

### Tech Note: More About Beta Code

The Thesaurus Linguae Graecae, a landmark in the use of technology to support scholarship, was the first project in the Humanities to encode a large body of texts and make them available in digital form. The TLG web site has much more about the history of the project.

The original editors of the TLG created Beta Code, a system that uses Latin letters and other symbols available on keyboards at the time (1972, long before the original IBM PC and software such as WinGreek) to represent Greek letters and accents. The TLG may someday move to Unicode, but it must be said that Beta Code has stood the test of time remarkably well. (See <http://www.tlg.uci.edu/encoding/> for the system.) Many scholars used Beta Code to represent Greek in the days before Greek fonts and keyboards were commonly available on PCs. Because it uses only letters and other signs available on any keyboard, it is easy to type once you learn the system.

If you are familiar with Beta Code and want to see the Unicode equivalents, the TLG maintains a quick reference guide at <http://www.tlg.uci.edu/encoding/quickbeta.pdf>, and the complete Beta Code manual is at <http://www.tlg.uci.edu/encoding/>.

classicists. Windows caught up with the introduction of TrueType fonts in Windows 3.1. Before the introduction of Unicode, there was no standardized arrangement for Greek characters in computer fonts. Since pre-Unicode fonts were limited to using 256 characters at once, font makers replaced Latin characters with Greek ones in whatever way they saw fit. Popular packages such as GreekKeys and WinGreek were incompatible with each other, which made sharing documents with colleagues difficult. In addition, some classicists worked with Greek using Latin characters for transliteration; the best known example of such a system is Beta Code, developed by the Thesaurus Linguae Graecae to encode its corpus of Greek texts. Unicode has now solved the character encoding issues, but there remains no standard for keyboard layouts, and several are available (see below).

## 7.2 Overview of Unicode Greek

As mentioned in Part I, the first version of Unicode supported only monotonic Greek along with combining accents. The second version added the precomposed combinations which made polytonic Unicode Greek usable with word processors such as Microsoft Word 97, resulting in significant numbers of scholars adopting Unicode Greek. Support for Greek in the UCS has continued to grow over the years; as a result, characters of interest to those who work in Greek are found in a variety of locations. The following chart identifies where they are and the links will take you to the appropriate online code chart at the Unicode website.

- Greek and Coptic: this was the original range of characters devoted to Greek; a number of characters have been added over time. This range contains the following types of characters:
  - characters for standard Greek text
  - archaic/epigraphic characters
  - characters used as numerals
  - characters used as editorial signs in papyri
  - Greek letters for use in mathematics and technical writing; avoid these in Greek text
  - characters encoded for compatibility with earlier standards, which should not be used now; see §7.5 below for discussion of this
  - spacing accents, usually not used (but they may be if needed)
  - some characters for Coptic; for an explanation of this issue, see §7.6 on page 148 below.

The chart for the Greek and Coptic block is available at:

<http://www.unicode.org/charts/PDF/U0370.pdf>

- Combining Diacritical Marks: several of the general-purpose combining accents can be used for Greek, along with two that are specific to Greek. See:

<http://www.unicode.org/charts/PDF/U0370.pdf>

- Greek Extended: this block contains the precomposed combinations of Greek letters plus accents and breathings. Some of these characters are now deprecated, as explained below on pages 147–149 and in the sidebar on page 148:

<http://www.unicode.org/charts/PDF/U1F00.pdf>

- Ancient Greek Numbers: this and the following are more recent, highly specialized additions to Unicode, found (along with other such characters) in Plane 1:

<http://www.unicode.org/charts/PDF/U10140.pdf>

Additional numeric symbols found in papyri are located in the range U+10175–U+1018A.

- Ancient Greek Musical Notation:

<http://www.unicode.org/charts/PDF/U1D200.pdf>

The official reference for Unicode Greek is Chapter 7.2 of The Unicode Standard, available online at <http://www.unicode.org/versions/Unicode5.2.0/ch07.pdf>.

The remainder of this chapter will present methods of entering Greek characters, identify some useful fonts, and then discuss in detail some important issues of which those who use Unicode Greek need to be aware. Unicode Greek is a bit of a mess, since it contains some characters that ideally would never have been encoded and is also affected by the use of Greek letters in other fields of study such as mathematics and IPA transcription. Finally we will discuss some of the more specialized areas of Unicode Greek, such as epigraphy, papyrology, and musical notation.

## English and Greek Names

Unicode uses the modern Greek terms for accents. For reference, here is a list of the corresponding English terms (with stress marks to show correct pronunciation):

oxía = acute	psilí = smooth (British, lenis)
varía = grave	dasía = rough (British, asper)
perispoméni = circumflex	hypogegramméni = iota subscript
vrachý = breve	prosgegramméni = iota adscript
dialytiká = diaeresis	áno teleía = Greek colon

## Converting Texts From Older Encodings

Most scholars have already made the move to Unicode Greek, and I will not provide any information here about non-Unicode systems. There are some tools available for converting documents created with older systems into Unicode.

Sean Redmond has written a utility that will convert from earlier Greek layouts into Unicode; see <http://www.jiffycomp.com/smr/unicode-converter/>. This program can convert to and from GreekKeys, WinGreek, and Beta Code and is an excellent way to move your documents into a Unicode format. The GreekKeys converter contains a bug that introduces some extraneous characters, but these can be removed with search and replace — it's still better than retyping an entire document! The converter still works but other information on the web page about Greek fonts and related issues is now out of date.

The Thessalonica utility (see page 83) includes a converter that can change text from from several older encodings to Unicode.

Another Beta Code to Unicode converter is available at <http://130.104.253.20/beta2uni/>.

GreekKeys (see below) includes a utility to convert documents created with pre-Unicode versions to GreekKeys Unicode, and SIL provides a utility to convert documents created using the old SIL Galatia fonts at <http://scripts.sil.org/MappingFiles>.

## 7.3 Using Unicode Greek

In order to use Unicode Greek, you need to enable Greek as a language on your computer, if using Windows, and locate an input method along with appropriate fonts. We will present first some packages that offer both keyboards and fonts, and then discuss keyboards and fonts that are available separately.

### Enable Greek as a Language

Adding Greek is no more difficult than adding any other language written in a standard script. See Chapter 4 for information about enabling languages and keyboards. Microsoft Word users also need

to tell Word that Greek is one of the languages they wish to use. If using Word 2007, click the Start button, then All Programs, Microsoft Office, Microsoft Office Tools, and finally click Microsoft Office 2007 Language Settings; then choose Greek in the list at the left and add it to the list of enabled languages.

## Utility Packages

Pride of place must go to the venerable GreekKeys. Created by George B. Walsh and Jeffrey Rusten for the Macintosh, it became a kind of standard, particularly among Mac users, in pre-Unicode days. Now owned by the American Philological Association and maintained by Donald Mastronarde, GreekKeys has been updated to work with Unicode fonts and is available from <http://apagreekkeys.org/index.html>. GreekKeys now includes Unicode versions of the Kadmos and Bosphoros fonts that were donated to the APA by Al-lotype Typographics as well as the New Athena Unicode font. Dr. Mastronarde issues frequent updates and the GreekKeys web page offers much information about the issues involved in using Unicode Greek.

*GreekKeys.*

Another very interesting product is Nanos. Nanos is an editor designed by a classicist specifically for Unicode Greek, and it has two particularly interesting features. The first is that it works the same way on Windows, Unix, and Mac OS X—this is very useful if you work on more than one type of computer or if you support those who do. It also makes use of an on-screen keyboard that can be used in conjunction with a Greek driver for your physical keyboard (if you have one installed). For more information, see <http://www.e-ternals.com/nanos/index.htm>.

*Nanos.*

Graecise and ConCise are macros packaged in an OpenOffice extension by Christian Becker. This will appeal to those who like to enter Greek using Latin letters, as with Beta Code (and the mapping is very similar to Beta Code). One can enter some text and then run the Graecise macro to convert it to Greek characters, or have the characters converted on the fly with the ConCise macro. See page 87 to get the extension, and the author's web site at <http://mitglied.multimania.de/christianbecker2/Graecise/index3.html> for more about using and modifying it.

*OpenOffice.org extensions.*

Mention has already been made of the Antioch package by Ralph Hancock, of Multikey by Stefan Hagel, of Thessalonica by Alexey Kryukov, and of the products from Linguist's Software and Unitype; see page 83.

*Various utilities.*

The Greek company Magenta offers several products, including automatic accentuator utilities. These programs can take a text with