Typesetting ancient Greek using the Ibycus fonts with the Babel system

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1 Overview

The present document describes a new interface for the Ibycus fonts to use them in conjunction with the Babel system for multilanguage typesetting. It constitutes an alternative to the well-known macro packages `ibycus4.sty` and `psibycus.sty`, which are distributed together with the fonts. The main advantage over these packages is that automatic hyphenation is provided for the Greek language. Notice, however, that a TeX program with the so-called ε-TeX extensions is required.

The implementation is available for LaTeX 2_ε only; there are no corresponding macro files for plain TeX or LaTeX 2.09.

2 Why ε-TeX?

With 'ordinary' TeX, hyphenation of Greek words will not work properly, if the end of a mixed Greek and Latin-alphabet paragraph does not coincide with the end of the Greek. This is due to a misfeature in TeX: Only one set of so-called lccodes is used throughout the length of a paragraph – only those which are valid at its end. These codes must be adjusted for the Ibycus notation in order to tell TeX that accents and breathings a part of the words, rather than punctuation. So if you have reverted back to a Latin-written language at the end of the paragraph, the wrong codes for Greek hyphenation are in effect, and the diacritics in Greek words are wrongly considered as punctuation.

The problem, however, does *not* occur with an ε-TeX program; i.e., a TeX program with certain extended capabilites. In fact, you may already by using ε-TeX, even if you did not realize it. Many up-to-date LaTeX systems are now built upon an ε-TeX typesetting engine, rather than on the classical TeX program.

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Some, however, do not use it as the default; for example, if you use the `teTeX` distribution, and when compiling a document you get an error complaining about the absence of the ε-TeX extensions, try compiling the document with the command `elatex` instead of `latex` or `pdfelatex` instead of `pdflatex`.

3 Usage

The Ibycus fonts are assigned a (pseudo-)language named `ibycus`, which can be used (almost) like any other language supported by Babel. To enable the use of this language in your document, specify it as an option to the Babel package just as you would do for any other language. For instance, to write a document in German with some Greek passages:

```
\usepackage[ibycus,ngerman]{babel}
```

A few caveats: Do not declare `ibycus` as the default language of the document; it is not suitable for this purpose! In other words, `ibycus` must never be the last option for Babel. And, of course, do not use it together with the packages `ibycus4` or `psibycus`.

The language `ibycus` should be selected only locally. Either use the `ibycus` environment to typeset larger passages of Greek text:

```
\begin{ibycus}
  (Hrodo'tou Qouri'ou i(stori'hs a)po'decis h('de,
  ...
  h('n ai)ti'hn e)pole'mhsan a)llh'loisi.
\end{ibycus}
```

or use the command `\ibygr`, which is more appropriate for short pieces of Greek within Latin-written text:

```
blah blah \ibygr{a)rxai=a gra'mmata} blah...
```

In fact, the environment `ibycus` is nothing but an abbreviation for Babel's `otherlanguage` environment with the option `ibycus`, and `\ibygr{...}` is the same as `\foreignlanguage{ibycus}{...}`.

Within the environment `ibycus` or the argument of `\ibygr`, the Ibycus-specific input notation is to be used to enter Greek. This notation is described in the documentation that comes with the Ibycus fonts.

The typeface Ibycus and the related input notation can also be selected without changing the hyphenation tables; to do so, use the declaration `\ibycustext` or the text-generating command `\textibycus{...}`. These macros exist more or less only as a side-effect of the implementation; they should normally not be needed.

To switch temporarily back to the Latin alphabet within a piece of Greek text (without, however, changing the hyphenation table), use the declaration

`\latintext` or the text-generating macro `\textlatin{...}`. When Babel is loaded with the option `ibycus`, these commands not only switch back to the default latin text font encoding as usual; they also select the default roman font family (just like `\rmfamily` or `\textrm`).

Notice a particular difference between `ibycus` and other languages of the Babel system: Switching to the language `ibycus` selects both a particular font encoding (`U`) and a particular font family (`fib`), regardless of the font family that was active before.

The Ibycus typeface provides a few traditional text-editor symbols for critical editions:

`\braceleft`	left curly brace
`\braceright`	right curly brace
`\bracketleftbt`	left half square bracket
`\bracketrightbt`	right half square bracket
`\sdagger`	single dagger
`\dbldagger`	double dagger

Use of these symbols is not restricted to Greek passages. **Caution:** In the Ibycus4 package the single dagger carries the name `\dagger`. However, this macro belongs to the LATEX kernel and should not be redefined, so the name `\sdagger` is now used for the Ibycus-specific symbol.

4   Scaling the Ibycus fonts

The Ibycus typeface was primarily designed to go with Computer Modern; yet it can be used with other Latin typefaces, too. In this case it may sometimes be useful to typeset the Ibycus fonts a little bit larger or smaller, to make them blend better with the Latin typeface. This can be accomplished through the macro `\setgreekfontsize`. For instance, `\setgreekfontsize{1.05}` will enlarge the Ibycus fonts by 5%, as compared with their nominal size. The command can be issued in the preamble only.

5   The hyphenation patterns

The hyphenation patterns for the Ibycus encoding were generated by running the Perl script `ibyhyph.pl` on Dimitrios Filippou's `GRAhyph4.tex`, which can be found in the CTAN directory `language/hyphenation/elhyphen`. This is an improved set of hyphenation patterns for ancient Greek with LGR encoding; Babel does not currently use it by default.

Dimitrios Filippou's improved hyphenation patterns discover far more hyphenation points than the default Babel patterns, and are more accurate, especially for compound words. You will notice that there are more hyphenation points right after the first letter of words beginning with a vowel +

consonant + vowel. Some may find such hyphenations surprising, but they are legal, according to the rules for hyphenation of Greek, ancient and modern; see the account by Yannis Haralambous: 'From Unicode to Typography, a Case Study: the Greek Script' `<http://omega.enstb.org/yannis/pdf/boston99.pdf>`, pp 18f. If you find these hyphenation points ugly, issue the command

```
\def\ibycushyphenmins{2 2}
```

after loading of Babel in order to suppress them.

Filippou's patterns also include legal hyphenation points immediately before the last letter of a word. However, the Ibycus-Babel interface suppreses them, since they are not only ugly but also of little practical use.

Please contact Peter Heslin if you come across any words that Ibycus hyphenates differently from the corresponding LGR-encoded patterns (except for the suppressed hyphenation before the last letter of a word).

6 Problems and deficiencies

- After a sequence such as

  ```
  \selectlanguage{ibycus}
  Greek text...
  \selectlanguage{anything}
  ```

  the font family is changed to the default roman typeface, just as after `\rmfamily`. This can be avoided by selecting the language `ibycus` only within a group or environment, or by using the commands `\ibygr` or `\foreignlanguage`.

- The command `\setgreekfontscale` has no effect when the Ibycus fonts are already in use; this situation is, however, rather unlikely in the preamble.

7 Changes since version 1.5

The names of several commands and environments have been changed:

Version 1.5:	Version 2.4
\gk	\ibygr
greek (environment)	ibycus
\ibylatintext	\latintext
\dagger	\sdagger

Furthermore, hyphenation before the last letter of a word is now suppressed by default.