

# The **xltxtra** package

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# 1 Introduction

This document describes the `xltxtra` package. It implements some odds-and-ends features and improved functionality for broken or sub-standard L<sup>A</sup>T<sub>E</sub>X methods when using the X<sub>E</sub>T<sub>E</sub>X format.

## 1.1 Usage

Easy: `\usepackage{xltxtra}`. This package automatically loads the following packages: `fixltx2e`, `etex`, `metalogo`, `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 §2.5, but *does* still define the `\XeTeX` and `\XeLaTeX` logo commands.

**no-hyphen** Disables the redefinition of `\-` (probably harmless anyway) described in section §2.6.

**no-verb** Disables the redefinition of `\verb*` and `\begin{verbatim*}`, and the patching of various verbatim packages, as described in section §2.4.

# 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>	<code>abcdefghijklmnoprstuvwxyz1234567890</code>
<code>\textsubscript</code>	<code>abcdefghijklmnoprstuvwxyz1234567890</code>

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

<code>\textsuperscript</code>	<code>abcdefghijklmnoprstuvwxyz1234567890</code>
<code>\textsubscript</code>	<code>abcdefghijklmnoprstuvwxyz1234567890</code>

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

<code>\textsuperscript*</code>	<code>abcdefghijklmnoprstuvwxyz1234567890</code>
<code>\textsubscript*</code>	<code>abcdefghijklmnoprstuvwxyz1234567890</code>

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

```
\textsuperscript ab_cdefghijklmno_pqrstuvwxyz1234567890
\textsubscript abcdefghijklmnpqrstuvwxyz1234567890
```

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  $\text{\LaTeX}$ , because font slant information might be missing from the font. Therefore, we use  $\text{\LaTeX}$ ’s NFSS information, which is more likely to be correct.

---

```
\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  $\text{\LaTeX}$  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 LCRs with the `xunicode` package.

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

## 2.4 Verbatim

Many verbatim mechanisms assume the existence of a ‘visible space’ character that exists in the ASCII space slot of the typewriter font. This character is known in unicode as U+2434: BOX OPEN, which looks like this: ‘`\`’.

When a unicode typewriter font is used,  $\text{\LaTeX}$  no longer prints visible spaces for the `verbatim*` environment and `\verb*` command. `xltxttra` fixes this problem by using the correct unicode glyph, and patches the following packages to do the same: `listings`, `fancyvrb`, `moreverb`, and `verbatim`.

In the case that the typewriter font does not contain ‘`\`’, the Latin Modern Mono font is used as a fallback.

## 2.5 Logos

This part of the package essentially exists to define the `\XeTeX` and `\XeLaTeX` logos, which need to be tuned according to the font that is used. Originally I had some hard-coded definitions in here, but Andrew Moschou's `metalogo` package now provides a much more flexible and useful interface to a variety of `TeX`-related logos.

Here are some examples. The default:

---

`\TeX X\H{}\TeX \LaTeX X\H{}\LaTeX`

`\TeX\ \XeTeX\ \LaTeX\ \XeLaTeX`

---

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

---

`\usefont{OT1}{cmr}{m}{n}`

`\TeX\ \XeTeX\ \LaTeX\ \XeLaTeX`

---

These logos, ideally, should be hand-tuned for each font that they're used in. Please refer to the `metalogo` documentation for more information.

The `[no-logos]` package option will not redefine `\TeX` or `\LaTeX` but will still define `\XeTeX` and `\XeLaTeX`.

## 2.6 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.

## 2.7 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: `^{123}/_{456}`  
ICU: `^{123}/_{456}`

`\fontspec{Skia}`  
AAT: `\vfrac{123}{456}\`  
`\fontspec{Warnock Pro}`  
ICU: `\vfrac{123}{456}`

---

(This can also be achieved in regular `LaTeX` with either the `nicefrac` or `xfrac` package.)

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

## 2.8 Named glyphs

Along the way somewhere, X<sub>E</sub>T<sub>E</sub>X 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}
-----------	---

---

## 2.9 The \showhyphens command

The default definition doesn't work in X<sub>E</sub>T<sub>E</sub>X. A new version, written by Jonathan Kew, is included in this 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 **xltxttra** package

This is the package implementation.

```
1 \ProvidesPackage{xltxttra}
2 [2009/12/26 v0.5b Improvements for the "XeLaTeX" format]
```

### Option processing

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

### Required packages

```
14 \RequirePackage{ifxetex}
15 \RequireXeTeX
16 \RequirePackage{fontspec}
17 \RequirePackage{xunicode}
```

## 3 Programming bits and pieces

## 4 Logos

- \XeTeX The TeX-related logos people insist upon using need to be tuned on a per-font basis. This package calls upon Andrew Moschou's package `metalogo` for this purpose. To tune the logos to each font, use the commands `\setlogokern`, `\setlogodrop`, etc. Refer to `mathspec`'s documentation for further details.

---

TEX X<sub>E</sub>TEX L<sub>A</sub>T<sub>E</sub>X X<sub>E</sub>L<sub>A</sub>T<sub>E</sub>X  
L<sub>A</sub>T<sub>E</sub>X 2<sub>ε</sub>

```

\setlogokern{Xe}{-0.061em}
\setlogokern{eL}{-0.057em}
\setlogokern{La}{-0.265em}
\setlogokern{aT}{-0.0585em}
\setlogokern{Te}{-0.0575em}
\setlogokern{eX}{-0.072em}
\setlogokern{eT}{-0.056em}
\setlogokern{X2}{0.1667em}
\setlogodrop{0.153em}
\setLaTeXa{\scshape a}
\setLaTeXee{\mbox{\fontspec{Times}\itshape ε}}
\TeX\ \XeTeX\ \LaTeX\ \XeLaTeX\ \LaTeX

```

---

<sup>18</sup> \RequirePackage{metalogo}

The [no-logos] package option might be in effect, in which case `\TeX`, `\LaTeX` and `\LaTeXe` should keep their original definitions (which were saved by `metalogo`).

```

19 \if@xxt@nologos@
20   \let\TeX\original@TeX
21   \let\LaTeX\original@LaTeX
22   \let\LaTeXe\original@LaTeXe
23 \fi

```

`\TeX@logo@spacing` This macro is now deprecated. It is recommended to use the commands from `metalogo`.

```

24 \newcommand*\TeX@logo@spacing[6]{%
25   \PackageWarning{xltxtra}{%
26     Use of \protect\TeX@logo@spacing\space is deprecated,\MessageBreak
27     recommend to use commands from package `metalogo' instead}
28   \setlogokern{Te}{#1}%
29   \setlogokern{eT}{#1}%
30   \setlogokern{eX}{#2}%
31   \setlogokern{Xe}{#2}%
32   \setlogodrop{#3}%
33   \setlogokern{La}{#4}%
34   \setlogokern{aT}{#5}%
35   \setlogokern{eL}{#6}%

```

## 5 $ε$ -TeX functionality

Because it's just sensible, we load the package that actually allows L<sub>A</sub>T<sub>E</sub>X to access the extra registers, etc., provided by  $ε$ -TeX.

<sup>36</sup> \RequirePackage{etex}

## 5.1 Unicode footnote symbols

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

## 5.2 Emph

38 \unless\if@xxt@noemph@

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

```
39 \DeclareRobustCommand{\em
40   {@nomath\em
41   \edef@\tempa{\f@shape}%
42   \edef@\tempb{\itdefault}%
43   \ifx@\tempa@\tempb
44     \eminnershape
45   \else
46     \emshape
47   \fi}
48 \DeclareTextFontCommand{\emph}{\em}
49 \let\emshape\itshape
50 \let\eminnershape\upshape
51 \fi
```

## 5.3 \-

52 \unless\if@xxt@nohyphen@

\- This macro is courtesy of Frank Mittelbach and the L<sup>A</sup>T<sub>E</sub>X 2<sub>&</sub> source code.

```
53 \DeclareRobustCommand{\-}{%
54   \discretionary{%
55     \char\ifnum\hyphenchar\font<\z@
56     \x1x@defaulthyphenchar
57   }{%
58     \hyphenchar\font
59   }{%
60   \def\x1x@defaulthyphenchar{\-}
61 \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:
\fakesuperscript 62 \DeclareRobustCommand*\fakesubscript[1]{%
63   \@textsubscript{\selectfont#1}}
64 \DeclareRobustCommand*\fakesuperscript[1]{%
65   \@textsuperscript{\selectfont#1}}


\textsubscript These commands are either defined to create fake or real sub-/super-scripts if they
\textsubscript* are starred or not, respectively. This swaps if the [ no-sscript ] package option is
\textsuperscript in effect. Text subscripts:
\textsuperscript* 66 \if@xxt@nossript@
67   \DeclareRobustCommand*\textsubscript{%
68     \@ifstar{\realsubscript}{\fakesubscript}}
69   \DeclareRobustCommand*\textsuperscript{%
70     \@ifstar{\realsuperscript}{\fakesuperscript}}
71 \else
72   \DeclareRobustCommand*\textsubscript{%
73     \@ifstar{\fakesubscript}{\realsubscript}}
74   \DeclareRobustCommand*\textsuperscript{%
75     \@ifstar{\fakesuperscript}{\realsuperscript}}
76 \fi


\realsubscript
77 \DeclareRobustCommand*\realsubscript[1]{%
78   \begingroup
79     \ifcsname zf@family@fontdef\f@family\endcsname
80       \c@zf@script 1818326126\relax
81       \font\zf@basefont="\csname zf@family@fontdef\f@family\endcsname" at \f@size pt
82         \zf@set@font@type
83         \ifzf@icu
84           \zf@check@ot@feat{+subs}%
85           \if@tempswa
86             {\addfontfeature{VerticalPosition=Inferior}#1}%
87           \else
88             \zf@check@ot@feat{+sinf}%
89             \if@tempswa
90               {\addfontfeature{VerticalPosition=ScientificInferior}#1}%
91             \else
92               \fakesubscript{#1}%
93             \fi
94           \fi
95         \else\ifzf@atsui
96           \zf@make@aat@feature@string{10}{2}%
97           \unless\ifx\@tempa\@empty
98             {\addfontfeature{VerticalPosition=Inferior}#1}%
99           \else
100             \fakesubscript{#1}%

```

```

101      \fi
102      \fi\fi
103  \else
104      \fakesubscript{#1}%
105      \fi
106  \endgroup

```

\realsuperscript Text superscripts:

```

107  \DeclareRobustCommand*\realsuperscript[1]{%
108  \begingroup
109  \ifcsname zf@family@fontdef\f@family\endcsname
110  \c@zf@script 1818326126\relax
111  \font\zf@basefont="\csname zf@family@fontdef\f@family\endcsname" at \f@size pt
112  \ifzf@set@font@type
113  \ifzf@icu
114  \zf@check@ot@feat{+sups}%
115  \if@tempswa
116  {\addfontfeature{VerticalPosition=Superior}#1}%
117  \else
118  \fakesuperscript{#1}%
119  \fi
120  \else\ifzf@atsui
121  \zf@make@aat@feature@string{10}{1}%
122  \unless\ifx@\tempa\@empty
123  {\addfontfeature{VerticalPosition=Superior}#1}%
124  \else
125  \fakesuperscript{#1}%
126  \fi
127  \fi\fi
128  \else
129  \fakesuperscript{#1}%
130  \fi
131  \endgroup}

```

Patching footnotes:

\@makefnmark

```

132  \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 `\textfractionsolidus`.

```

133  \newcommand*\vfrac[2]{%
134  \begingroup
135  \c@zf@script 1818326126\relax

```

```

136 \font\zf@basefont="\csname zf@family@fontdef\f@family\endcsname" at \f@size pt
137 \zf@set@font@type
138 \ifzf@icu
139   {\addfontfeature{VerticalPosition=Numerator}#1}%
140   \textfractionsolidus
141   {\addfontfeature{VerticalPosition=Denominator}#2}%
142 \else\ifzf@atsui
143   {\addfontfeature{VerticalPosition=Superior}#1}%
144   \textfractionsolidus
145   {\addfontfeature{VerticalPosition=Inferior}#2}%
146 \fi\fi
147 \endgroup}

```

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

```

148 \newcommand\namedglyph[1]{%
149   \@tempcnta=\XeTeXglyphindex "#1"\relax
150   \ifnum@\tempcnta>0
151     \XeTeXglyph@\tempcnta
152   \else
153     \xxt@namedglyph@fallback{#1}%
154   \fi}

```

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

```
155 \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.

```

156 \newbox\xxt@tempbox
157 \def\showhyphens#1{%
158   \typeout{^J*****%
159   \string\showhyphens:
160   *****%}
161   \for@ii:=#1\do{\xxt@showhyphens{@ii}}%
162   \typeout{^J*****%
163   *****%
164   *****^J}}
165 \def\xxt@showhyphens#1{%
166   \setbox@\tempboxa=\vbox{%
167     \hsize1sp \hbadness10000 \hfuzz\maxdimen
168     \everypar={} \leftskip\z@ \rightskip\leftskip
169     \pretolerance\m@ne \noindent \hskip\z@ #1\par
170     \global\setbox\xxt@tempbox=\hbox{}\xxt@sh@cat}%
171   \setbox@\tempboxa=\hbox to \maxdimen{\unhbox\xxt@tempbox}%
172 \def\xxt@sh@cat{\unskip\unpenalty
173   \setbox@\tempboxa=\lastbox
174   \unless\ifvoid@\tempboxa

```

```

175      \global\setbox\xxt@tempbox=\hbox{%
176          \unhbox\@tempboxa
177          \unskip\unskip
178          \unhbox\xxt@tempbox}%
179          \expandafter\xxt@sh@cat
180      \fi}

```

## 5.5 Verbatims

Many thanks to Apostolos Syropoulos for discovering this problem and writing the redefinition of L<sup>A</sup>T<sub>E</sub>X's `\verb@` environment and `\verb*@` command.

```
181 \unless\if@xxt@noverb@
```

`\xxt@visiblespace` Print U+2434: OPEN BOX, which is used to visibly display a space character.

```

182 \def\xxt@visiblespace{%
183     \iffontchar\font"2423
184         \expandafter\textvisiblespace
185     \else
186         \expandafter\xxt@visiblespace@fallback
187     \fi}

```

`\xxt@visiblespace@fallback` If the current font doesn't have U2434, use Latin Modern Mono instead.

```

188 \def\xxt@visiblespace@fallback{%
189     \usefont{EU1}{lmtt}{\f@series}{\f@shape}%
190     \textvisiblespace}

```

`\xxt@vprintspaces` Helper macro to turn spaces active and print visible space instead.

```

191 \begingroup
192     \catcode`\ =\active%
193     \gdef\xxt@vprintspaces{\catcode`\ \active\let \xxt@visiblespace}%
194 \endgroup

```

`\verb` Redefine `\verb` to use `\xxt@vprintspaces`.

```

195 \def\verb{\relax\ifmmode\hbox\else\leavevmode\null\fi
196     \bgroup
197         \verb@eol@error \let\do\@makeother \dospecials
198         \verbatim@font\@noligs
199         \@ifstar\@sverb\@verb}
200 \def\@sverb{\xxt@vprintspaces\@sverb}

```

It's better to put small things into `\AtBeginDocument`, so here we go:

```

201 \AtBeginDocument{%
202     \xxt@patch@verbatim
203     \xxt@patch@moreverb
204     \xxt@patch@fancyvrb
205     \xxt@patch@listings}

```

`verbatim*` With the `verbatim` package.

```
206 \def\xxt@patch@verbatim{%
207   \@ifpackageloaded{verbatim}{%
208     \@namedef{verbatim*}{\begingroup\@verbatim\xxt@vprintspaces\verbatim@start}%
209   }{}}
```

This is for vanilla LaTeX.

```
210   \@namedef{verbatim*}{\@verbatim\xxt@vprintspaces\@sxverbatim}%
211 }
```

`listingcont*` This is for `moreverb`. The main `listing*` environment inherits this definition.

```
212 \def\xxt@patch@moreverb{%
213   \@ifpackageloaded{moreverb}{%
214     \@namedef{listingcont*}{%
215       \def\verbatim@processline{%
216         \the\listing@line \global\advance\listing@line1
217         \the\verbatim@line\par}%
218       \@verbatim\xxt@vprintspaces\verbatim@start}%
219     }{}}
```

`listings` and `fancyvrb` make things nice and easy:

```
220 \def\xxt@patch@fancyvrb{%
221   \@ifpackageloaded{fancyvrb}{%
222     \let\FancyVerbSpace\xxt@visiblespace
223   }{}}%
224 \def\xxt@patch@listings{%
225   \@ifpackageloaded{listings}{%
226     \let\lst@visiblespace\xxt@visiblespace
227   }{}}
```

Finish verbatim features:

```
228 \fi
```

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