numerator}#1}%
199     \textfractionsolidus
200     {\addfontfeature{VerticalPosition=Denominator}#2}%
201   \fi
202 \endgroup}

```

`\namedglyph` #1: Name of the font glyph to be typeset

```

203 \newcommand\namedglyph[1]{%
204   \@tempcnta=\XeTeXglyphindex "#1"\relax
205   \ifnum\@tempcnta>0
206     \XeTeXglyph\@tempcnta
207   \else
208     \xxt@namedglyph@fallback{#1}%
209   \fi}

```

`\xxt@namedglyph@fallback` Redefine this macro to change how glyph names that aren't found get typeset.

```

210 \newcommand\xxt@namedglyph@fallback[1]{[#1]}

```

`\showhyphens` This macro is entirely due to Jonathan Kew. I wish I knew how to write these sorts of things.

```

211 \newbox\xxt@tempbox
212 \def\showhyphens#1{%
213   \typeout{^^J*****}
214   \string\showhyphens:
215   *****}%
216   \@for\@ii:=#1\do{\xxt@showhyphens{\@ii}}%
217   \typeout{^^J*****}
218   *****%
219   *****^^J}}
220 \def\xxt@showhyphens#1{%
221   \setbox\@tempboxa=\vbox{%

```

```

222     \hsize1sp \hbadness10000 \hfuzz\maxdimen
223     \everypar={} \leftskip\z@ \rightskip\leftskip
224     \pretolerance\m@ne \noindent \hskip\z@ #1\par
225     \global\setbox\xxt@tempbox=\hbox{}\xxt@sh@cat}%
226     \setbox\@tempboxa=\hbox to \maxdimen{\unhbox\xxt@tempbox}}
227 \def\xxt@sh@cat{\unskip\unpenalty
228     \setbox\@tempboxa=\lastbox
229     \unless\ifvoid\@tempboxa
230         \global\setbox\xxt@tempbox=\hbox{%
231             \unhbox\@tempboxa
232             \unskip\unskip
233             \unhbox\xxt@tempbox}%
234         \expandafter\xxt@sh@cat
235     \fi}

```

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