

მეჯრული — *Mxedruli*,  
ხუკური, խոչընկիւ — *Xucuri*  
*The Georgian Alphabets*<sup>\*</sup>

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## 1 Introduction

This is a short documentation of the two alphabets used by Georgian and some of its neighbouring languages from the Kartvelian language family. The first alphabet is called *Mxedruli*. Some letters used by Old Georgian or other languages such as Ossetian are also included. The second alphabet is called *Xucuri*. Whereas *Mxedruli* does differentiate majuscules and minuscules, *Xucuri* distinguishes between majuscules (also called *Mrg(v)lovani*) and minuscules (*Kutxovani*). However, in opposition to the Roman, Greek and Cyrillic alphabets in a text either majuscules or minuscules are used. They cannot be combined. *Xucuri* is now restricted to religious use.

It is implemented using METAFONT and can be used in L<sup>A</sup>T<sub>E</sub>X or T<sub>E</sub>X-documents. The font are of a rather simple design (cf. section 3) and surely may be improved. I would be very happy if any suggestions, improvements, corrections, extensions, enhancements etc. could be forwarded to me<sup>1</sup>. Thank you very much!

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<sup>\*</sup>With improvements by Jan De Lameillieure, Berlin and Mark Leisher, Las Cruces, New Mexico

<sup>1</sup>By e-mail: [johannes.heinecke@wanadoo.fr](mailto:johannes.heinecke@wanadoo.fr). I try to realize suggestions etc. as quick as possible. So please check my WWW-Homepage for the newest  $\beta$ -release: <http://pagesperso-orange.fr/heinecke/mxedruli/>

## 2 The fonts and their usage

### 2.1 *Mxedruli*

The tables below show the names of the *Mxedruli* letters, followed by the letter in normal and bold shape and in a “capital”<sup>2</sup> mode. Within a L<sup>A</sup>T<sub>E</sub>X-document they can be activated by \mxedr (normal), \mxedb (bold) \mxedi (italics) or \mxedc analogously to standard L<sup>A</sup>T<sub>E</sub>X font commands such as \rm, \bf, \it or \sc respectively. Therefore the *mxedruli.sty* stylefile must be loaded for standard font selection and NFSS2.<sup>3</sup>. Please refer to section 5 in order to install the fonts. They are provided for 300dpi printers, if you need different solutions section 6 describes how you can produce the .pk-files required.

Within L<sup>A</sup>T<sub>E</sub>X the font size commands have also effect on the *Mxedruli* letters. Finally, in the last column, the required L<sup>A</sup>T<sub>E</sub>X or T<sub>E</sub>X-input to produce the *Mxedruli* letter is shown.

(As I designed some new letters I had to reposition the ‘᳚’ (.+c) from its original position<sup>4</sup> ’171 to ’014. On ’171 (y) the new letter ‘᳗’ (*schwa*) is installed now. This is mainly important for those users, who address the letters directly by using the T<sub>E</sub>X \char{n} or the L<sup>A</sup>T<sub>E</sub>X \symbol{n} commands respectively. If you address the letter as described here, nothing has changed compared to previous versions.)

For those (Kartvelian) languages, which use *Mxedruli* together with diacritics<sup>5</sup> an umlaut (“”), a circumflex (“”) and a macron (“”) have been defined. They can be used as in normal L<sup>A</sup>T<sub>E</sub>X-documents by the \"char (umlaut on char), ^char (circonflex) or \=char (macron) command respectively, e.g. {\mxedr \"o} yields ‘᳕’, {\mxedr ^a} yields ‘᳘’, and {\mxedr \=u} yields ‘᳙’.

The table in sections 2.1.1 and 2.2.1 contains in the leftmost column the corresponding Unicode-code<sup>6</sup> Please note that the letter-names do slightly differ to the names used in the Unicode name table. This is due to different conventions.

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<sup>2</sup>As there are no capital letters in *mxedruli* the letters are scaled to the same height for headlines etc.

<sup>3</sup>NFSS1 is supported too. Due to the lack of NFSS1 however, I could not test, whether the NFSS1 routines work satisfactorily.

<sup>4</sup>As coded in versions anterior to 2.1

<sup>5</sup>Sometimes also used in Kartvelian dialectology or descriptive linguistics of Kaukavian languages in Georgian, in order to provide a phonetic transcription without recurring to the Internal Phonetic Alphabet.

<sup>6</sup>Cf. <http://www.unicode.org/charts/>.

### 2.1.1 Standard letters

| Name | <i>Mxedruli</i> |      |         |         | Transcription | input          | Unicode |
|------|-----------------|------|---------|---------|---------------|----------------|---------|
|      | normal          | bold | italics | capital |               |                |         |
| an   | ა               | ა    | ა       | ჸ       | a             | ა              | 10D0    |
| ban  | ბ               | ბ    | ბ       | ბ       | b             | ბ              | 10D1    |
| or   | ბ               | ბ    | ბ       |         |               | ბ1             |         |
| gan  | გ               | გ    | გ       | გ       | g             | გ              | 10D2    |
| don  | დ               | დ    | დ       | დ       | d             | დ              | 10D3    |
| en   | ე               | ე    | ე       | ჸ       | e             | ე              | 10D4    |
| vin  | ვ               | ვ    | ვ       | ვ       | v             | ვ              | 10D5    |
| zen  | ზ               | ზ    | ზ       | ზ       | z             | ზ              | 10D6    |
| tan  | თ               | თ    | თ       | თ       | t             | თ              | 10D7    |
| in   | ი               | ი    | ი       | ი       | i             | ი              | 10D8    |
| kan  | კ               | კ    | კ       | კ       | k             | .k             | 10D9    |
| las  | ლ               | ლ    | ლ       | ლ       | l             | ლ              | 10DA    |
| man  | მ               | მ    | მ       | მ       | m             | მ              | 10DB    |
| nar  | ნ               | ნ    | ნ       | ნ       | n             | ნ              | 10DC    |
| on   | ო               | ო    | ო       | ო       | o             | օ              | 10DD    |
| par  | პ               | პ    | პ       | პ       | p             | .p             | 10DE    |
| žan  | ჟ               | ჟ    | ჟ       | ჟ       | ž             | +z             | 10DF    |
| ran  | რ               | რ    | რ       | რ       | r             | რ              | 10E0    |
| san  | ს               | ს    | ს       | ს       | s             | ს              | 10E1    |
| tar  | ტ               | ტ    | ტ       | ტ       | ṭ             | .t             | 10E2    |
| un   | უ               | უ    | უ       | უ       | u             | უ              | 10E3    |
| par  | პ               | პ    | პ       | პ       | p             | პ              | 10E4    |
| kan  | კ               | კ    | კ       | კ       | k             | კ              | 10E5    |
| ğan  | ღ               | ღ    | ღ       | ღ       | ğ             | .g             | 10E6    |
| qar  | ყ               | ყ    | ყ       | ყ       | q             | q <sup>7</sup> | 10E7    |
| šan  | შ               | შ    | შ       | შ       | š             | +s             | 10E8    |
| čin  | ჩ               | ჩ    | ჩ       | ჩ       | č             | .c             | 10E9    |
| can  | ც               | ც    | ც       | ც       | c             | ც              | 10EA    |
| dzil | ძ               | ძ    | ძ       | ძ       | j/dz          | j              | 10EB    |
| cil  | წ               | წ    | წ       | წ       | ç             | .c             | 10EC    |
| čar  | չ               | Շ    | Շ       | Շ       | č             | .+c            | 10ED    |
| xan  | ხ               | ხ    | ხ       | ხ       | x             | ხ              | 10EE    |
| džan | ճ               | Ճ    | Ճ       | Ճ       | dž            | +j             | 10EF    |
| ha   | ჰ               | ჰ    | ჰ       | ჰ       | h             | ჰ              | 10F0    |

<sup>7</sup>Although the transcription of ‘ყ’ is *q* the TeX-input will remain ‘q’ for the letter *qar* as it appears with a far more frequent than *qar* (‘ڙ’) which is coded as ‘q1’.

### 2.1.2 Other letters

| Name  | <i>Mxedruli</i> |      |         |         | Transcription | input | Unicode |
|-------|-----------------|------|---------|---------|---------------|-------|---------|
|       | normal          | bold | italics | capital |               |       |         |
| qar   | ქ               | ქ    | ქ       | ქ       | q             | q1    | 10F4    |
| hē    | ჺ               | ჺ    | ჺ       | ჺ       | ē, e᷑         | e0    | 10F1    |
| ho    | ჸ               | ჸ    | ჸ       | ჸ       | ō, oy         | o1    | 10F5    |
| jo    | ჹ               | ჹ    | ჹ       | ჹ       | ǐ             | i1    | 10F2    |
| wi    | ჵ               | ჵ    | ჵ       | ჵ       | w             | w     | 10F3    |
| fi    | ჶ               | ჶ    | ჶ       | ჶ       | f             | f     | 10F6    |
| schwa | ჲ               | ჲ    | ჲ       | ჲ       | ə, y          | y     | 10F7    |
| elifi | ჳ               | ჳ    | ჳ       | ჳ       | ,             | a1    | 10F8    |
| æ     | ჸ               | ჸ    | ჸ       | ჸ       | æ             | e1    |         |

The letters *qar*, *hē*, *ho*, *jo*, *wi* and *fi* are seldomly used or archaic letters (*fi* may be used to transcribe latin *f*). *Schwa* and *elifi* are mainly used in Mingrelian or Svan, whereas *æ* is used to write the Ossetian language using Mxedruli.

### 2.1.3 Digits

| <i>Mxedruli</i> |      |         | input |
|-----------------|------|---------|-------|
| normal          | bold | capital |       |
| 1               | 1    | 1       | 1     |
| 2               | 2    | 2       | 2     |
| 3               | 3    | 3       | 3     |
| 4               | 4    | 4       | 4     |
| 5               | 5    | 5       | 5     |

| <i>Mxedruli</i> |      |         | input |
|-----------------|------|---------|-------|
| normal          | bold | capital |       |
| 6               | 6    | 6       | 6     |
| 7               | 7    | 7       | 7     |
| 8               | 8    | 8       | 8     |
| 9               | 9    | 9       | 9     |
| 0               | 0    | 0       | 0     |

### 2.1.4 Punctuation

| Mxedruli |      |         | input   |
|----------|------|---------|---------|
| normal   | bold | capital |         |
| .        | .    | .       | .       |
| ,        | ,    | ,       | ,       |
| !        | !    | !       | !       |
| ?        | ?    | ?       | ?       |
| =        | =    | =       | =       |
| -        | -    | -       | -       |
| --       | --   | --      | --      |
| ---      | --   | --      | ---     |
| /        | /    | /       | /       |
| \        | \    | \       | \char92 |

| Mxedruli |      |         | input |
|----------|------|---------|-------|
| normal   | bold | capital |       |
| :        | :    | :       | :     |
| ;        | ;    | ;       | ;     |
| +        | +    | +       | +     |
| (        | (    | (       | (     |
| )        | )    | )       | )     |
| [        | [    | [       | [     |
| ]        | ]    | ]       |       |
| "        | "    | "       | "     |
| "        | "    | "       | "     |

## 2.2 Xucuri

The following tables show the names and the coding of the *Xucuri* alphabets (*Mrgvlo-vani* and *Kutxovani*). These fonts do not have any diacritics. Further, for the time being, it only consists of the normal series.<sup>8</sup>

Within a L<sup>A</sup>T<sub>E</sub>X-document they can be activated by \xucr. If used within a L<sup>A</sup>T<sub>E</sub>X-document together with the style file provided (xucuri.sty) the L<sup>A</sup>T<sub>E</sub>X size commands will also work. (L<sup>A</sup>T<sub>E</sub>X 2<sub>ε</sub> is supported together with NFSS2, as is L<sup>A</sup>T<sub>E</sub>X2.09)

### 2.2.1 Letters

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<sup>8</sup>If there is a demand for italics and bold versions, I will gladly provide the driver files required. Please contact me as indicated on page 1.

| Name | <i>Xucuri</i>                     |                                | Transcription | input             | Unicode             |                  |
|------|-----------------------------------|--------------------------------|---------------|-------------------|---------------------|------------------|
|      | majuscules<br><i>Mrg(v)lovani</i> | minuscules<br><i>Kutxovani</i> |               |                   | <i>Mrg(v)lovani</i> | <i>Kutxovani</i> |
| an   | Ҫ                                 | ѧ                              | a             | Ա, ա              | 10A0                | 2D00             |
| ban  | Ӯ                                 | Յ                              | b             | Բ, բ              | 10A1                | 2D01             |
| gan  | ӻ                                 | Յ                              | g             | Գ, ց              | 10A2                | 2D02             |
| don  | Ծ                                 | Ճ                              | d             | Ճ, ճ              | 10A3                | 2D03             |
| en   | Ҕ                                 | Ե                              | e             | Ե, ե              | 10A4                | 2D04             |
| vin  | Җ                                 | Վ                              | v             | Վ, վ              | 10A5                | 2D05             |
| zen  | ҈                                 | Զ                              | z             | Զ, զ              | 10A6                | 2D06             |
| tan  | ҉                                 | Տ                              | t             | Տ, տ              | 10A7                | 2D07             |
| in   | Ҋ                                 | Ի                              | i             | Ի, ի              | 10A8                | 2D08             |
| կան  | Կ                                 | Լ                              | կ             | .Կ, .կ            | 10A9                | 2D09             |
| las  | Ҍ                                 | Լ                              | l             | Լ, լ              | 10AA                | 2D0A             |
| man  | Ծ                                 | Ժ                              | m             | Մ, մ              | 10AB                | 2D)B             |
| nar  | Ը                                 | Ւ                              | n             | Ն, ն              | 10AC                | 2D0C             |
| on   | Օ                                 | Ո                              | o             | Օ, օ              | 10AD                | 2D0D             |
| par  | Ҏ                                 | Ո                              | պ             | .Պ, .պ            | 10AE                | 2D0E             |
| žan  | ҏ                                 | Ղ                              | ž             | +Z, +z            | 10AF                | 2D0F             |
| ran  | Ճ                                 | Շ                              | r             | Ր, ր              | 10B0                | 2D10             |
| san  | Ծ                                 | Լ                              | s             | Ս, ս              | 10B1                | 2D11             |
| tar  | Ր                                 | Ը                              | տ             | .Տ, .տ            | 10B2                | 2D12             |
| un   | Օ                                 | Ա                              | u             | Ո, ո              | 10B3                | 2D13             |
| par  | Փ                                 | Ա                              | p             | Փ, պ              | 10B4                | 2D14             |
| kan  | Ւ                                 | Ա                              | k             | Կ, կ              | 10B5                | 2D15             |
| ğan  | Ո                                 | Ա                              | ğ             | .Գ, .ğ            | 10B6                | 2D16             |
| qar  | ҏ                                 | Ա                              | q             | Ղ, ղ <sup>9</sup> | 10B7                | 2D17             |
| šan  | Ծ                                 | Ա                              | š             | +S, +s            | 10B8                | 2D18             |
| čin  | Ւ                                 | Ա                              | č             | +C, +c            | 10B9                | 2D19             |
| can  | Ծ                                 | Ա                              | c             | C, ց              | 10BA                | 2D1A             |
| dzil | Ժ                                 | Ժ                              | j/dz          | Ջ, յ              | 10BB                | 2D1B             |
| çil  | Ր                                 | Ա                              | ç             | .C, .ç            | 10BC                | 2D1C             |
| čar  | Ծ                                 | Ա                              | č             | .+C, .+c          | 10BD                | 2D1D             |
| xan  | Ծ                                 | Ա                              | x             | X, խ              | 10BE                | 2D1E             |
| džan | Ճ                                 | Ճ                              | dž            | +Ջ, +յ            | 10BF                | 2D1F             |
| ha   | Ҍ                                 | Ա                              | h             | H, հ              | 10C0                | 2D20             |

<sup>9</sup> Although the transcription of ‘ $\Psi$ ’ and ‘ $\varphi$ ’ is  $\dot{Q}$  and  $\dot{q}$  respectively, the TeX-input will remain ‘Q’ and ‘q’ for the letter *qar* as it appears with a far more frequent than *qar* (‘ $\Gamma$ ’, ‘ $\varphi$ ’) which is coded as ‘Q1’ and ‘q1’.

| Name | <i>Xucuri</i>                     |                                | Transcription | TeX-input |
|------|-----------------------------------|--------------------------------|---------------|-----------|
|      | majuscules<br><i>Mrg(v)lovani</i> | minuscules<br><i>Kutxovani</i> |               |           |
| qar  | ¶                                 | ¶                              | q             | Q1, q1    |
| hē   | ќ                                 | ѓ                              | ē, e᷑         | E0, e0    |
| ho   | Ԁ                                 | — <sup>10</sup>                | ō, oy         | O1        |
| jo   | Ԁ                                 | ᷑                              | ᷑             | I1, i1    |
| wi   | ԝ                                 | ԝ                              | w             | W, w      |

## 2.2.2 Punctuation

Please refer to section 2.1.4 on page 5. Punctuation for *Xucuri* is encoded exactly as for *Mxedruli*

## 2.3 Correspondant letters

This table shows, which character of *Mxedruli* corresponds to which *Xucuri* character. Characters not found here do only occur in one of the alphabets.

|     | <i>Mxedruli</i> | <i>Xucuri</i>                     |                                |
|-----|-----------------|-----------------------------------|--------------------------------|
|     |                 | majuscules<br><i>Mrg(v)lovani</i> | minuscules<br><i>Kutxovani</i> |
| an  | ᷑               | Ҫ                                 | ܶ                              |
| ban | ڏ               | ܲ                                 | ܵ                              |
| gan | ڏ               | ܱ                                 | ܷ                              |
| don | ڦ               | ܮ                                 | ܹ                              |
| en  | ܳ               | ܰ                                 | ܷ                              |
| vin | ܃               | ܴ                                 | ܸ                              |
| zen | ܆               | ܶ                                 | ܹ                              |
| tan | ܂               | ܱ                                 | ܻ                              |
| in  | ܄               | ܱ                                 | ܻ                              |
| kan | ܃               | ܶ                                 | ܹ                              |
| las | ܃               | ܶ                                 | ܻ                              |
| man | ڏ               | ܱ                                 | ܹ                              |
| nar | ܅               | ܱ                                 | ܹ                              |

<sup>10</sup>The letter *ho* does only have a majuscule form.

|      | <i>Mxedruli</i> | <i>Xucuri</i>                     |                                |
|------|-----------------|-----------------------------------|--------------------------------|
|      |                 | majuscules<br><i>Mrg(v)lovani</i> | minuscules<br><i>Kutxovani</i> |
| on   | ო               | Օ                                 | ա                              |
| par  | პ               | Վ                                 | ւ                              |
| žan  | ჟ               | Վ                                 | ყ                              |
| ran  | რ               | Ճ                                 | ճ                              |
| san  | ს               | Ը                                 | և                              |
| tar  | თ               | Ք                                 | զ                              |
| un   | უ               | Օ                                 | աղ                             |
| par  | პ               | Փ                                 | պ                              |
| kan  | კ               | Ւ                                 | փ                              |
| ğan  | ღ               | Ո                                 | ն                              |
| qar  | ყ               | Վ                                 | դ                              |
| šan  | შ               | Գ                                 | ց                              |
| čin  | ჩ               | Ւ                                 | ի                              |
| can  | ც               | Ը                                 | լ                              |
| dzil | ძ               | Ժ                                 | ժ                              |
| çil  | ڇ               | Ք                                 | մ                              |
| čar  | ڇ               | Ծ                                 | ց                              |
| xan  | ხ               | Է                                 | լ                              |
| džan | ڇ               | Ք                                 | չ                              |
| ha   | հ               | Ե                                 | ա                              |
| qar  | զ               | Ւ                                 | պ                              |
| hē   | ڇ               | Ւ                                 | ի                              |
| ho   | ڦ               | Ժ                                 | —                              |
| jo   | Ջ               | Ծ                                 | յ                              |
| wi   | ڇ               | Վ                                 | դ                              |

### 3 Examples

#### 3.1 Յշեն Ծյառսան – The Knight in the Tiger’s Skin

The following example are two stanzas from Šota Rustaveli’s *Vep̄xis T̄qaosani* “The Knight in the Tiger’s Skin”.<sup>11</sup>

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<sup>11</sup>This example you can find slightly changed in the example file `vepxis.tex`.

# 303ებს ტყაოსნი

## შოთა რუსთაველი

ღმერთსა შემვედრე, წუთუ კვლა დამხსნას სოფლისა შრომასა,  
ცეცხლს, წყალსა და მიწასა, ჰერთა თანა შრომასა;  
მომცნეს ფრთენ და აღვთრინდე, მივჰევდე მას ჩემსა ნდომასა,  
დღისით და ღამით ვჰედვიდე მზისა ელვათა კრთომასა.

მზე უშენოდ ვერ იქმდების, რათგან შენ ხარ მასა წილი,  
განაღამდა მას ეახელ მისი ეტლი, არ თუ წბილი!  
მუნა გნახო, მადვე ესახო, განმინათლო გული ჩიდილი,  
თუ სიცოცხლე მწარე მქონდა, სიკვდილიმდა მქონდა ტკბილი!

This was set with the following:

```
\documentclass[12pt]{article}
\usepackage{mxedruli}
\begin{document}
\begin{center}
{\Large\mxedc ve.pxis .tqaosani}

\medskip
{\large\mxedc +sota rustaveli}
\end{center}

\bigskip

\begin{verse}
\begin{mxedr}
.gmertsa +semvedre, nutu .kvla damxsnas soplisa
+srromasa, \\
cecxls, .cqals da mi.casa, haerta tana +srromasa; \\
momcnes prteni da a.gvprinde, mivhxvde mas +cemsa
ndomasa, \\
d.gisit da .gamit vhxedvide mzisa elvata .krtomasa.

\medskip
```

```

mze u+senod ver ikmdebis, ratgan +sen xar masa .cili,\\
gana.gamca mas eaxel misi e.tli, ar tu .cbili!\\
munaxo, madve gsaxo, ganminatlo guli +crdili,\\
tu sicocxle m.care mkonda, si.kvdilimca mkonda t.kbili!
\end{mxedr}
\end{verse}
\end{document}

```

### 3.2 Another example with different font sizes

The second sample text is due to the lack of some proper text<sup>12</sup> when I prepared this file just taken from the preface of a small Georgian-German dictionary, but it should give another impression how this font – using different sizes and the “capitals”– looks like as well:

## ქართულ-გერმანული ლექსიკონი

შედგენილი:

ო. ხუციშვილის და

თ. ხატიაშვილის მიერ

გამოშევსას „განათლებას“  
თბილისი – 1977

წინამდებარე ქართულ-გერმანულ ლექსიკონში შერჩეულია ქართული ენის ლექსიკიდან სიტყვები, რომლებიც ყველაზე მეტად იხმარება სალაპარაკო ენაში, აგრეთვე მხატვრულ, პოლიტიკურ, მეცნიერულ და სასწავლო ლიტერატურაში. განმარტებულია სიტყვის ყველა ძირითადი მნიშვნელობა და ილუსტრირებულია ნიმუშებით. ვცდილობდით, სათანადო ფრაზეოლოგიზმების მოშველებით განვემარტა სიტყვის ნიუანსობრივი გავებანიც.

The input was:

---

<sup>12</sup>If you would send me a sample text, you prepared with these fonts to be included in this documentation, I would be most grateful.

```

\documentclass[12pt]{article}
\usepackage{mxedruli}
\begin{document}
\begin{center}
{\LARGE\mxedc kartul--germanuli
leksi.koni}

\medskip
\mxedi +sedgenili: \\
{\large\mxedb o. xuci+svilis da \\
t. xa.tia+svilis mier}

\bigskip
\bigskip
{\large\mxedc gamomcemloba ,,ganatleba'' \\
tbilisi ---} 1977
\end{center}

\bigskip \mxedr
.cinamdebare kartul--germanul leksi.kon+si
+ser+ceulia kartuli enis lek\ -si.ki\ -dan si.tqvebi,
romlebic qvelize me.tad ixmareba sala.para.ko eni+si,
abretve mxa.tvrul, .politi.kur, mecnierul da sas.cavlo
li.tera.turi+si. ganmar.tbulia si.tqvis qvela jiritadi
mni+svneloba da ilus.trarebulia nimu\ -+se\ -bit.
vcdilobdit, satanado prazeologizsegis mo+svelibit
gang\ -ve\ -mar\ -.ta si.tqvis niuansobrivi gagebanic.
\end{document}

```

### 3.3 An example using *Xucuri*

The following example is taken from *N. Marr and M. Brière, La Langue Géorgienne, Paris 1931*, p. 595:

საქართველოს მთავრის დაქუცხი.

¶

1. — ევნე უსაყ ფანერთს ყოველს ყოდნებს ზოგადის გადასახლებისას.  
შეიძლება ზეპირ მატერიალის ცხოვნის გადასახლებისას ზოგადის გადასახლებისას.

ԳԿԾՊԵ ԿԱԺԱՎԵԸՆՊԻԹ ՑՇ ԿՐՎԱԾՊԵ:

2. – ԵՇԾԵ ՀՃԵ ՃԱՒՄԵՆ ԿՌԵ ՆՑԻԾ. ԽՊԱՎՊՊԻ ՊԵՎԿԻՆՑՓԵ? ՃՇԵ-  
ՃՎՓՈՎ ԳԿԷՐՆԵՎ ԳԵՎՏԵԿԱՎԵԾԻՆ ՒՆԵՆ ՇՈՒՋԱԼԵՎԻԾԵՆՎ ՑՇ ԽԱՄՊԵՆՎ  
ՓԵԿՎԱՎԵՆԵ-ԾՈՒԾՑ ՒՆԵԾ.

3. – ԳԿՎԵԺԵԾ ՊԵՖԵ ՊԵՎ ՊԵՎԱԾՊԵ ԽՊՊԱԾ. ՑԱԽԺՔԱՎԲԾՑ ՑՇ  
ՅԱՒՄԵՆ ԿԱԺԱՎԵԸՆՊԻԴ ՒՆԵՎԾԵՆ.

This was generated using the following input:

```
\documentclass[12pt]{article}
\usepackage{xucuri}

\begin{xucr}
\begin{center}
SAXAREBAI1 MATEES TAVISAI1.

B
\end{center}

{\rm 1.} --- XOLO IESOW KRIS.TEES +SUBASA BETLEMS
HOWRIAS.TANISASA. D.GETA HERODE MEPISATA. AHA
MOGOWNI A.GMOSAVALIT MOVIDES IEROWSALEEMD DA
I.TQODES:

{\rm 2.} --- SADA ARS ROMELI IGI I+SVA. MEOWPEE
HOWRIATAI1? RAI1RETOW VIXILET VARS.KOWLAVI MISI
A.GMOSAVALIT DA MOVEDIT TAVQOWANIS-CEMAD MISA.

{\rm 3.} --- VITARCA ESMA ESE HERODES
MEPESA. +SEJR.COWNDA DA +SOVELI IEROWSALEEMI
MISTANA.
\end{xucr}
```

The example which illustrates the *Xucuri* minuscules is again taken from *N. Marr and M. Brière, La Langue Géorgienne, Paris 1931*, p. 599:

ԽԵՂԻՄՊԱՎԵ ՊԱՎԿԵՋԻ ՄԵՎՊՐՈՒՆՎ.

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11. — ՃղմհՅԴ ՆԱԿԱԾԿ ՖԿ ՄՎԻԱՊՐ: ԼԿԱԾԿ ԿՐՈՒՅԴԴ ՊԵՐԲԻԴԻ ԱԽ ՄԻԴ.

12. — ՖԿ ԿԱԽԻՎԱՊՐ: ԱՊՋԻՄՊԴՊԼԺԿԻ ՃՐԱ ՃՐԵՇԽՆԿ ԱՎԻՆԵՐ: ՃՐԵՇԽԱ. ՃԱԺԴՊԸ ՃԴ ԻԽԱՅԴՊՄԱ ՃԱՍՊԸՊՄՆԵ ԲԿՐՈՐՈՒԾԿԺԿՎ ՖԱԿԱՅՊՄԱՆԿ. ՖԿ ԱԿԲԻՎԱՊԱ ՃՐԱ ԼԿԱԾԿ ԱՎԻԲԻԴՊՄԱ ԵՐԿԻ.

The input was

```
\begin{xucr}
\begin{center}\Large
saxareba11 lu.kails tavisail.

ie
\end{center}

{\rm 11.} --- merme i.tqoda da tkua: .kacsa visme escnes
or je.

{\rm 12.} --- da hrkua umr.cemesman man mamasa twssa:
mamao. momec me romeli mxudebis na.cilidam.kw drebela.
da ganuquo mat saxovrebeli igi.
\end{xucr}
```

## 4 Font coding

The following table shows the internal encoding of the defined letters of *Mxedruli* and *Xucuri*:

|      | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7  |
|------|---|---|---|---|---|---|---|----|
| '000 | ፩ | ፪ | ፫ | ፳ | ፲ | ፭ | ፮ | ፯  |
| '010 | ፻ | ፻ | ፻ | ፻ | ፻ | ፻ | ፻ | ፻  |
| '020 | ፻ | ፻ |   |   |   |   | - |    |
| '030 |   |   |   |   |   |   |   |    |
| '040 |   | ! |   |   |   |   | , |    |
| '050 | ( | ) |   | + | , | - | . | /  |
| '060 | ፦ | ፧ | ፨ | ፩ | ፪ | ፫ | ፬ | ፭  |
| '070 | ፧ | ፨ | : | ; |   | = |   | ?  |
| '100 |   |   |   |   |   |   |   |    |
| '110 |   |   |   |   |   |   |   |    |
| '120 |   |   |   |   |   |   |   |    |
| '130 |   |   |   | [ | \ | ] | ^ |    |
| '140 |   | ፻ | ፻ | ፻ | ፻ | ፻ | ፻ | ፻  |
| '150 | ፩ | ፪ | ፫ | ፫ | ፫ | ፫ | ፫ | ፫  |
| '160 | ፪ | ፪ | ፫ | ፫ | ፫ | ፫ | ፫ | ፫  |
| '170 | ፻ | ፻ | ፻ | - | - |   |   | .. |

|      | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|------|---|---|---|---|---|---|---|---|
| '000 | ፩ | ፪ | ፫ | ፳ | ፲ | ፭ | ፮ | ፯ |
| '010 | ፻ | ፻ | ፻ |   | ፻ | ፻ | ፻ |   |
| '020 | ፻ | ፻ | ፻ | ፻ | ፻ | ፻ | ፻ | ፻ |
| '030 | ፻ |   | ፻ |   | ፻ | ፻ | ፻ | ፻ |
| '040 |   | ! |   |   |   |   |   | , |
| '050 | ( | ) |   | + | , | - | . | / |
| '060 | ፦ | ፧ | ፨ | ፩ | ፪ | ፫ | ፬ | ፭ |
| '070 | ፧ | ፨ | : | ; |   | = |   | ? |
| '100 |   | ፩ | ፪ | ፫ | ፫ | ፫ | ፫ |   |
| '110 | ፩ | ፪ | ፫ | ፫ | ፫ | ፫ | ፫ | ፫ |
| '120 | ፩ | ፪ | ፫ | ፫ | ፫ | ፫ | ፫ | ፫ |
| '130 | ፩ |   | ፪ | [ | \ | ] |   |   |
| '140 |   | ፻ | ፪ | ፻ | ፫ | ፪ |   | ፪ |
| '150 | ፻ | ፪ | ፫ | ፫ | ፫ | ፫ | ፫ | ፫ |
| '160 | ፻ | ፪ | ፫ | ፫ | ፫ | ፫ | ፫ | ፫ |
| '170 | ፻ |   | ፪ | - | - |   |   |   |

## 5 Files

The package consists of the following files:

|                     |   |
|---------------------|---|
| README.txt          | A short information file.   |
| inputs/umxed.fd     | Font definition files for use with NFSS2.   |
| inputs/uxuc.fd      |   |
| inputs/mxedruli.sty | <b>L<small>A</small>T<small>E</small>X</b> Style File.  |
| inputs/xucuri.sty   |   |
| mf/mxed.mf          | The standard generation file for METAFONT.  |
| mf/mxed10.mf        | Driver file for normal <i>Mxedruli</i> . Run METAFONT on this file to generate <i>Mxedruli</i> for any other resolution than 300 dpi. |
| mf/mxedbf10.mf      | As before, but bold <i>Mxedruli</i> .   |
| mf/mxedi10.mf       | As before, but italics <i>Mxedruli</i> .  |
| mf/mxedc10.mf       | As before, but capital <i>Mxedruli</i> .  |
| mf/mxedacc.mf       | Accents for other Kartvelian languages (Svan).  |
| mf/mxedbase.mf      | METAFONT macros etc.  |
| mf/mxedcaps.mf      | “Capital” letters.  |
| mf/mxeddd.mf        | Digits (can be replaced by Computer Modern digits, cf. below).  |
| mf/mxedfont.mf      | Letters.  |
| mf/mxedp.mf         | Punctuation (can be replaced by Computer Modern punctuation, cf. below).  |
| mf/xuc.mf           | The standard generation file for METAFONT.  |
| mf/xuc10.mf         | Driver file for <i>Xucuri</i> . Run METAFONT on this file to generate <i>Xucuri</i> for any other resolution than 300 dpi.            |
| mf/xucbase.mf       | METAFONT macros etc.  |
| mf/xucfont.mf       | <i>Xucuri</i> majuscules.   |
| mf/xucd.mf          | Digits (can be replaced by Computer Modern digits, cf. below).  |
| mf/xucl.mf          | <i>Xucuri</i> minuscules.   |
| mf/xucp.mf          | Punctuation (can be replaced by Computer Modern punctuation, cf. below).  |
| afm/*.afm           | afm files for use with type1 fonts  |
| type1/*.pbf         | type1 vector fonts  |
| alphabets.tex       | An example showing both Xucuri and Mxedruli   |
| mxeddoc.ps          | This documentation.   |
| ossetic.tex         | A short example of Ossetic text, written in <i>Mxedruli</i> .   |
| vepxis.tex          | The first <i>Mxedruli</i> -example of this documentation.   |

To install the fonts etc., please copy all .mf-files from the mf-directory to the appropriate directory of your TEX-system. Further, the files from the inputs-directory must be copied into the directory where LATEX can find them.

## 5.1 Debian package

If you are on a Ubuntu platform (at least Ubuntu 10.04 or 12.04), you can install the necessary files (style-files and type1 fonts) via the debian package

```
sudo dpkg -i mxedruli-3.4.deb
```

## 6 Using METAFONT

If you are going to regenerate the fonts, there are two possibilities, using the Computer Modern digits and punctuation (which are far nicer) or the digits and punctuation provided in `mxedd.mf` and `mxedp.mf` or `xucp.mf` respectively.

In the first case you should use the following command in a UN\*X environment:<sup>13</sup>

```
mf '&cmmf \mode=your_mode;' input mxed10
```

Else you use plain METAFONT by:

```
mf '\mode=your_mode;' input mxed10
```

(Other sizes are generated by:

```
mf '&cmmf \mode=your_mode; mag=magstepn' input mxed10
```

or

```
mf '\mode=your_mode; mag=magstepn' input mxed10
```

respectively.) `your_mode` has to be replaced by the mode your printer requires, e.g. `localmode` or `laserjet`, `n` by a valid magstep (1, 2, 3, 4, 5 or half).

In either case `mf` must be followed by `gftopk` to generate the `.pk`-files. Please refer to the documentation of `gftopk` for further information on postprocessing METAFONT output.

---

<sup>13</sup>Do so analogously for `mxedb10`, `mxedi10`, `mxedc10` and `xuc10` respectively.

## 7 License

This Material is subject to the LaTeX Project Public License 1.3 (<http://ctan.org/license/lppl1.3>).

## 8 Changelog

- 6th April 2013: Version 3.4
  - there is now a debian package which installs type1 fonts, tfm, afm files as well as style files on Ubuntu 10.04, Ubuntu 12.04 platforms and probably (untested) other debian and derived platforms
- 18th January 2009: Version 3.3c
  - 10 years, and the only thing changed is the doc (reference to Unicode codes and some minor details)
- 1st September 1999: Version 3.3
  - Changed Fontcoding U to u
- 15th April 1997: Version 3.0
  - Added Xucuri characters (upper and lower case)
- 15th July 1996: Version 2.4
  - Added italics, minor corrections
- 20th May 1996: Version 2.3
  - Added new letter: Glottal Stop (reverse ‘q’)
- 5th March 1996: Version 2.2
  - Added two more letters: ‘qhar’ and ‘ee’
- 26th June 1995: Version 2.1
  - Minor corrections (not distributed via CTAN)
- 16th June 1995: Version 2.0
  - ‘Capital’ fonts included
    - Introduced some letters for Old Georgian and Ossetian resp.
  - The letter .+c is now at position oct(014), not at postion oct(171) where it used to be. This was necessary as a letter being transcribed by ”y” (oct(171)) was introduced.

- 8th August 1994: Version 1.0

Some Corrections on too mishaped letters. Introduced some letters for Old Georgian.

- September 1993:

First Release.