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# **Latvian Characters on the Macintosh**

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## **ABSTRACT**

The written Latvian language uses the Roman alphabet with three character modifier symbols. A bar above some vowels, a tick mark over some consonants, or a comma below other consonants. This report describes how the Macintosh software was reconfigured to accommodate these character modifiers.

## 1. Introduction.

This report describes how character modifier symbols which are used in the Latvian language were made available for use with the Apple Macintosh.

Our aim was to alter and reconfigure the font definition bitmaps to create the modified Latvian characters. This had to be done for the individual point sizes of each font, because each separate point size of each font is defined by its own collection of characters bitmaps. Currently there are 34 fonts available with Latvian characters. These are:

Athens	18
Monaco	9 12
New York	9 10 12 14 18 24
Geneva	9 10 12 14 18 24
Seattle	10
Times	9 10 12 14 18 24
Helvetica	9 10 12 14 18 24
Courier	9 10 12 14 18 24

## 2. Modifications in the Macintosh Operating System.

### 2.1 Latvian Character Set.

The written Latvian language uses the Roman alphabet with the exception of W, X, Y and the following modified characters:

(i) Vowels with the exception of O may be long or short. Long vowels are designated by a bar over the vowel :  $\bar{A}$   $\bar{E}$   $\bar{I}$   $\bar{U}$   $\bar{a}$   $\bar{e}$   $\bar{i}$   $\bar{u}$ .

(ii) Consonants G, K, L, N may be softened in the following way :  $\mathring{K}$   $\mathring{L}$   $\mathring{N}$   
 $\mathring{G}$   $\mathring{k}$   $\mathring{l}$   $\mathring{n}$   $\mathring{g}$ .

(iii) Consonants C, S, Z may be sharpened by a "hat" :  $\hat{C}$   $\hat{S}$   $\hat{Z}$   $\hat{c}$   $\hat{s}$   $\hat{z}$ .

### 2.2 Character Representation in the Macintosh Operating System.

For each font and pointsize, the characters are stored as unique bitmaps. Each individual bitmap represents a single character. A collection of 255 characters comprises a font. These fonts are predefined, but any or all of the character defining bitmaps may be changed.

In total 22 characters had to be changed in each font to provide the modified Latvian characters. The modified Latvian characters are obtained using the option key like the shift key, that is to say, press and hold down

the option key, then the character to be modified. Thus the modified characters appear in the option keyed locations of the character set that is to be modified. For information as to what characters were there before the Latvian characters were installed refer to Chernicoff(85).

One small problem encountered, was that certain optioned characters, notably "option e, n u, and i" were double-keyed. That is to say, to produce any output from these keys a two key sequence was necessary. For example "option e" by itself produced nothing, if this was followed by "option e", the grave accent was produced. Alternatively if the second keystroke was "e", e with a grave accent was produced, if "space" was the second key then the grave accent was produced without the expected following space. In fact if the second key is one that the standard Macintosh system recognises as a valid accented letter then the appropriately modified character is printed. The other double-keyed letters "u, n, i" operate in a similar manner, but with different diacritical marks. A more detailed discussion of how the Macintosh stores the fonts and how they work appears in Chernicoff(85).

The double-key sequence was too cumbersome to use when typing Latvian text, so the keyboard driver was reconfigured to eliminate the double-key feature of "e, n, u and i" keys. This was accomplished by editing the keyboard driver ( resource type INIT ID - 0 ), using the resource editor and changing the five leftmost keys on the numeric keypad to the double-key function. Since the standard Macintosh setup is without the separate numeric keypad, this effectively eliminates the double-key problem.

### **2.3 Calling Mechanism for Modified Characters.**

The modified Latvian characters are very easy to obtain, all one has to do is to select or use a font in which Latvian characters are available, press and hold the option key (as when using the shift key), then the character to be modified, will produce the appropriately modified Latvian character.

Any application that uses a system with Latvian characters available on it, will if it uses a Latvian font will have Latvian characters available for use, for example as Macwrite is being used to prepare this paper. Other applications can also be used with Latvian characters, such as MacPaint, MacDraw, MacProject, Microsoft Word, Pagemaker etc.

**3. Examples.**

Here are examples of some of the fonts available:

**Athens 18**

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ǫ

**Chicago 12**

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ǫ

**Courier 10**

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ǫ

**Courier 24**

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ǫ

**Geneva 10**

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ǫ

**Geneva 24**

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ǫ

**Helvetica 10**

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ǫ

# Helvetica 24

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ğ

# Monaco 12

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ğ

# New York 10

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ğ

# New York 24

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ğ

# Seattle 10

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ğ

# Times 10

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ğ

# Times 24

Ā Ē Ī Ū ā ē ū ī  
Č Š Ž č š ž  
Ǫ Ǭ Ǹ Ğ ǫ ǫ ǫ ğ

#### **4. Limitations.**

Since the characters are defined as bitmaps, and there are 255 characters in each font, they unfortunately take up a lot of space on the disk. A Latvian font of point size 12 will take up about 3K, and one of 24 point size about 8.5K.

This does present certain problems when using a single drive Macintosh, as the extended fonts take up so much room on the disk that it is not even possible to fit the Macwrite application the disk. To be able to use Macwrite with Latvian fonts and still have enough room on the disk to save the document created, it is necessary to use a truncated set of the Latvian fonts. With a double drive Macintosh this problem does not occur since the operating system may be stored on one disk and Macwrite, other applications and documents on the other disk. However if the system used does not contain Latvian characters then they will not be available.

#### **5. Future Enhancements.**

The resolution of the Imagewriter is not the best, so it would be desirable to have Latvian fonts available for the Laserwriter. Downline loadable fonts are now available for the laserwriter plus. This means that it is now feasible to produce Latvian fonts for the Laserwriter-plus, and they should be available reasonably soon. A spelling checker would also be highly desirable.

#### **6. Acknowledgements.**

The help of the students of the Latvian Summer School at Dzintari in South Australia in the testing of this system is gratefully acknowledged.

#### **7. References.**

- [1] CHERNICOFF, Stephen. Macintosh Revealed. Chapter 8 pg. 349  
Hayden, California (1985).