Writing Greek with the **`greek`** option of the **`babel`** package

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April 8, 1999

1 Overview

The `greek` option of the `babel` package is an attempt to make it possible for someone to write Greek text with LaTeX. The current version of the `greek` option supports the πολυτονικό accentual system of the Greek language. Moreover, there is now support for Greek numerals. One can produce easily valid Greek numerals both in uppercase and lowercase forms, e.g, ͵αϡϟζʹ and ͵ΑϡϟΖʹ. The labels in second and fourth level enumerations are lowercase and uppercase Greek numerals correspondingly. The latest version of the file (1.2b as of this writing) supports the `polutonikogreek` dialect for people willing to typeset documents in πολυτονικό greek.

2 Typing Greek Text

TeX understands only the basic ASCII characters, so it is not possible to enter directly Greek letters. Instead, someone enters Latin letters which are mapped to their Greek "counterparts" by TeX. The following table shows the transliteration employed:

α	β	γ	δ	ε	ζ	η	ϑ	ι	κ	λ	μ	ν
a	b	g	d	e	z	h	j	i	k	l	m	n
ξ	ο	π	ρ	σ	τ	υ	φ	χ	ψ	ω	ς	
x	o	p	r	s	t	u	f	q	y	w	c	

Please, note that in order to produce the letter σ, in isolation, on has to type `sv`. This feature is due to the strong ligature that TeX employs. In the "modern" μονοτονικό accentual system only one accent is used—οξεία (acute). In the traditional πολυτονικό accentual system we need more accents and breathing signs. Since the later has some peculiarities, as far it regards TeX, we decided to make the primary language the μονοτονικό and to provide the πολυτονικό as a dialect. Consequently, if someone wishes to correctly typeset πολυτονικό, he must use the `polutonikogreek` option, instead of the `greek` option.

We can produce an accented letter by prefixing the letter with he symbol that denotes the accent, e.g., `>a'erac` produces the word ἀέρας.[1] Here are the symbols that are recognized:

Accent	Symbol	Example	Output
acute	'	`g'ata`	γάτα
grave	`	`dad`i`	δαδὶ
circumflex	~	`ful~hc`	φυλ ης
rough breathing	<	`<'otan`	ὅταν
smooth breathing	>	`>'aneu`	ἄνευ
subscript	|	`>anate'ilh|`	ἀνατείλῃ
diaeresis	"	`qa"ide'uh|c`	χαϊδεύῃς

Note that the subscript symbol is placed **after** the letter. The last thing someone must know in order to be able to write normal Greek text is the punctuation marks used in the language:

Punctuation Sign	Symbol	Output
period	.	.
semicolon	;	·
exclamation mark	!	!
comma	,	,
colon	:	:
question mark	?	;
left apostrophe	``	‘
right apostrophe	''	’
left quotation mark	((	»
right quotation mark	))	»

Using these conventions it is a straightforward exercise to write Greek πολυτονικό text. For example the following excerpt from Δύσκολος of Μένανδρος

Τί φήις; Ἰδὼν ἐνθέδε πα ιδ’ ἐλευθέραν
τὰς πλησίον Νύμφας στεφανο υσαν, Σώστρατε,
ἐρ ων άπ ηλθες εὐθύς;

can be produced by the following LaTeX code:

```
T'i f'hic? <Id`wn >enj'ede pa~id'' >eleuj'eran[2]
t`ac plhs'ion N'umfac stefano~usan, S'wstrate,
>er~wn 'ap~hljec e>uj'uc?
```

[1] For the technically inclined reader, we must say that TeX uses the ligature table of the font in order to determine the character that corresponds to the input character sequence.

Typing Greek text with Latin letters is most unnatural for Greek speaking people. The yet unofficial option `iso-8859-7` of the `inputenc` package makes it possible to enter Greek text using a Greek keyboard. Unfortunately, this does not work for Polutonik'o text. In this case, one has to type the breathnings and all the accents but acute and diaeresis in front of the vowel.

3 Producing Greek Text

Once the Greek language is selected with the command

`\selectlanguage{greek}`

or the command

`\selectlanguage{polutonikogreek}`

whatever we type will be typeset with the Greek fonts. The command `\textlatin` can be used for short passages in some language that uses the Latin alphabet, while the the command `\latintext` changes the base fonts to the ones used by languages that use the Latin alphabet. However, all words will be hyphenated by following the Greek hyphenation rules! Similar commands are available once someone has selected some other language. The commands `\textgreek` and `\greektext` behave exactly like their "Latin" counterparts. For example, the word Μίμης has been produced with the command `\textgreek{M'imhc}`. Please note that certain symbols cannot have their expected result for Greek text, unless someone has selected the Greek language, e.g., ~ is such a symbol.

As we have mentioned above this version of the `greek` option of the `babel` package supports the use of Greek numerals. The commands `\greeknumeral` and `\Greeknumeral` produce the lowercase and the uppercase Greek numeral, e.g.,

Command	Output
`\Greeknumeral{9999}`	͵ΘϠϞΘʹ
`\greeknumeral{9999}`	͵ϑϡϟϑʹ

These macros can accept as argument only Arabic numerals. In case someone wishes to produce the Greek numeral corresponding to the value of a counter variable, he can use the command `\alph{counter}`. Moreover, it is now possible to have Greek page numbering by using the command `\pagenumbering{alph}`. (`\alph` is now a synonym for `\greeknumeral`, and `\Alph` for `\Greeknumeral`.) In order to correctly typeset the greek numerals the greek option file provides the following commands:

Command	Output
`\qoppa`	ϟ
`\sampi`	ϡ
`\stigma`	ϛ

[2]Please, bear in mind that this work correctly only if we use the `polutonikogreek` "dialect".

Apart from these symbols there are few more available:

Command	Output
`\Digamma`	Ϝ
`\ddigamma`	ϝ
`\vardigamma`	ϛ
`\euro`	€
`\permill`	‰

In traditional Greek typography the first paragraph after a header is always indented, contrary to the habit of, say, American typography. This effect can be achieved by using the package `indentfirst`.

The package `athnum` provides the command `\athnum`, with which one can produce the so called *Athenian numerals*:

Command	Output
`\athnum{1997}`	X𐅅HHHH𐅄ΔΔΔΔΠII

The package `grmath` renames the basic log-like functions with their greek counterparts:

Command	Output
`$\sin^{2}x+\cos^{2}x=1$`	$\text{ημ}^2 x + \text{συν}^2 y = 1$