



ACCENTS,
ACCENTS,
ACCENTS...

Latin Modern or Enhancing CM Fonts
with “Funny Characters”

WAIKOLOA, 20–24 JULY, 2003

Bogusław Jackowski, Janusz M. Nowacki

Do we really need accents?

bought, ought
although, dough (nut)
borough, thorough
bough, drought, plough
cough, trough
enough, rough, tough
through

It is cases like these which give English a bad name

— Anonym

Do we really need accents?

bought, ought	[ɔ:]
although, dough (nut)	[əʊ]
borough, thorough	[ə]
bough, drought, plough	[aʊ]
cough, trough	[ɒf, Am. ɔ:f]
enough, rough, tough	[ʌf]
through	[u:]

It is cases like these which give English a bad name

– *Anonym*

Long, long, time ago...

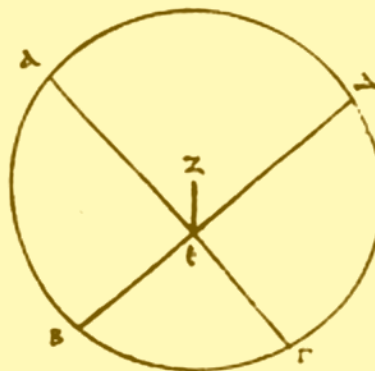
Aristophanes of Byzantium, 257?-180 B.C.,
used (for the first time?) accents in
order to teach foreigners
the correct pronunciation of Greek.

Long, long, time ago...

Aristophanes of Byzantium, 257?–180 B.C.,
used (for the first time?) accents in
order to teach foreigners
the correct pronunciation of Greek.

Accents were commonly used in medieval Greek.

Ἐὰν ἐκλύωμαι δύο ἄρθρα τέρμους ἁπλῆσιν κῆδιστοῦ κέν-
 τρου οὐσαι. οὐτέρμουσι ἁπλῆσιν διχῶ. ἄνω κλύωσιν ὁ
 ἀβγδ. ἐκλύωμαι δύο ἄρθρα εἰ δὲ βδ, τέρμους ἁπλῆσιν
 κεντὰ τὸ εἰ κῆδιστοῦ κέντρου οὐσαι. λέγω. ὅτι οὐτέρμουσι
 ἁπλῆσιν διχῶ. ἔτι γὰρ δυνάτομ. τέρμους ἁπλῆσιν διχῶ.
 ὡς ἴση εἶναι τῆν μδν δε τῆν εγ. τῆν δδ βε τῆν εδ. ἐκ-
 ἔληφθα τὸ κέντρον τοῦ ἀβγδ. κλύωσιν ἐκλύωσιν τὸ ζ ἐκλύωσιν
 ζαχθω ἢ ζε. ὡς οὐκ ἄρθρα κῆδιστοῦ κέντρου ἢ ζε ἄρθρα
 ἀπὸ τῆν δγ διχῶ τέρμους. ἐκλύωσιν ὁρθῶσιν αὐτῆν τέρμους.
 ὁρθῶσιν ερα εἶναι ἢ ὑπο ζεδ. ὡς ἁπλῆσιν ἄρθρα ἢ ζε ἄρθρα
 τῆν αὐτῆν βδ διχῶ τέρμους. ἐκλύωσιν ὁρθῶσιν αὐτῆν τέρμους.
 ὁρθῶσιν ερα ἢ ὑπο ζεβ. ὡς ἄρθρα εδ ἢ ὑπο ζεδ ὁρθῶσιν.
 ἴση ερα ἢ ὑπο ζεδ. τῆν ὑπο ζεβ. ἢ ὡς
 ἁπλῆσιν τῆν μδν. ὡς ἁπλῆσιν αὐτῆν
 τέρμους οὐκ ερα εἰ δὲ βδ, τέρμους ἁπλῆσιν
 κλύωσιν διχῶ. Ἐὰν ὁρθῶσιν ἐκλύωσιν δύο



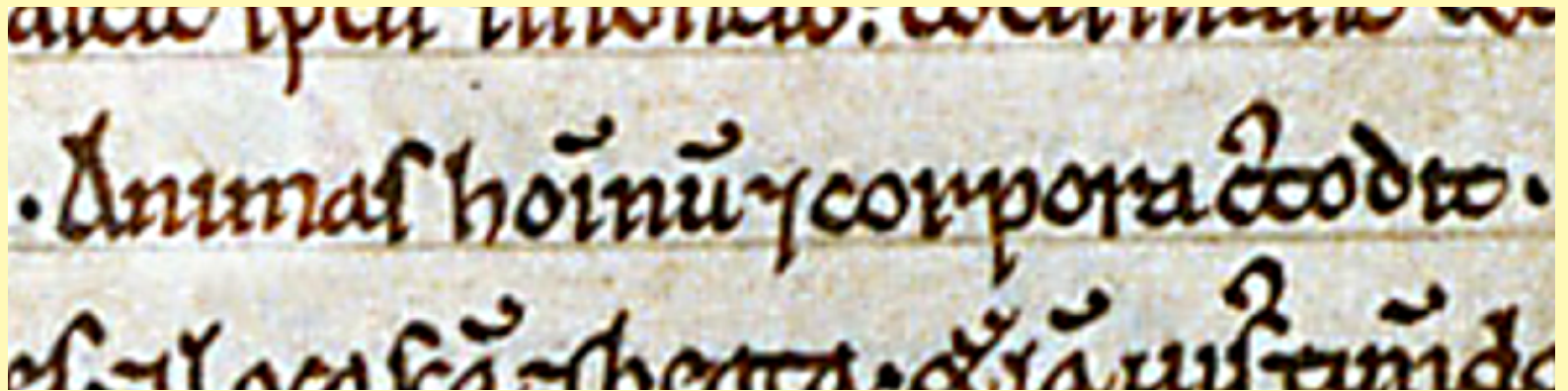
Euclid, *Elements*, IX century (Bodleian Library, Oxford).

Various marks were used in Latin manuscripts to indicate abbreviations...



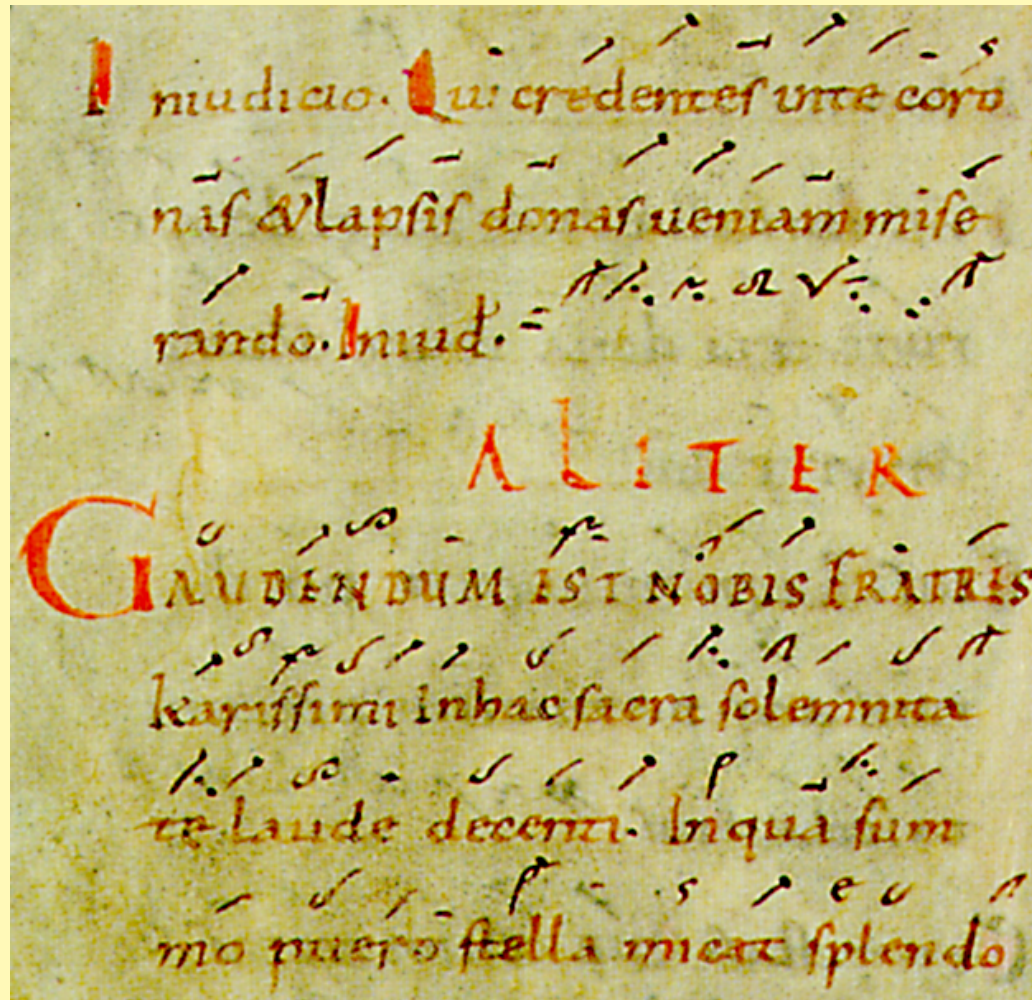
Pseudo-Apuleius, *Herbal*, XI century (Bodleian Library, Oxford).

Various marks were used in Latin manuscripts to indicate abbreviations...



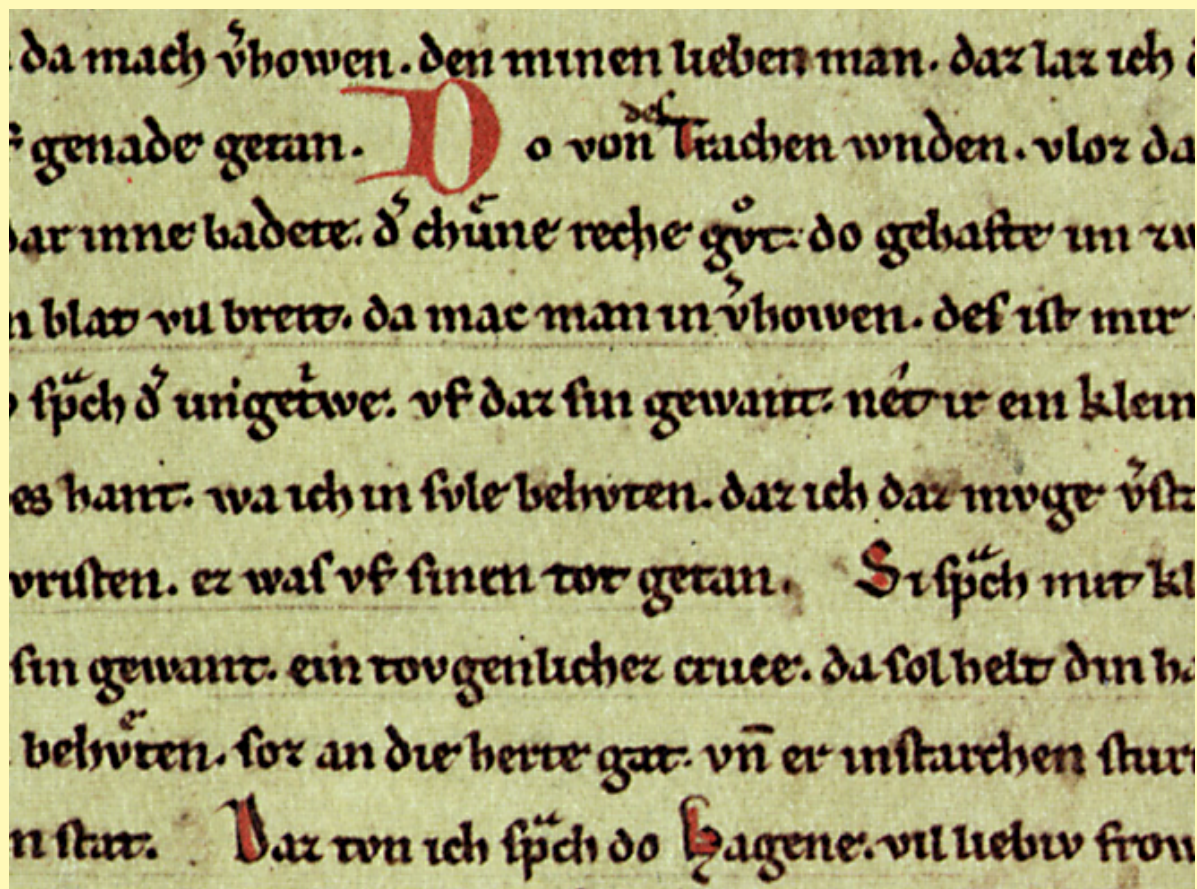
Pseudo-Apuleius, *Herbal*, XI century (Bodleian Library, Oxford).

... or to convey music information.



Offertorium for the Feast of the Epiphany from X century
(Codex Sangallensis, Stiftsbibliothek Sankt Gallen, Switzerland).

Therefore, it is no surprise that “diacritical embellishments” crept eventually into national scripts.



Das Nibelungenlied und die Klage, XIII century (Fürstlich Fürstenbergische Hofbibliothek, Donaueschingen, Germany).

Therefore, it is no surprise that “diacritical embellishments” crept eventually into national scripts.

I A N V S Z O W S K I.

O B I E C A D Ł O W E D L E M E Y O R T H O -
gráphiiéy ták idzie.

A a á a b b c c c d d d d e e e e f g h h i j k l l m m n n
o o o p p q r r s s s t u v v x y z z z.

Albo zdáli sie niektóre litery odmięnić, więc ták :

ç ç d d d r r s z.
ná mieysce c d d d r s z.

Jan Kochanowski, Łukasz Górnicki, Jan Januszowski, *A New Polish Character*, 1594

Then, Dante, Gutenberg, Copernicus,
Columbus, Newton, Bach, Gauss,
et alii entered the scene.

Then, a few centuries elapsed...

Eventually, a significant
breakthrough came...

In 1978, Donald E. Knuth
announced the release of T_EX.

Then, Dante, Gutenberg, Copernicus,
Columbus, Newton, Bach, Gauss,
et alii entered the scene.

Then, a few centuries elapsed...

Eventually, a significant
breakthrough came...

In 1978, Donald E. Knuth
announced the release of T_EX.

Then, Dante, Gutenberg, Copernicus,
Columbus, Newton, Bach, Gauss,
et alii entered the scene.

Then, a few centuries elapsed.

Eventually, a significant
breakthrough came...

In 1978, Donald E. Knuth
announced the release of T_EX.

Then, Dante, Gutenberg, Copernicus,
Columbus, Newton, Bach, Gauss,
et alii entered the scene.

Then, a few centuries elapsed.

Eventually, a significant
breakthrough came.

In 1978, Donald E. Knuth
announced the release of T_EX.

$\text{T}_{\text{E}}\text{X}$ was designed to meet the needs of those few desperados who would dare to use diacritical characters:

- `\catcode` and `\lcode` tables define actually the notion of a letter;
- thanks to these data structure, $\text{T}_{\text{E}}\text{X}$ hyphenation algorithm may handle appropriately diacritical characters;
- `\accent` primitive is only moderately useful for the typesetting of longer texts (because it interferes with hyphenation, kerning, and ligatures);
- in 1989, D. E. Knuth decided to enhance $\text{T}_{\text{E}}\text{X}$ with multilinguality (`\language`) and 8-bit character codes.

$\text{T}_{\text{E}}\text{X}$ was designed to meet the needs of those few desperados who would dare to use diacritical characters:

- `\catcode` and `\lccode` tables define actually the *notion of a letter*;
- thanks to these data structure, $\text{T}_{\text{E}}\text{X}$ hyphenation algorithm may handle appropriately diacritical characters;
- `\accent` primitive is only moderately useful for the typesetting of longer texts (because it interferes with hyphenation, kerning, and ligatures);
- in 1989, D. E. Knuth decided to enhance $\text{T}_{\text{E}}\text{X}$ with multilinguality (`\language`) and 8-bit character codes.

$\text{T}_{\text{E}}\text{X}$ was designed to meet the needs of those few desperados who would dare to use diacritical characters:

- `\catcode` and `\lccode` tables define actually the *notion of a letter*;
- thanks to these data structures, $\text{T}_{\text{E}}\text{X}$ hyphenation algorithm may handle appropriately diacritical characters;
- `\accent` primitive is only moderately useful for the typesetting of longer texts (because it interferes with hyphenation, kerning, and ligatures);
- in 1989, D. E. Knuth decided to enhance $\text{T}_{\text{E}}\text{X}$ with multilinguality (`\language`) and 8-bit character codes.

T_EX was designed to meet the needs of those few desperados who would dare to use diacritical characters:

- `\catcode` and `\lccode` tables define actually the *notion of a letter*;
- thanks to these data structures, T_EX hyphenation algorithm may handle appropriately diacritical characters;
- `\accent` primitive is only moderately useful for the typesetting of longer texts (because it interferes with hyphenation, kerning, and ligatures);
- in 1989, D. E. Knuth decided to enhance T_EX with multilinguality (`\language`) and 8-bit character codes.

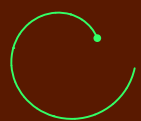
T_EX was designed to meet the needs of those few desperados who would dare to use diacritical characters:

- `\catcode` and `\lccode` tables define actually the *notion of a letter*;
- thanks to these data structures, T_EX hyphenation algorithm may handle appropriately diacritical characters;
- `\accent` primitive is only moderately useful for the typesetting of longer texts (because it interferes with hyphenation, kerning, and ligatures);
- in 1989, D. E. Knuth decided to enhance T_EX with multilinguality (`\language`) and 8-bit character codes.

Alas, the *Computer Modern* family of fonts was not prepared commensurately:

- it contained no diacritical characters;
- it did not even contain all necessary diacritical elements, e.g., the (n)famous ‘ogonek’ was missing, which resulted in commonly used cedilla instead;
- native encodings had less to do with multilinguality and more with prof. Knuth’s personal convenience (altogether there are 77 layouts in the standard CM fonts);

1. roman; 2. italic; 3. no f-ligatures (cmr5, cmesc10);
4. inch; 5. typewriter; 6. typewriter italic;
7. TeX extended ASCII; 8. math symbols;
9. math italic; 10. math extension.



Alas, the *Computer Modern* family of fonts was not prepared commensurately:

- it contained no diacritical characters;
- it did not even contain all necessary diacritical elements, e.g., the (n)famous ‘ogonek’ was missing, which resulted in commonly used cedilla instead;
- native encodings had less to do with multilinguality and more with prof. Knuth’s personal convenience (altogether there are 77 layouts in the standard CM fonts);

1. roman; 2. italic; 3. no f-ligatures (cmr5, cmesc10);
4. inch; 5. typewriter; 6. typewriter italic;
7. T_EX extended ASCII; 8. math symbols;
9. math italic; 10. math extension.

€ ÷ × †
ÿ Ę Ń Ń
ș ı ą Ū ș
% 00 i ô ž
Å ê á à â
ã ä å Ü
ö Ţ ® ©

Alas, the *Computer Modern* family of fonts was not prepared commensurately:

- it contained no diacritical characters;
- it did not even contain all necessary diacritical elements, e.g., the (in)famous ‘ogonek’ was missing, which resulted in commonly used *cedilla* instead;
- native encodings had less to do with multilinguality and more with prof. Knuth’s personal convenience (altogether there are 77 layouts in the standard CM fonts);

1: roman; 2: italic; 3: no-ligatures (cmr5, cmscl0);
4: inch; 5: typewriter; 6: typewriter italic;
7: TeX-extended ASCII; 8: math-symbols;
9: math-italic; 10: math-extension

€ ÷ × †
ÿ Ę Ń Ņ
ș î ą Ů ș
% 00 ï ô ž
Å ê á à â
ã ä å Ü
ö Ƨ ® ©

Alas, the *Computer Modern* family of fonts was not prepared commensurately:

- it contained no diacritical characters;
- it did not even contain all necessary diacritical elements, e.g., the (in)famous ‘ogonek’ was missing, which resulted in commonly used *cedilla* instead;
- native encodings had less to do with multilinguality and more with prof. Knuth’s personal convenience (altogether there are **??** layouts in the standard CM fonts);

€ ÷ × †
ÿ ę ñ ñ
ș î ă Ÿ ș
% 00 ï ô ž
À ê á à â
ã ä å Ü
ö ı ® ©

• Roman 2 style (no ligatures, some accents)
• Latin 2 style (no ligatures, some accents)
• TeX roman (no ligatures, some accents)
• TeX latin 2 (no ligatures, some accents)

Alas, the *Computer Modern* family of fonts was not prepared commensurately:

- it contained no diacritical characters;
- it did not even contain all necessary diacritical elements, e.g., the (in)famous ‘ogonek’ was missing, which resulted in commonly used *cedilla* instead;
- native encodings had less to do with multilinguality and more with prof. Knuth’s personal convenience (altogether there are **10** layouts in the standard CM fonts);

1. roman; 2. italic; 3. no f-ligatures (cmr5, cmcsc10);
4. inch; 5. typewriter; 6. typewriter italic;
7. T_EX extended ASCII; 8. math symbols;
9. math italic; 10. math extension.



The T_EX community took immediately the advantage of the multilinguality of T_EX:

- during the EuroT_EX and TUG meeting in Cork, Ireland, 3–15 September 1990, a new multilingual encoding scheme was worked out;
- already in 1990, Norbert Schwarz began working on a DC family of fonts, a prototype of the EC fonts;
- the project was finally accomplished in 1997 by the team led by Jörg Knappen;

It was really a milestone. The only problem with EC fonts was that they were available only as PK bitmaps, while outline fonts suit better the purposes of electronic publishing.

The T_EX community took immediately the advantage of the multilinguality of T_EX:

- during the EuroT_EX and TUG meeting in Cork, Ireland, 3–15 September 1990, a new multilingual encoding scheme was worked out;
- already in 1990, Norbert Schwarz began working on a DC family of fonts, a prototype of the EC fonts;
- the project was finally accomplished in 1997 by the team led by Jörg Knappen;

It was really a milestone. The only problem with EC fonts was that they were available only as PK bitmaps, while outline fonts suit better the purposes of electronic publishing.

The T_EX community took immediately the advantage of the multilinguality of T_EX:

- during the EuroT_EX and TUG meeting in Cork, Ireland, 3–15 September 1990, a new multilingual encoding scheme was worked out;
- already in 1990, Norbert Schwarz began working on a DC family of fonts, a prototype of the EC fonts;
- the project was finally accomplished in 1997 by the team led by Jörg Knappen.

It was really a milestone. The only problem with EC fonts was that they were available only as PK bitmaps, while outline fonts suit better the purposes of electronic publishing.



The T_EX community took immediately the advantage of the multilinguality of T_EX:

- during the EuroT_EX and TUG meeting in Cork, Ireland, 3–15 September 1990, a new multilingual encoding scheme was worked out;
- already in 1990, Norbert Schwarz began working on a DC family of fonts, a prototype of the EC fonts;
- the project was finally accomplished in 1997 by the team led by Jörg Knappen;

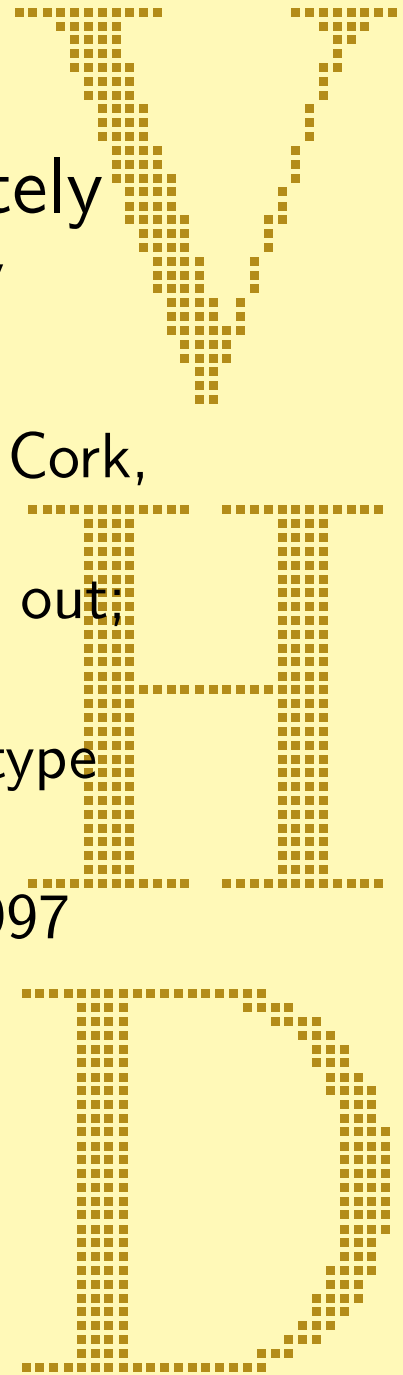
It was really a milestone. The only problem with EC fonts was that they were available only as PK bitmaps, while outline fonts suit better the purposes of electronic publishing.



The T_EX community took immediately the advantage of the multilinguality of T_EX:

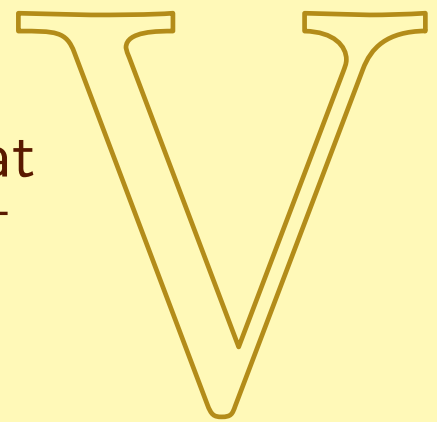
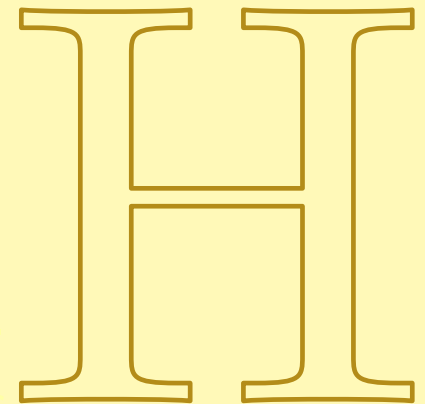
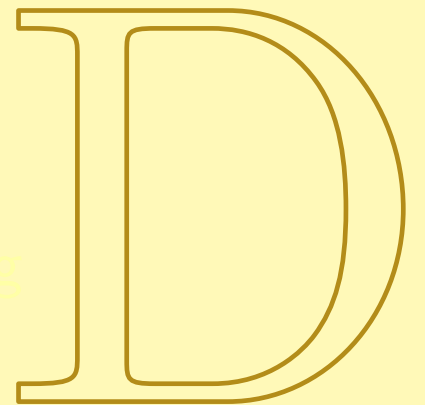
- during the EuroT_EX and TUG meeting in Cork, Ireland, 3–15 September 1990, a new multilingual encoding scheme was worked out;
- already in 1990, Norbert Schwarz began working on a DC family of fonts, a prototype of the EC fonts;
- the project was finally accomplished in 1997 by the team led by Jörg Knappen;

It was really a milestone. The only problem with EC fonts was that they were available only as PK bitmaps, while outline fonts suit better the purposes of electronic publishing.



Fortunately, also in 1997, AMS decided that the excellent outline version in POSTSCRIPT Type 1 format of the *Computer Modern* fonts should freely be available for T_EX users. It was another milestone.

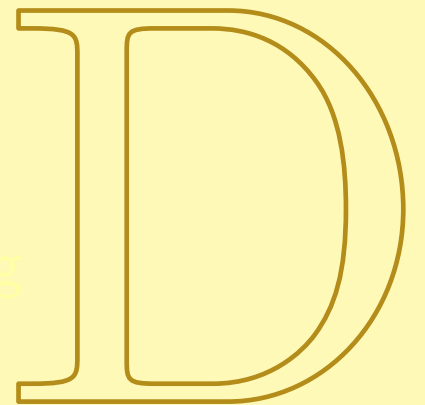
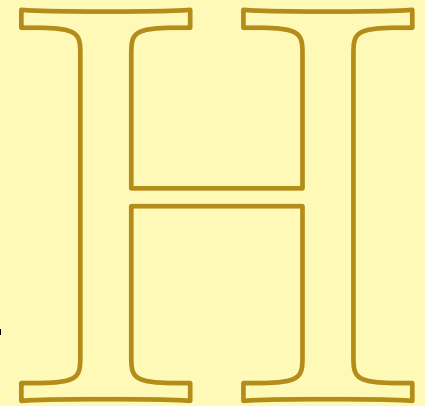
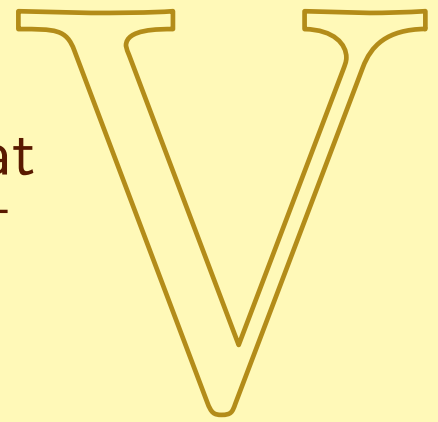
This inspired Lars Engebretsen who prepared a collection of T_EX virtual fonts, *Almost EC* (AE). They could refer to the outline CM fonts, and therefore could effectively be used for electronic publishing. This, in turn, inspired a few representatives from European T_EX Users Groups. Having discussed the matters using email, they came up with a proposal of converting virtual AE fonts into a more universal POSTSCRIPT Type 1 format and augmenting them with a bulk of diacritical characters.

A large, hollow outline of the uppercase letter 'V' in a serif font style, showing the internal structure of the letter.A large, hollow outline of the uppercase letter 'H' in a serif font style, showing the internal structure of the letter.A large, hollow outline of the uppercase letter 'D' in a serif font style, showing the internal structure of the letter.

Fortunately, also in 1997, AMS decided that the excellent outline version in POSTSCRIPT Type 1 format of the *Computer Modern* fonts should freely be available for T_EX users. It was another milestone.

This inspired Lars Engebretsen who prepared a collection of T_EX virtual fonts, *Almost EC* (AE). They could refer to the outline CM fonts, and therefore could effectively be used for electronic publishing.

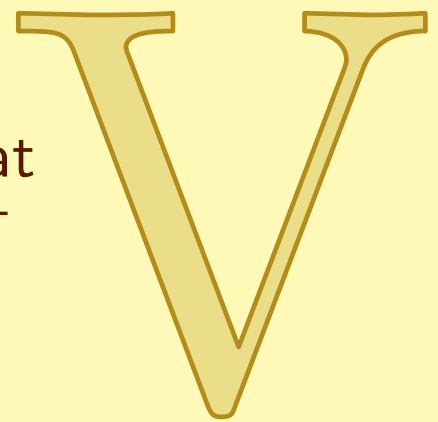
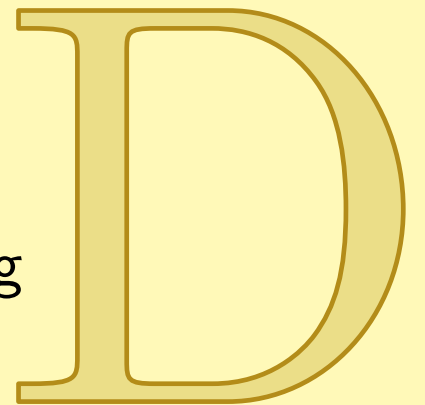
This, in turn, inspired a few representatives from European T_EX Users Groups. Having discussed the matters using email, they came up with a proposal of converting virtual AE fonts into a more universal PostScript Type 1 format and augmenting them with a bulk of diacritical characters.



Fortunately, also in 1997, AMS decided that the excellent outline version in POSTSCRIPT Type 1 format of the *Computer Modern* fonts should freely be available for T_EX users. It was another milestone.

This inspired Lars Engebretsen who prepared a collection of T_EX virtual fonts, *Almost EC* (AE). They could refer to the outline CM fonts, and therefore could effectively be used for electronic publishing.

This, in turn, inspired a few representatives from European T_EX Users Groups. Having discussed the matters using email, they came up with a proposal of converting virtual AE fonts into a more universal POSTSCRIPT Type 1 format and augmenting them with a bulk of diacritical characters.

A large, stylized outline letter 'V' in a golden-yellow color, positioned at the top right of the slide.A large, stylized outline letter 'H' in a golden-yellow color, positioned in the middle right of the slide.A large, stylized outline letter 'D' in a golden-yellow color, positioned at the bottom right of the slide.

The project was fixed during the 13th European and 10th Polish T_EX Conference in Bachotek, May 2002. *and launched soon afterwards.*



Blanca Mancilla

The project was fixed during the 13th European and 10th Polish T_EX Conference in Bachotek, May 2002, and launched soon afterwards.



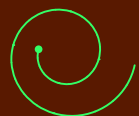
Kim Roberts

We were invited to take part in the enterprise. Needless to say, we promptly accepted the offer. We were eager to embark our METATYPE1 engine upon a new, unconventional task.

Our plan was simple: to convert AMS fonts into METATYPE1 sources and then to enhance them manually.

An alternative approach would be to employ the autotracing of PK bitmaps, e.g., to make use of Péter Szabó's *TpXtrace* program.

So far, we used METATYPE1 to reproduce Knuth's logo font, to create an electronic replica of a Polish traditional typeface, Pottawski's Antykwą, and to audit and enhance selected fonts from the URW's collection, distributed freely (GPL) with Ghostscript. It was the latter experience that made us fairly optimistic.



We were invited to take part in the enterprise. Needless to say, we promptly accepted the offer. We were eager to embark our METATYPE1 engine upon a new, unconventional task. Our plan was simple: **to convert AMS fonts into METATYPE1 sources and then to enhance them manually.**

An alternative approach would be to employ the autotracing of PK bitmaps, e.g., to make use of Peter Szabó's *TpXtrace* program.

So far, we used METATYPE1 to reproduce Knuth's logo font, to create an electronic replica of a Polish traditional typeface, Półtawski's Antykwa, and to audit and enhance selected fonts from the URW++ collection, distributed freely (GPL) with Ghostscript. It was the latter experience that made us fairly optimistic.



We were invited to take part in the enterprise. Needless to say, we promptly accepted the offer. We were eager to embark our METATYPE1 engine upon a new, unconventional task. Our plan was simple: **to convert AMS fonts into METATYPE1 sources and then to enhance them manually.**

An alternative approach would be to employ the autotracing of PK bitmaps, e.g., to make use of Péter Szabó's *T_EXtrace* program.

So far, we used METATYPE1 to reproduce Knuth's logo font, to create an electronic replica of a Polish traditional typeface, Póltawski's Antykwa, and to audit and enhance selected fonts from the URW++ collection, distributed freely (GPL) with Ghostscript. It was the latter experience that made us fairly optimistic.



There are at least three reasons for looking for an alternative to the autotracing:

- It is a good situation if there is a rich choice.
- We stay firmly by the conception underlying the design of T_EX and METAFONT: every detail, be it a typesetting or a typeface design, should be controllable and replicable.
- The quality of autotraced fonts, e.g., *CM-Super* by Vladimir Volovich or *CM-LGC* by Alexey Kryukov, cannot compare (yet?) to the quality of the *Computer Modern* POSTSCRIPT Type 1 fonts, kindly provided by AMS. Autotraced fonts are relatively larger, they contain a lot of tiny irregularities, and—sometimes—strange scraps...



There are at least three reasons for looking for an alternative to the autotracing:

- It is a good situation if there is a rich choice.
- We stay firmly by the conception underlying the design of T_EX and METAFONT: every detail, be it a typesetting or a typeface design, should be controllable and replicable.
- The quality of autotraced fonts, e.g., *CM-Super* by Vladimir Volovich or *CM-LGC* by Alexey Kryukov, cannot compare (yet?) to the quality of the *Computer Modern* POSTSCRIPT Type 1 fonts, kindly provided by AMS. Autotraced fonts are relatively larger, they contain a lot of tiny irregularities, and—sometimes—strange scraps...



There are at least three reasons for looking for an alternative to the autotracing:

- It is a good situation if there is a rich choice.
- We stay firmly by the conception underlying the design of T_EX and METAFONT: *every detail, be it a typesetting or a typeface design, should be controllable and replicable.*
- The quality of autotraced fonts, e.g., CM-Super by Vladimir Volovich or CM-LGC by Alexey Kryukov, cannot compare (yet?) to the quality of the Computer Modern PostSCRIPT Type 1 fonts, kindly provided by AMS. Autotraced fonts are relatively larger, they contain a lot of tiny irregularities, and—sometimes—strange scraps...

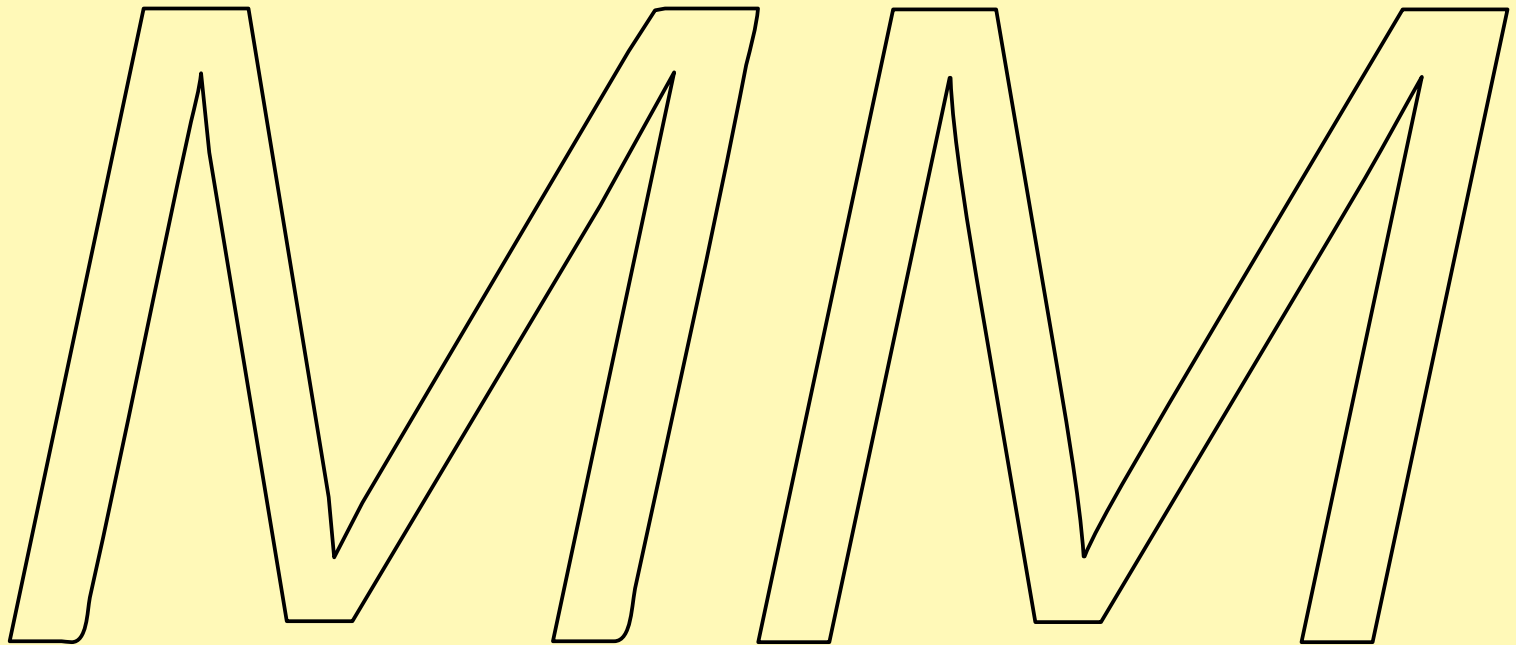


There are at least three reasons for looking for an alternative to the autotracing:

- It is a good situation if there is a rich choice.
- We stay firmly by the conception underlying the design of T_EX and METAFONT: *every detail, be it a typesetting or a typeface design, should be controllable and replicable.*
- The quality of autotraced fonts, e.g., *CM-Super* by Vladimir Volovich or *CM-LGC* by Alexey Kryukov, cannot compare (yet?) to the quality of the *Computer Modern* POSTSCRIPT Type 1 fonts, kindly provided by AMS. Autotraced fonts are relatively larger, they contain a lot of tiny irregularities, and—sometimes—strange scraps...



CM-Super vs AMS CM: an example

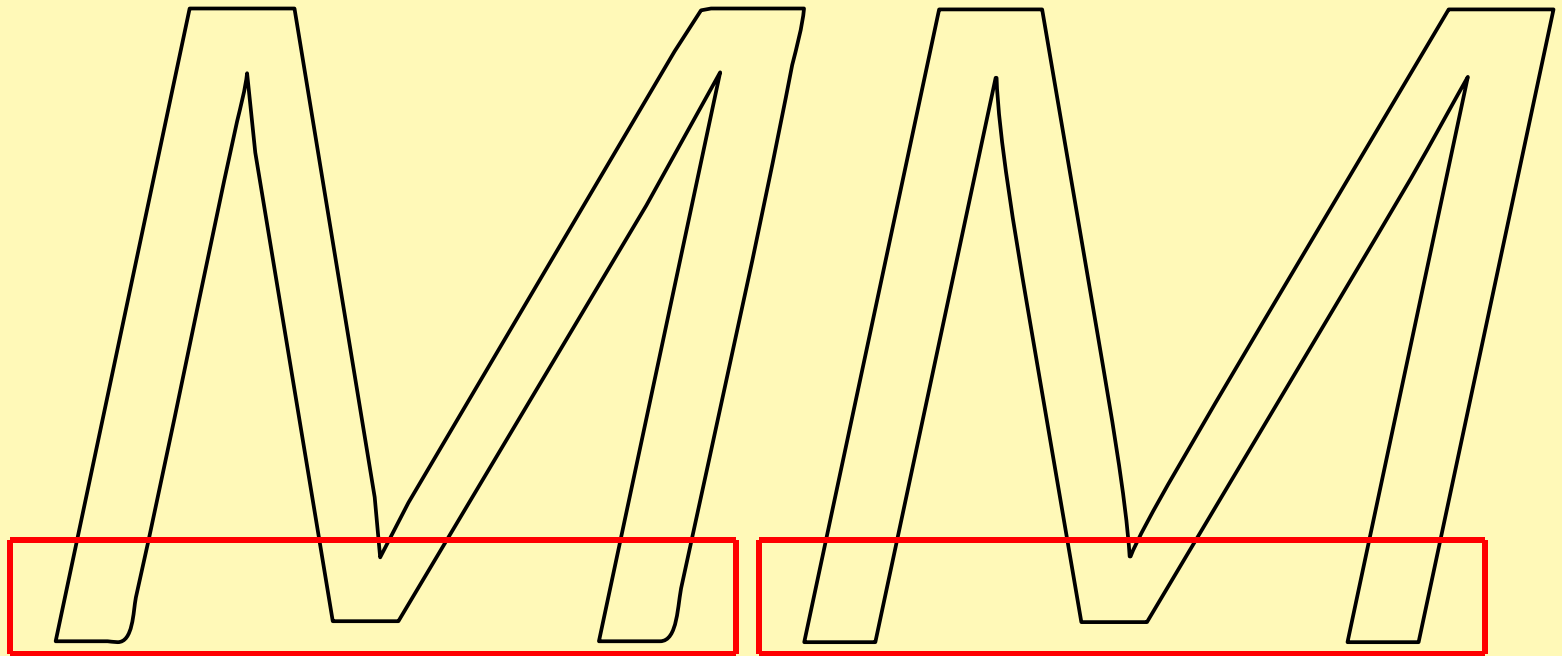


sfsi1000 (*CM-Super*)

cmss10 (*AMS CM*)



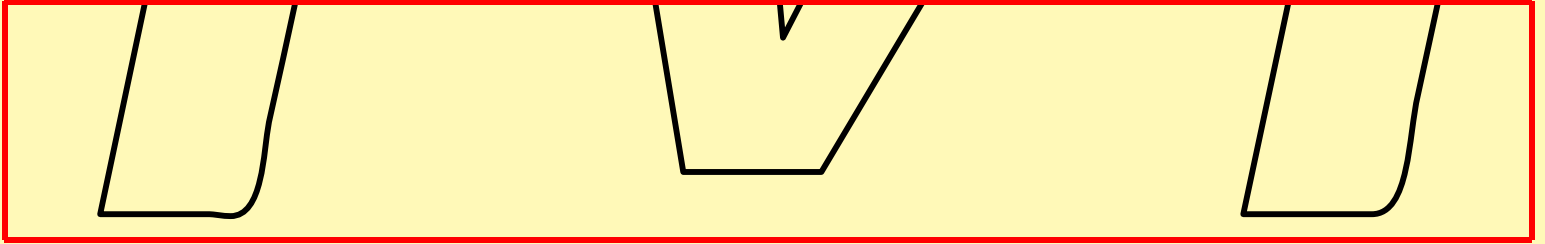
CM-Super vs AMS CM: an example



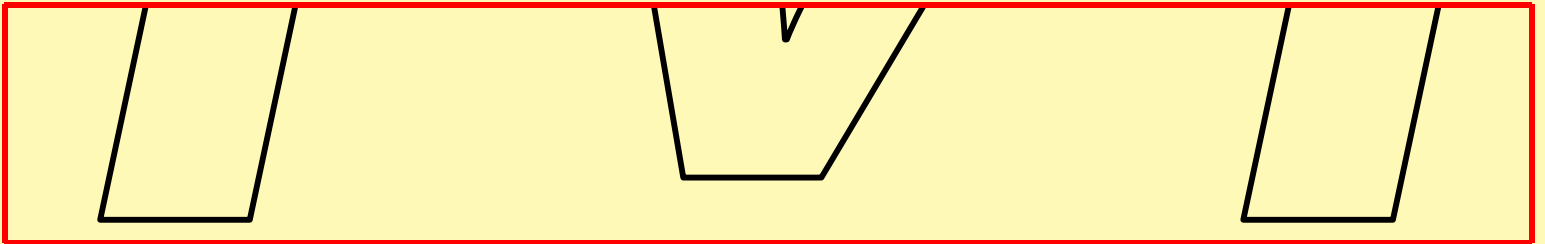
sfsi1000 (*CM-Super*)

cmss10 (*AMS CM*)

CM-Super vs AMS CM: an example



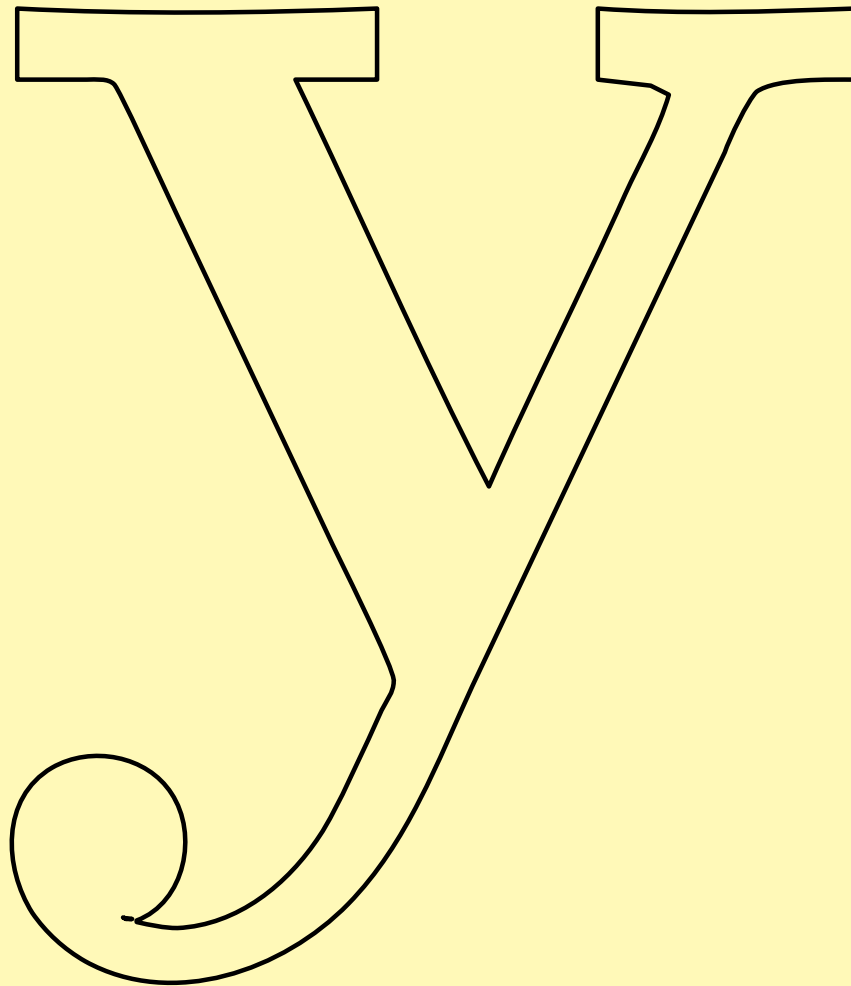
sfsi1000 (*CM-Super*)



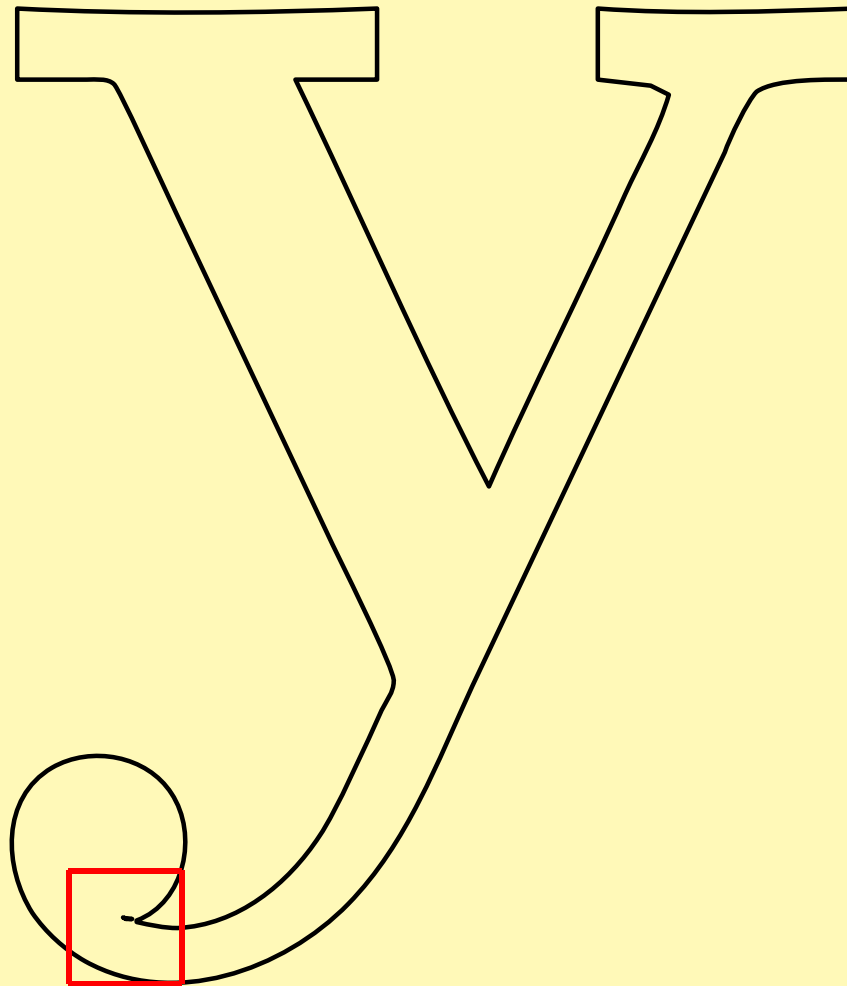
cmss10 (*AMS CM*)



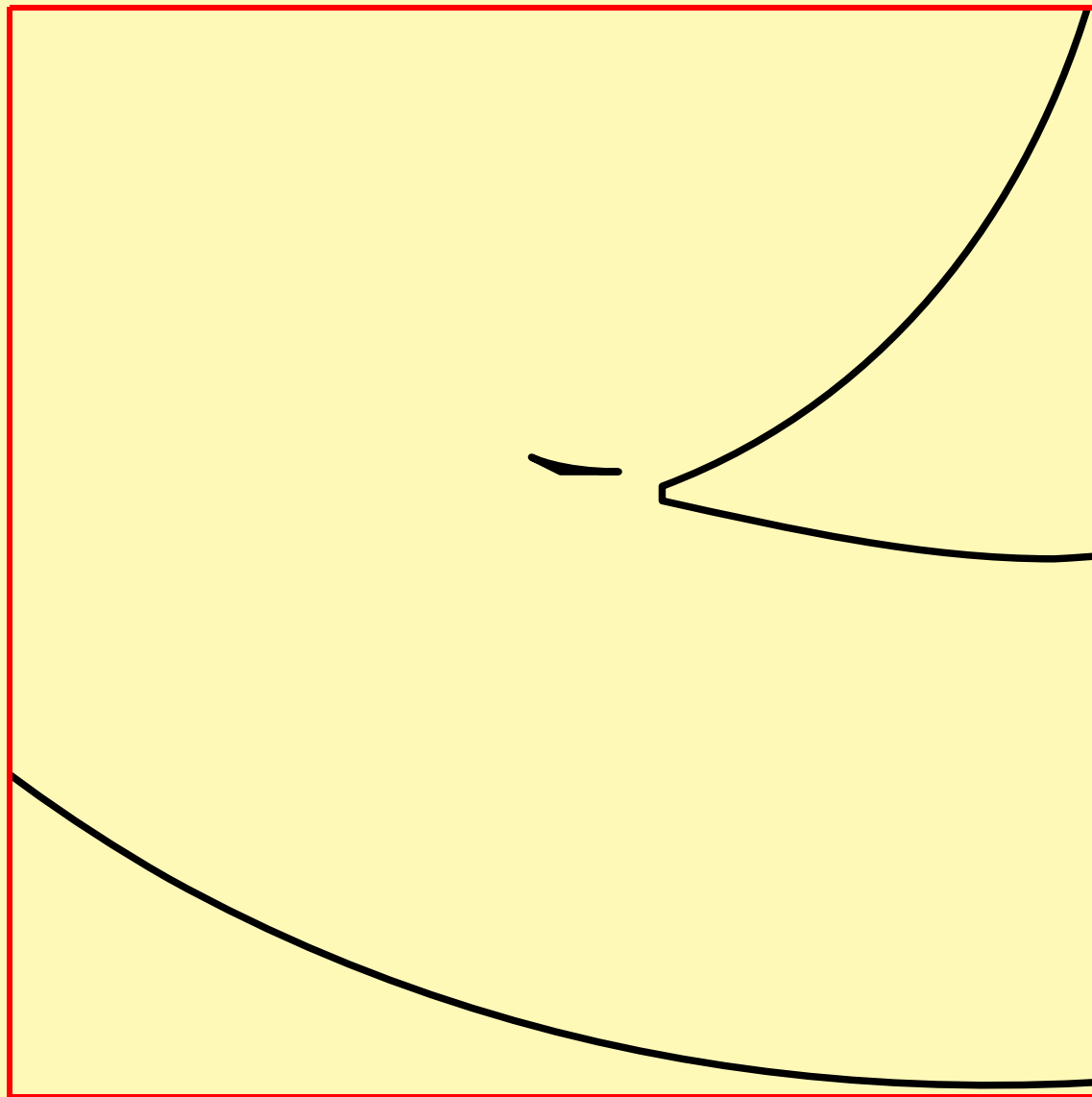
The letter 'y' from *CM-LGC* fcmb8a:



The letter 'y' from *CM-LGC fcmb8a*:

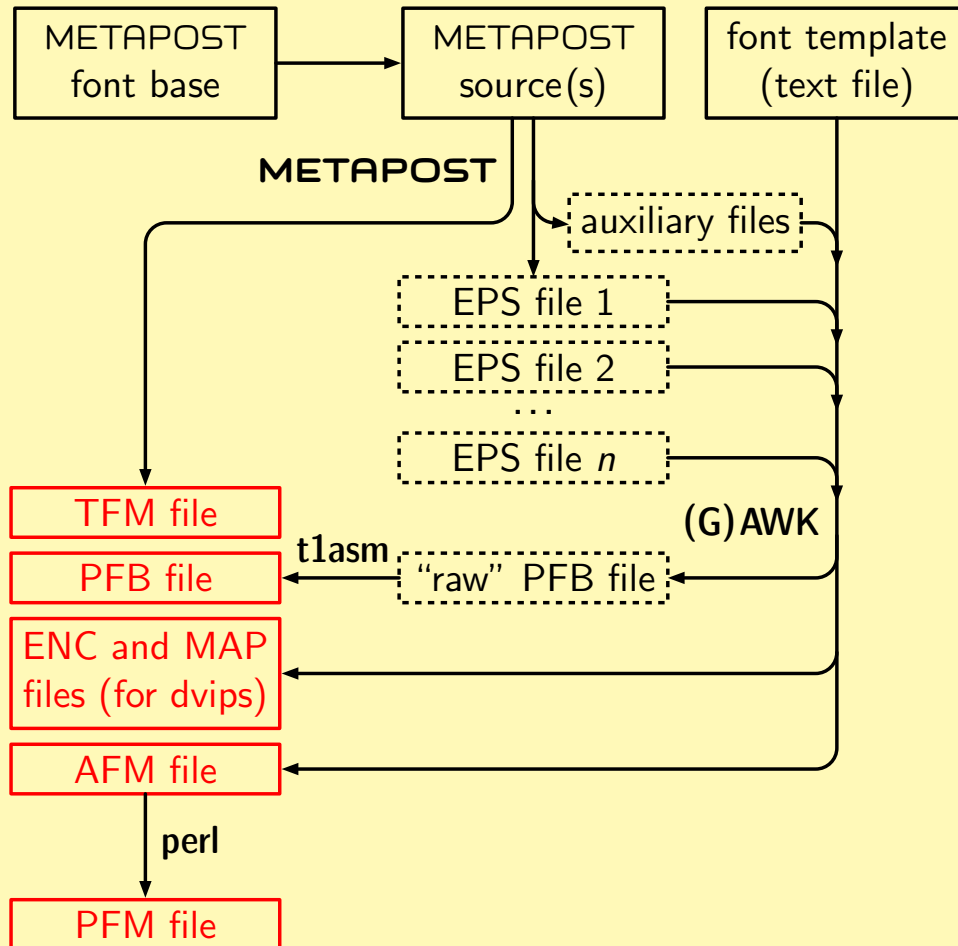


The letter 'y' from *CM-LGC* fcmb8a:

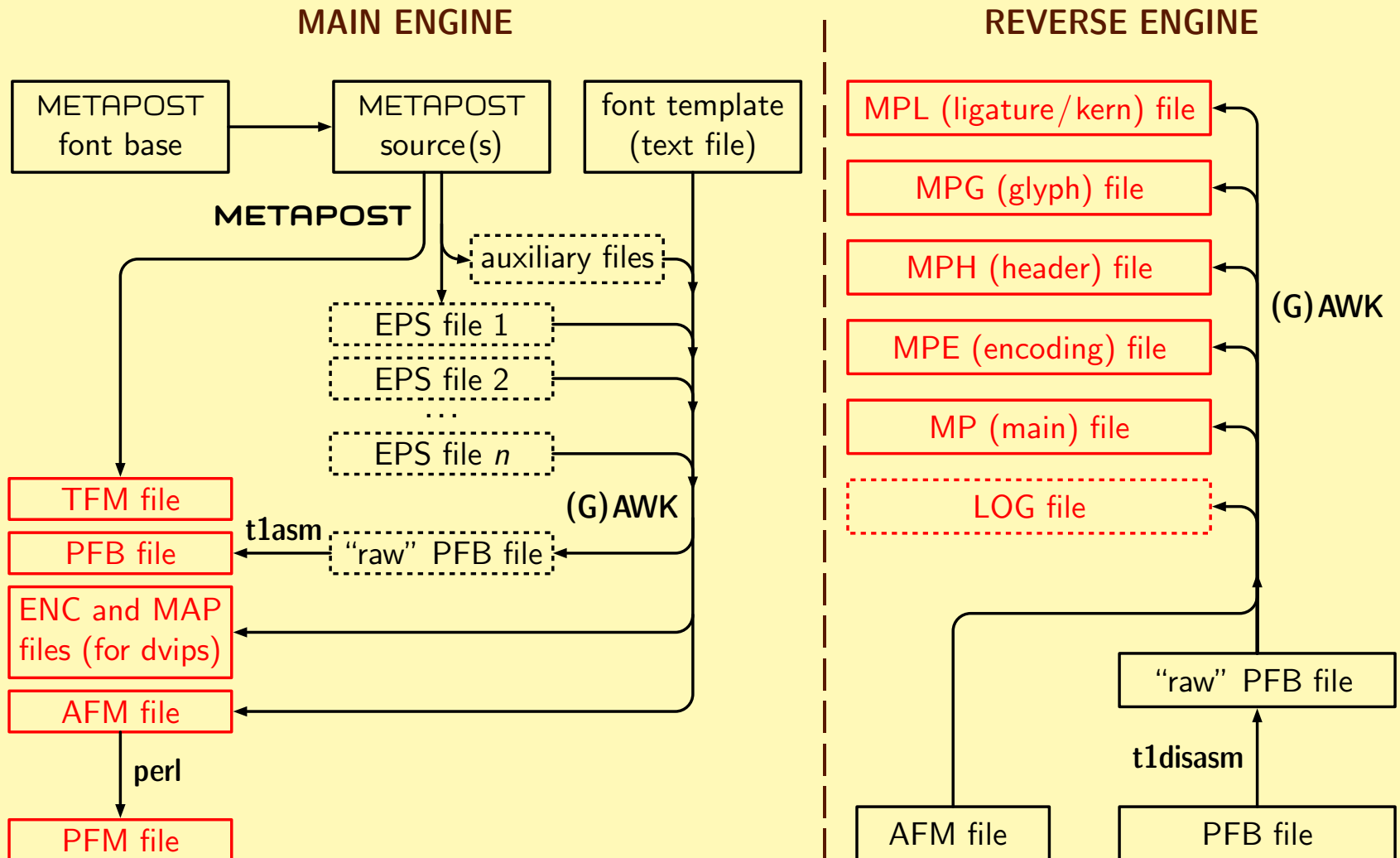


General scheme of METATYPE1

MAIN ENGINE



General scheme of METATYPE1



DETAILS,
DETAILS,
DETAILS...



The *Latin Modern* family of fonts
consists (so far) of 57 fonts

lmb10	lmcsc10	lmri8	lmssbo10	lmssqbx8
lmb10	lmcsc10	lmri9	lmssbx10	lmssqo8
lmbx10	lmr12	lmro10	lmssdc10	lmtcsc10
lmbx12	lmr17	lmro12	lmssdo10	lmtt10
lmbx5	lmr5	lmro8	lmss10	lmtt12
lmbx6	lmr6	lmro9	lmss12	lmtt8
lmbx7	lmr7	lmss10	lmss17	lmtt9
lmbx8	lmr8	lmss12	lmss8	lmtti10
lmbx9	lmr9	lmss17	lmss9	lmtto10
lmbxi10	lmri10	lmss8	lmssq8	lmvtt10
lmbxo10	lmri12	lmss9	lmssqbo8	lmvtto10
lmcsc10	lmri7			

A few questions concerning the appearance of glyphs:

- what is the proper shape of 'dieresis'?
- what is the proper shape of 'commaaccent'?
- what is the proper shape of 'Aring'?
- what is the proper shape (size) of 'bullet'?
- can *Latin Modern* ligature 'ij' be simulated by the respective kerning?
- glyphs 'chi' and 'lambda' of *Computer Modern* seem incompatible with the worldwide typographic tradition—is it OK?
- should metrics (e.g., width of digits) in roman and cap-small-caps differ?
- should the math-oriented characters (plus, multiply, equal, braces) remain unslanted in oblique fonts?
- what about nonstandard ligatures?
- etc., etc...



A few questions concerning the appearance of glyphs:

- what is the proper shape of ‘dieresis’?
- what is the proper shape of ‘commaaccent’?
- what is the proper shape of ‘Aring’?
- what is the proper shape (size) of ‘bullet’?
- can *Latin Modern* ligature ‘ij’ be simulated by the respective kerning?
- glyphs ‘chi’ and ‘lambda’ of Computer Modern seem incompatible with the worldwide typographic tradition—is it OK?
- should metrics (e.g., width of digits) in roman and cap-small-caps differ?
- should the math-oriented characters (plus, multiply, equal, braces) remain unslanted in oblique fonts?
- what about nonstandard ligatures?
- etc., etc...

ü ü

, ,

Å Å

• ×

ij ij

χλ λχ

01 01

fk fb? fh?

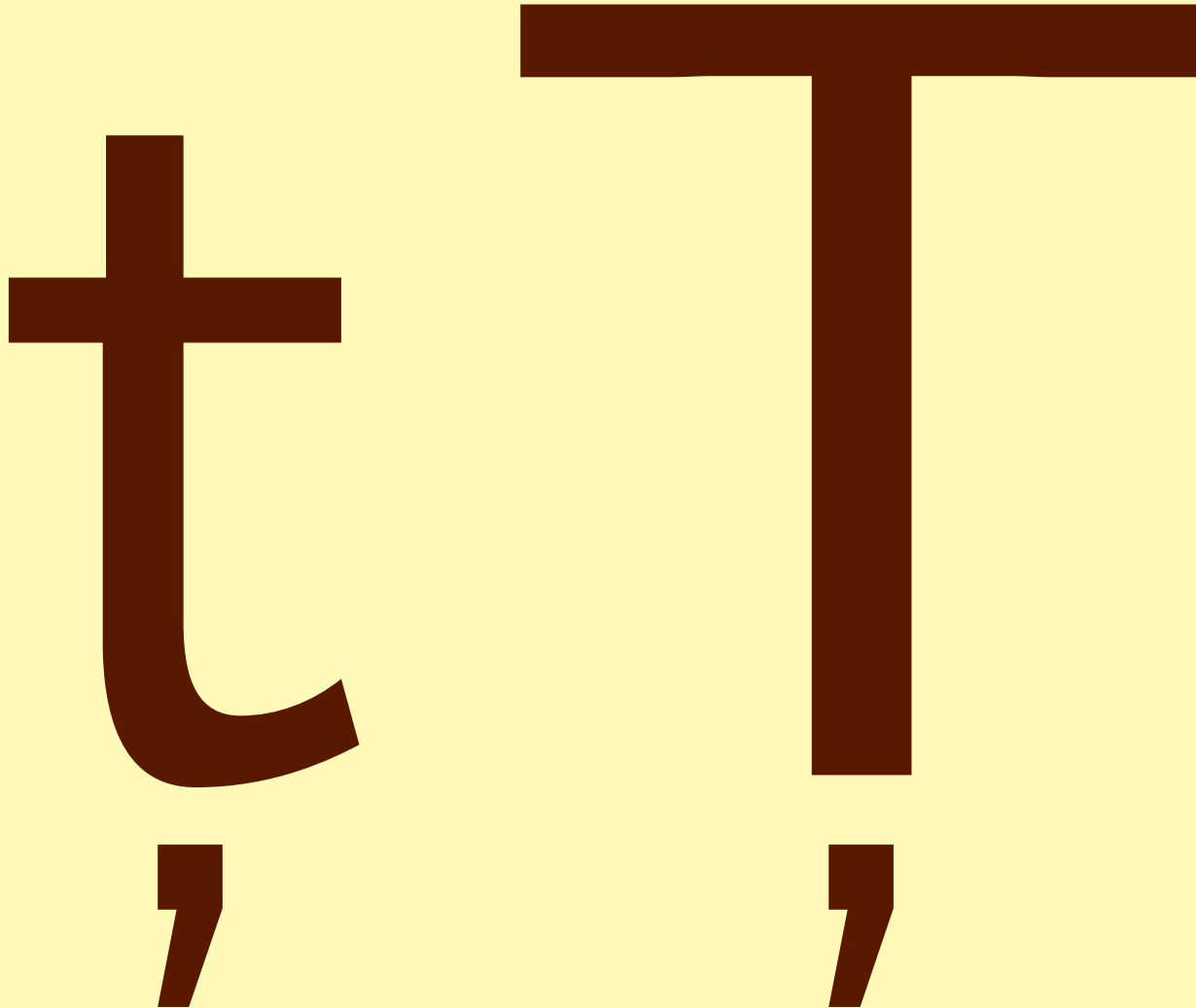
A commaaccent story or the comedy of errors

Once upon a time there were two diacritical characters...



A commaaccent story or the comedy of errors

Once upon a time there were two diacritical characters...



A commaaccent story or the comedy of errors

Once upon a time there were two diacritical characters...

- Adobe Glyph List (ver. 1.1) mentioned the characters described as ‘T with cedilla’ and ‘t with cedilla’ and assigned them names *Tcommaaccent* and *tcommaaccent*, respectively; characters that could be described as ‘T with comma below’ or ‘t with comma below’ were just ignored.
- Adobe Glyph List (ver. 1.2) informed that the names *Tcommaaccent* and *tcommaaccent* were assigned both to characters described as ‘T or t with cedilla’ and ‘T or t with comma below’.
- Adobe Glyph List For New Fonts (31 Jan 2003) says that one of the most recent changes has been “renaming *tcommaaccent* to *tcedilla* and *Tcommaaccent* to *Tcedilla*.”



A commaaccent story or the comedy of errors (cont.)

Adobe Glyph List For New Fonts (31 Jan 2003) enumerates also a few more ‘commaaccented’ characters...



A commaaccent story or the comedy of errors (cont.)

Adobe Glyph List For New Fonts (31 Jan 2003) enumerates also a few more ‘commaaccented’ characters...

gcommaaccent:

LATIN SMALL LETTER G WITH CEDILLA

kcommaaccent;

LATIN SMALL LETTER K WITH CEDILLA

lcommaaccent;

LATIN SMALL LETTER L WITH CEDILLA

ncommaaccent;

LATIN SMALL LETTER N WITH CEDILLA

rcommaaccent;

LATIN SMALL LETTER R WITH CEDILLA

scommaaccent;

LATIN SMALL LETTER S WITH COMMA BELOW



A commaaccent story or the comedy of errors (cont.)

Adobe Glyph List For New Fonts (31 Jan 2003) enumerates also a few more ‘commaaccented’ characters...

gcommaaccent:

LATIN SMALL LETTER G WITH CEDILLA

kcommaaccent;

LATIN SMALL LETTER K WITH CEDILLA

lcommaaccent;

LATIN SMALL LETTER L WITH CEDILLA

ncommaaccent;

LATIN SMALL LETTER N WITH CEDILLA

rcommaaccent;

LATIN SMALL LETTER R WITH CEDILLA

scommaaccent;

LATIN SMALL LETTER S WITH COMMA BELOW



How many magnifications do we need?

- EC scheme: 5, 6, 7, 8, 9, 10, 10.95, 12, 14.4, 17.28, 20.74, 24.88, 29.86, and 35.83 pt;
- CM scheme: 5, 6, 7, 8, 9, 10, 12, and 17.28 pt;
- “Traditional” scheme: heading (17 pt), normal (10 pt), script (7 pt), and second order script (5 pt, “scriptscript”).

Adobe's *OpenType Users Guide* says about *Caption*, *Regular*, *Subhead*, and *Display* variants:



How many magnifications do we need?

- EC scheme: 5, 6, 7, 8, 9, 10, 10.95, 12, 14.4, 17.28, 20.74, 24.88, 29.86, and 35.83 pt;
- CM scheme: 5, 6, 7, 8, 9, 10, 12, and 17.28 pt;
- “Traditional” scheme: heading (17 pt), normal (10 pt), script (7 pt), and second order script (5 pt, “scriptscript”).

Adobe's *OpenType Users Guide* says about *Caption*, *Regular*, *Subhead*, and *Display* variants:



How many magnifications do we need?

- EC scheme: 5, 6, 7, 8, 9, 10, 10.95, 12, 14.4, 17.28, 20.74, 24.88, 29.86, and 35.83 pt;
- CM scheme: 5, 6, 7, 8, 9, 10, 12, and 17.28 pt;
- “Traditional” scheme: heading (17 pt), normal (10 pt), script (7 pt), and second order script (5 pt, “scriptscript”).

Adobe's *OpenType Users Guide* says about *Caption*, *Regular*, *Subhead*, and *Display* variants:



How many magnifications do we need?

- EC scheme: 5, 6, 7, 8, 9, 10, 10.95, 12, 14.4, 17.28, 20.74, 24.88, 29.86, and 35.83 pt;
- CM scheme: 5, 6, 7, 8, 9, 10, 12, and 17.28 pt;
- “Traditional” scheme: heading (17 pt), normal (10 pt), script (7 pt), and second order script (5 pt, “scriptscript”).

Adobe’s OpenType Users Guide says about *Caption*, *Regular*, *Subhead*, and *Display* variants.



How many magnifications do we need?

- EC scheme: 5, 6, 7, 8, 9, 10, 10.95, 12, 14.4, 17.28, 20.74, 24.88, 29.86, and 35.83 pt;
- CM scheme: 5, 6, 7, 8, 9, 10, 12, and 17.28 pt;
- “Traditional” scheme: heading (17 pt), normal (10 pt), script (7 pt), and second order script (5 pt, “scriptscript”).

Adobe’s OpenType Users Guide says about Caption, Regular, Subhead, and Display variants.



How many encodings do we need?

- *Cork Encoding:*

```
lmr10 → lmr10_cork or cork-lmr10 or ...
lms10 → lms10_cork or cork-lms10 or ...
lmtt10 → lmtt10_cork or cork-lmtt10 or ...
...
```

- *T_EX'n'ANSI Encoding:*

```
lmr10 → lmr10_texansi or texansi-lmr10 or ...
lms10 → lms10_texansi or texansi-lms10 or ...
lmtt10 → lmtt10_texansi or texansi-lmtt10 or ...
...
```

- ** Encoding:*

```
lmr10 → lmr10_* or *-lmr10 or ...
lms10 → lms10_* or *-lms10 or ...
lmtt10 → lmtt10_* or *-lmtt10 or ...
...
```



How many encodings do we need?

- *Cork Encoding:*

```
lmr10 → lmr10_cork or cork-lmr10 or ...  
lmss10 → lmss10_cork or cork-lmss10 or ...  
lmtt10 → lmtt10_cork or cork-lmtt10 or ...  
...
```

- *T_EX n'ANSI Encoding:*

```
lmr10 → lmr10_texansi or texansi-lmr10 or ...  
lmss10 → lmss10_texansi or texansi-lmss10 or ...  
lmtt10 → lmtt10_texansi or texansi-lmtt10 or ...  
...
```

- ** Encoding:*

```
lmr10 → lmr10_* or *-lmr10 or ...  
lmss10 → lmss10_* or *-lmss10 or ...  
lmtt10 → lmtt10_* or *-lmtt10 or ...  
...
```



How many encodings do we need?

- *Cork Encoding:*

```
lmr10 → lmr10_cork or cork-lmr10 or ...  
lmss10 → lmss10_cork or cork-lmss10 or ...  
lmtt10 → lmtt10_cork or cork-lmtt10 or ...  
...
```

- *TEX'n'ANSI Encoding:*

```
lmr10 → lmr10_texnansi or texnansi-lmr10 or ...  
lmss10 → lmss10_texnansi or texnansi-lmss10 or ...  
lmtt10 → lmtt10_texnansi or texnansi-lmtt10 or ...  
...
```

- ** Encoding:*

```
lmr10 → lmr10_* or *-lmr10 or ...  
lmss10 → lmss10_* or *-lmss10 or ...  
lmtt10 → lmtt10_* or *-lmtt10 or ...  
...
```



How many encodings do we need?

- *Cork Encoding:*

```
lmr10 → lmr10_cork or cork-lmr10 or ...  
lmss10 → lmss10_cork or cork-lmss10 or ...  
lmtt10 → lmtt10_cork or cork-lmtt10 or ...  
...
```

- *TEX'n'ANSI Encoding:*

```
lmr10 → lmr10_texnansi or texnansi-lmr10 or ...  
lmss10 → lmss10_texnansi or texnansi-lmss10 or ...  
lmtt10 → lmtt10_texnansi or texnansi-lmtt10 or ...  
...
```

- ** Encoding:*

```
lmr10 → lmr10_* or *-lmr10 or ...  
lmss10 → lmss10_* or *-lmss10 or ...  
lmtt10 → lmtt10_* or *-lmtt10 or ...  
...
```

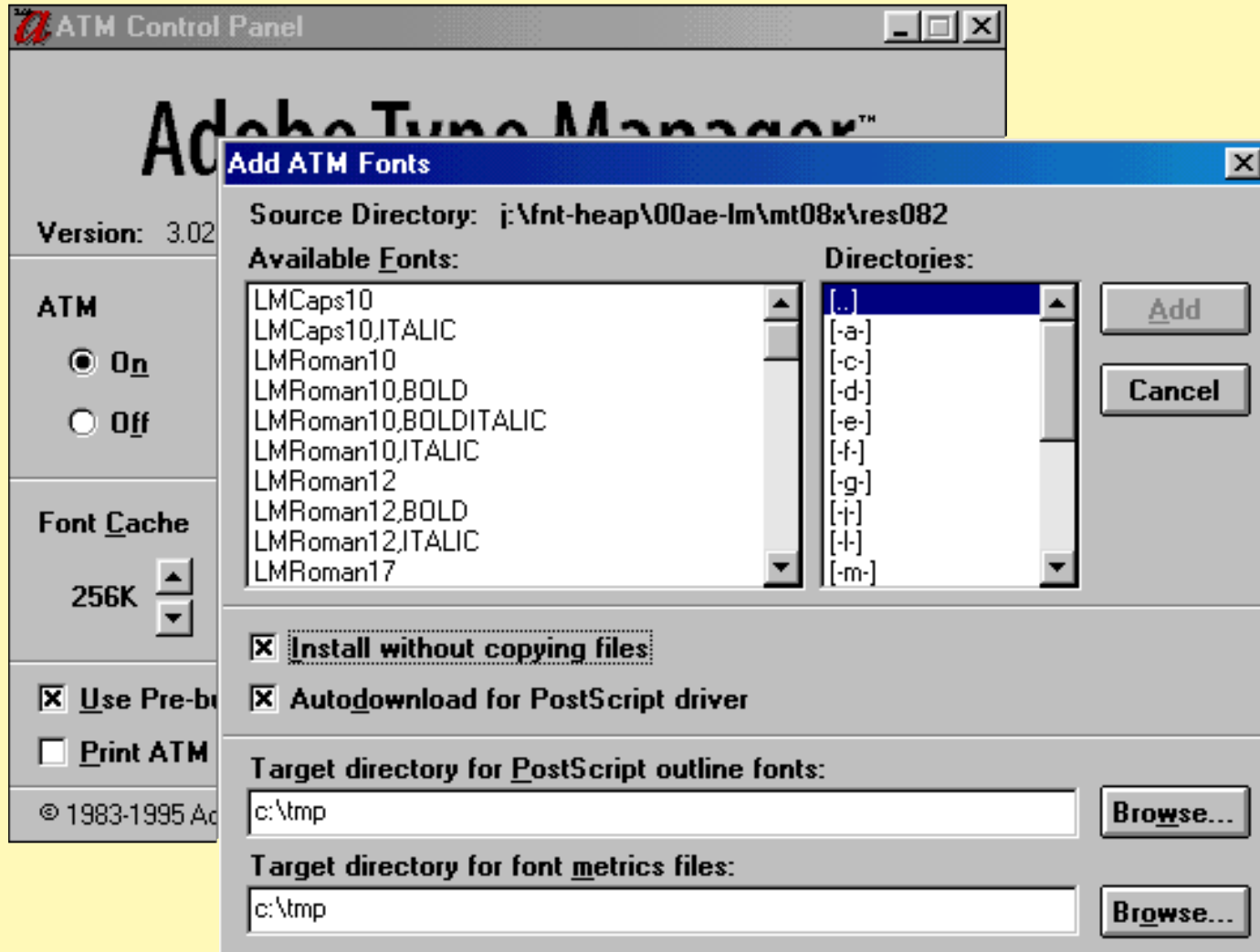


Can *Latin Modern* fonts be used in Windows?



Can *Latin Modern* fonts be used in Windows?

- short answer: “yes”;



Can *Latin Modern* fonts be used in Windows?

- short answer: “yes” ;
- longer answer: “yes, so far only as POSTSCRIPT Type 1 fonts, with a ‘Europe-oriented’ encoding” ;



Can *Latin Modern* fonts be used to replace *Computer Modern*?

- short answer: "no";



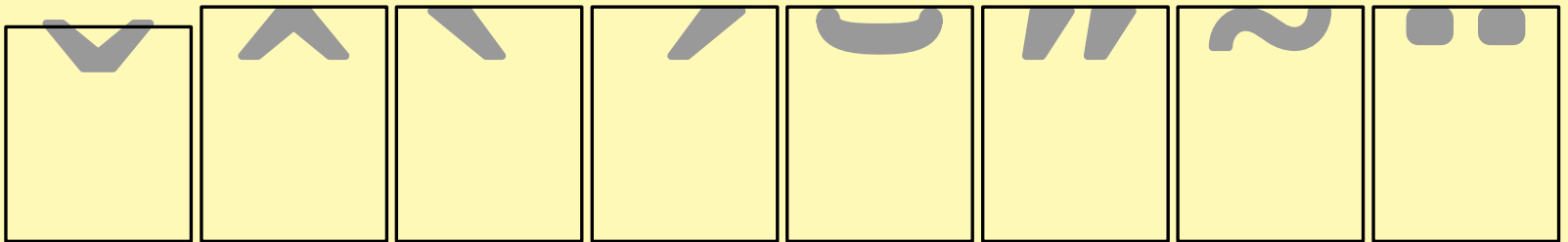
Can *Latin Modern* fonts be used to replace *Computer Modern*?

- short answer: “no”;



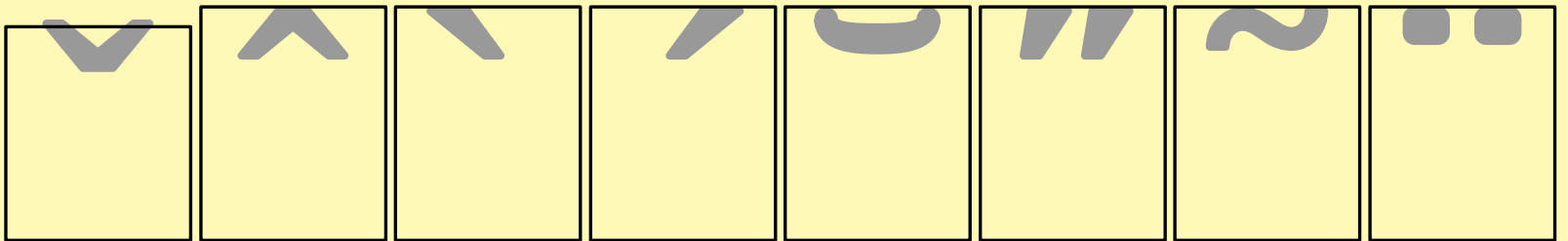
Can *Latin Modern* fonts be used to replace *Computer Modern*?

- short answer: “no”;
 - the collection of fonts is different (e.g., there are no “funny” fonts in *Latin Modern*, there are also no math fonts);
 - *Computer Modern* ‘caron’ accent is a little bit lowered, while all *Latin Modern* accents are aligned horizontally.



Can *Latin Modern* fonts be used to replace *Computer Modern*?

- short answer: “no”;
 - the collection of fonts is different (e.g., there are no “funny” fonts in *Latin Modern*, there are also no math fonts);
 - *Computer Modern* ‘caron’ accent is a little bit lowered, while all *Latin Modern* accents are aligned horizontally.



- longer answer: “yes, to some extent.”

Are *Latin Modern* fonts freely available?

- short answer: “yes, from CTAN”;
- longer answer: “yes, from CTAN or at <ftp://bop.eps.gda.pl/pub/lm/>; METATYPE1 sources, however, are not available yet—but we hope to make them public before long”;



Are *Latin Modern* fonts freely available?

- short answer: “yes, from CTAN”;
- longer answer: “yes, from CTAN or at <ftp://bop.eps.gda.pl/pub/lm/>; METATYPE1 sources, however, are not available yet—but we hope to make them public before long”;



Are *Latin Modern* fonts freely available?

- short answer: “yes, from CTAN”;
- longer answer: “yes, from CTAN or at `ftp://bop.eps.gda.pl/pub/lm/`; METATYPE1 sources, however, are not available yet.” *we hope to make them public before long*;



Are *Latin Modern* fonts freely available?

- short answer: “yes, from CTAN”;
- longer answer: “yes, from CTAN or at `ftp://bop.eps.gda.pl/pub/lm/`; METATYPE1 sources, however, are not available yet—but we hope to make them public before long”;



Is it a closed project?

- short answer: “no”;
- longer answer: “no, we have a lot of plans, e.g., to augment the character set (African scripts, native American scripts, Vietnamese), to augment the collection of fonts, to improve kerning and hinting, to improve character shapes, etc., etc.”;



Is it a closed project?

- short answer: “no”;
- longer answer: “no, we have a lot of plans, e.g., to augment the character set (African scripts, native American scripts, Vietnamese), to augment the collection of fonts, to improve kerning and hinting, to improve character shapes, etc., etc.”;



Is it a closed project?

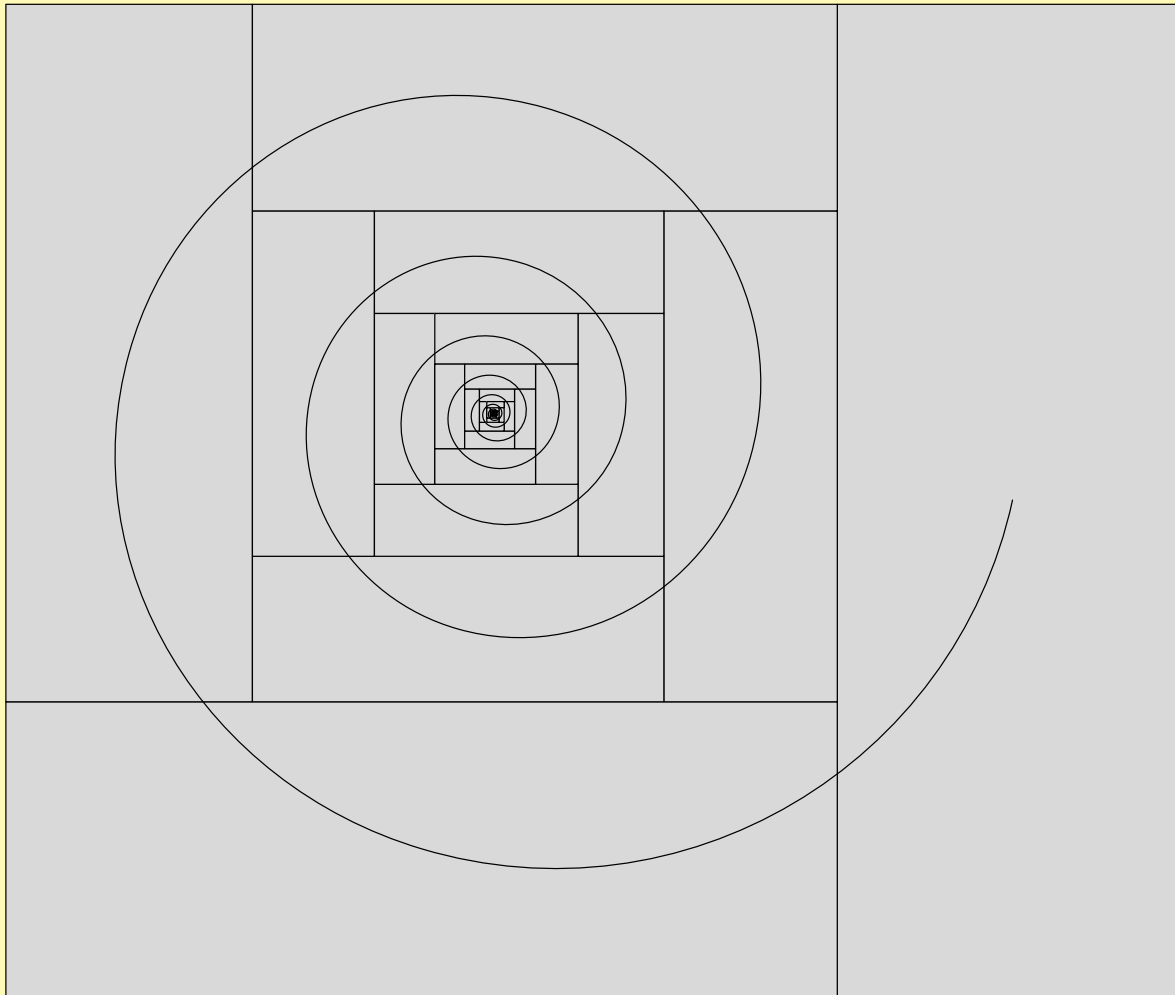
- short answer: “no”;
- longer answer: “no, we have a lot of plans, e.g., to augment the character set (African scripts, native American scripts, Vietnamese), to augment the collection of fonts, to improve kerning and hinting, to improve character shapes, etc., etc.”;





Hawaii
Hawai'i
Hawai'i
Hawai'i
Hawai'i
Hawai'i?...





The project was supported by European T_EX Users Groups, in particular by the German-speaking T_EX Users Group DANTE e.V., the Polish T_EX Users Group GUST, the French-speaking T_EX Users Group GUTenberg, and the Dutch-speaking T_EX Users Group NTG.

