Greek support for Babel with XeTeX/LuaTeX

Günter Milde

2014/09/02

The babel option «greek» activates the support for the Greek language defined in the file «greek.ldf» (source «greek.dtx»).

Typesetting Greek texts requires a font containing Greek letters. With the XeTeX or LuaTeX engines, the user must ensure that the selected font contains the required glyphs (the default Latin Modern fonts miss them). Examples for suitable fonts are the «Deja Vu», «Linux Libertine», or «Free Serif» OpenType fonts.

1 Language Switch

The declaration `\selectlanguage` switches between languages.

> Τί φήις; Ἰδὼν ἐνθέδε παῖδ' ἐλευθέραν τὰς πλησίον Νύμφας στεφανοῦσαν, Σώστρατε, ἐρῶν ἀπῆλθες εὐθύς;

The command `\foreignlanguage` sets its second argument in the language specified as first argument. This is intended for short text parts like Βιβλιοθήκη.

2 Font Encoding

Every language switch to `greek` calls the `\extrasgreek` command which in turn calls `\greekscript` to ensure a Greek-supporting font encoding (LGR, EU1, or EU2). Under XeTeX/LuaTeX the font encoding normally just remains Unicode (EU1 or EU2). (For customization, you can add to or redefine the `\extrasgreek` command.)

The LGR font encoding does not support Latin characters. Therefore, the Babel core defines the declaration `\latintext` and the command `\textlatin` to switch to the T1 or OT1 font encoding or typeset the argument using this encoding. `greek-fontenc` adds a test for EU1 and EU2. At this point, the «latinencoding» is EU1.

Every language switch from `greek` calls the `\noextrasgreek` command which in turn calls `\latintext`. (For customization, you can add to or redefine the `\noextrasgreek` command.)

With the Unicode font encodings EU1 (XeTeX) or EU2 (LuaTeX), Latin characters can

be used in Greek text parts and input via the «LGR Latin transcription» is not possible.[1]

Φίλων τοῦ TeX (ΕΦΤ) – Friends (Fílwn) of TeX.[2]

3 LICR Macros

Babel defines macros for several autogenerated strings so that they may appear in the choosen language. *babel-greek* uses LICR macros in order to let the string macros work independent of the font encoding.

If `fontspec` is loaded before babel, babel-greek loads Greek LICR for EU1 or EU2 from the file `greek-euenc.def` provided with greek-fontenc since version 0.10.

With this setup, it is also possible to use accent macros instead of pre-composed Unicode characters for letters with diacritics: «Τί φήις;», «ὅρα».

3.1 Captions

Προοίμιον, Ἀναφοραὶ, Περίληψις, Βιβλιογραφία, Κεφάλαιον, Παράρτημα, Περιεχόμενα, Κατάλογος σχημάτων, Κατάλογος πινάκων, Εὑρετήριον, Σχῆμα, Πίναξ, Μέρος, Συνημμένως, Κοινοποίησις, Πρὸς, Σελὶς, ὅρα, ὅρα ὡσαύτως, Ἀπόδειξις, Γλωσσάριον

Test correct upcasing (dropping of accents):

ΠΡΟΟΙΜΙΟΝ, ΑΝΑΦΟΡΑΙ, ΠΕΡΙΛΗΨΙΣ, ΒΙΒΛΙΟΓΡΑΦΙΑ, ΚΕΦΑΛΑΙΟΝ, ΠΑΡΑΡΤΗΜΑ, ΠΕΡΙΕΧΟΜΕΝΑ, ΚΑΤΑΛΟΓΟΣ ΣΧΗΜΑΤΩΝ, ΚΑΤΑΛΟΓΟΣ ΠΙΝΑΚΩΝ, ΕΥΡΕΤΗΡΙΟΝ, ΣΧΗΜΑ, ΠΙΝΑΞ, ΜΕΡΟΣ, ΣΥΝΗΜΜΕΝΩΣ, ΚΟΙΝΟΠΟΙΗΣΙΣ, ΠΡΟΣ, ΣΕΛΙΣ, ΟΡΑ, ΟΡΑ ΩΣΑΥΤΩΣ, ΑΠΟΔΕΙΞΙΣ, ΓΛΩΣΣΑΡΙΟΝ

3.2 Months

27 Ἰανουαρίου 2015
27 Φεβρουαρίου 2015
27 Μαρτίου 2015
27 Ἀπριλίου 2015
27 Μαΐου 2015
27 Ἰουνίου 2015
27 Ἰουλίου 2015
27 Αὐγούστου 2015
27 Σεπτεμβρίου 2015
27 Ὀκτωβρίου 2015
27 Νοεμβρίου 2015
27 Δεκεμβρίου 2015

[1] The *xunicode* package provides with the `tipa` emulation an example how this could be achieved also for Unicode fonts. Alternatively, LGR encoded fonts can be used (see test-unicode-lgr.tex).

[2] Compare the printout to the similar example in test-greek.pdf.

4 Greek Numerals

See greek.pdf for the formation rules of Greek numerals. Some examples:

α′, β′, γ′, δ′, ε′, ϛ′, ζ′, η′, θ′, ι′, ια′, ιβ′, κ′, τμε′, φ′, ͵αϡϙζ′, ͵βιγ′,

A′, B′, Γ′, Δ′, E′, Ϛ′, Z′, H′, Θ′, I′, IA′, IB′, K′, TME′, Φ′, ͵AϠQZ′, ͵BΠ′,

Enumerated lists use Greek characters/numerals in the second and fourth level:

1. item 1
   (α′) item 1.1
      i. item 1.1.1
         A′. item 1.1.1.1
         B′. item 1.1.1.2
      ii. item 1.1.2

This may be problematic with fonts that only partially support Greek and miss the numeral signs (dexiakeraia and aristerikeraia). You may redefine the commands `\textdexiakeraia` and `\textaristerikeraia` to some substitute characters. Or, if you prefer the "normal" enumeration, write in the preamble after loading babel:

```
\makeatletter
\addto\extrasgreek{\let\@alph\latin@alph
      \let\@Alph\latin@Alph}
\makeatother
```