მხედრული — *Mxedruli,*
ჩოტოტა, ეფეფეფა — *Xucuri*
The Georgian Alphabets[*]

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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 (*Ḳutxovani*). 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 LaTeX or TeX-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[1]. Thank you very much!

[*] With improvements by Jan De Lameillieure, Berlin and Mark Leisher, Las Cruces, New Mexico

[1] Author's address: Johannes Heinecke, Humboldt-Universität zu Berlin, Philosophische Fakultät II, Institut für deutsche Sprache und Linguistik, Computerlinguistik, Jägerstr. 10/11, D-10099 Berlin, Germany. Or by e-mail: heinecke@compling.hu-berlin.de. I try to realize suggestions etc. as quick as possible. So please check my WWW-Homepage for the newest β-release: http://www.compling.hu-berlin.de/~johannes/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"[2] mode. Within a LaTeX-document they can be activated by `\mxedr` (normal), `\mxedb` (bold) `\mxedi` (italics) or `\mxedc` analogously to standard LaTeX font commands such as `\rm`, `\bf`, `\it` or `\sc` respectively. Therefore the `mxedruli.sty` stylefile must be loaded for standard font selection and NFSS2.[3]. 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 LaTeX the font size commands have also effect on the *Mxedruli* letters. Finally, in the last column, the required LaTeX or TeX-input to produce the *Mxedruli* letter is shown.

(As I designed some new letters I had to reposition the ' ' (`.+c`) from its original position[4] *'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 TeX `\char`*nnn* or the LaTeX `\symbol{`*nnn*`}` 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 an umlaut ('¨'), a circonflex ('ˆ') and a macron ('¯') have been defined. They can be used as in normal LaTeX-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 ''.

[2] As there are no capital letters in *mxedruli* the letters are scaled to the same height for headlines etc.

[3] NFSS1 is supported too. Due to the lack of NFSS1 however, I could not test, whether the NFSS1 routines work satisfactorily.

[4] As coded in versions anterior to 2.1

2.1.1 Standard letters

Name	*Mxedruli*				Transcription	input
	normal	bold	italics	capital		
an	ა	ა	ა	Ა	a	`a`
ban	ბ	ბ	ბ	Ბ	b	`b`
or	ბ	ბ	ბ			`b1`
gan	გ	გ	გ	Გ	g	`g`
don	დ	დ	დ	Დ	d	`d`
en	ე	ე	ე	Ე	e	`e`
vin	ვ	ვ	ვ	Ვ	v	`v`
zen	ზ	ზ	ზ	Ზ	z	`z`
tan	თ	თ	თ	Თ	t	`t`
in	ი	ი	ი	Ი	i	`i`
ḳan	კ	კ	კ	Კ	ḳ	`.k`
las	ლ	ლ	ლ	Ლ	l	`l`
man	მ	მ	მ	მ	m	`m`
nar	ნ	ნ	ნ	Ნ	n	`n`
on	ო	ო	ო	Ო	o	`o`
ṗar	პ	პ	პ	Პ	ṗ	`.p`
žan	ჟ	ჟ	ჟ	Ჟ	ž	`+z`
ran	რ	რ	რ	Რ	r	`r`
san	ს	ს	ს	Ს	s	`s`
ṭar	ტ	ტ	ტ	Ტ	ṭ	`.t`
un	უ	უ	უ	Უ	u	`u`
par	ფ	ფ	ფ	Ფ	p	`p`
kan	ქ	ქ	ქ	Ქ	k	`k`
ġan	ღ	ღ	ღ	Ღ	ġ	`.g`
q̇ar	ყ	ყ	ყ	Ყ	q̇	`q`[5]
šan	შ	შ	შ	Შ	š	`+s`
čin	ჩ	ჩ	ჩ	Ჩ	č	`+c`
can	ც	ც	ც	Ც	c	`c`
dzil	ძ	ძ	ძ	ძ	j/dz	`j`
ċil	წ	წ	წ	Წ	ċ	`.c`
čar	ჭ	ჭ	ჭ	Ჭ	č	`.+c`
xan	ხ	ხ	ხ	Ხ	x	`x`
džan	ჯ	ჯ	ჯ	Ჯ	dž	`+j`
ha	ჰ	ჰ	ჰ	Ჰ	h	`h`

[5] Although the transcription of 'ყ' is *q̇* the TEX-input will remain '`q`' for the letter *q̇ar* as it appears with a far more frequent than *qar* ('ჴ') which is coded as '`q1`'.

2.1.2 Other letters

Name	*Mxedruli*				Transcription	TEX-input
	normal	bold	italics	capital		
qar	ჴ	ჴ	*ჴ*	Ⴣ	q	`q1`
hē	ჱ	ჱ	*ჱ*	Ⴡ	ē, eĭ	`e0`
ho	ჰ	ჰ	*ჰ*	Ⴐ	ō, oy	`o1`
jo	ჯ	ჯ	*ჯ*	Ⴉ	ĭ	`i1`
wi	ჳ	ჳ	*ჳ*	Ⴓ	w	`w`
schwa	ჲ	ჲ	*ჲ*	Ⴒ	ə, y	`y`
fi	ჶ	ჶ	*ჶ*	Ⴖ	f	`f`
	ჵ	ჵ	*ჵ*	Ⴕ	’	`a1`
	ჷ	ჷ	*ჷ*	Ⴗ	æ	`e1`

2.1.3 Digits

Mxedruli			input
normal	bold	capital	
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`1`
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`2`
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`3`
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`4`
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`5`

Mxedruli			input
normal	bold	capital	
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`6`
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`7`
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`8`
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`9`
ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	ᲛᲐᲨᲘᲜ	`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 (*Mrgvlovani and Ḳutxovani*). These fonts do not have any diacritics. Further, for the time being, it only consists of the normal series.[6]

Within a LaTeX-document they can be activated by `\xucr`. If used within a LaTeX-document together with the style file provided (`xucuri.sty`) the LaTeX size commands will also work. (LaTeX 2_ε is supported together with NFSS2, as is LaTeX2.09)

[6] 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.

2.2.1 Letters

Name	*Xucuri* majuscules *Mrg(v)lovani*	*Xucuri* minuscules *Ḳutxovani*	Transcription	TEX-input
an	Ⴠ	ⴀ	a	A, a
ban	Ⴡ	ⴁ	b	B, b
gan	Ⴢ	ⴂ	g	G, g
don	Ⴣ	ⴃ	d	D, d
en	Ⴤ	ⴄ	e	E, e
vin	Ⴥ	ⴅ	v	V, v
zen	Ⴆ	ⴆ	z	Z, z
tan	Ⴇ	ⴇ	t	T, t
in	Ⴈ	ⴈ	i	I, i
ḳan	Ⴉ	ⴉ	ḳ	.K, .k
las	Ⴊ	ⴊ	l	L, l
man	Ⴋ	ⴋ	m	M, m
nar	Ⴌ	ⴌ	n	N, n
on	Ⴍ	ⴍ	o	O, o
ṗar	Ⴎ	ⴎ	ṗ	.P, .p
žan	Ⴏ	ⴏ	ž	+Z, +z
ran	Ⴐ	ⴐ	r	R, r
san	Ⴑ	ⴑ	s	S, s
ṭar	Ⴒ	ⴒ	ṭ	.T, .t
un	Ⴓ	ⴓ	u	U, u
par	Ⴔ	ⴔ	p	P, p
kan	Ⴕ	ⴕ	k	K, k
ġan	Ⴖ	ⴖ	ġ	.G, .g
q̇ar	Ⴗ	ⴗ	q̇	Q, q[7]
šan	Ⴘ	ⴘ	š	+S, +s
čin	Ⴙ	ⴙ	č	+C, +c
can	Ⴚ	ⴚ	c	C, c
dzil	Ⴛ	ⴛ	j/dz	J, j
ċil	Ⴜ	ⴜ	ċ	.C, .c
čar	Ⴝ	ⴝ	č̇	.+C, .+c
xan	Ⴞ	ⴞ	x	X, x
džan	Ⴟ	ⴟ	dž	+J, +j
ha	Ⴠ	ⴠ	h	H, h

[7] Although the transcription of 'Ⴗ' and 'ⴗ' is *Q̇* and *q̇* respectively, the TEX-input will remain 'Q' and 'q' for the letter *q̇ar* as it appears with a far more frequent than *qar* ('Ⴗ', 'ⴗ') which is coded as 'Q1' and 'q1'.

Name	*Xucuri* majuscules *Mrg(v)lovani*	*Xucuri* minuscules *Ḳutxovani*	Transcription	TEX-input
qar	Ⴕ	ⴕ	q	`Q1`, `q1`
hē	Ⴔ	ⴔ	ē, eĭ	`E0`, `e0`
ho	Ⴕ	—[8]	ō, oy	`O1`
jo	Ⴖ	ⴖ	ĭ	`I1`, `i1`
wi	Ⴗ	ⴗ	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.

	Mxedruli	*Xucuri* majuscules *Mrg(v)lovani*	*Xucuri* minuscules *Ḳutxovani*
an	ა	Ⴀ	ⴀ
ban	ბ	Ⴁ	ⴁ
gan	გ	Ⴂ	ⴂ
don	დ	Ⴃ	ⴃ
en	ე	Ⴄ	ⴄ
vin	ვ	Ⴅ	ⴅ
zen	ზ	Ⴆ	ⴆ
tan	თ	Ⴇ	ⴇ
in	ი	Ⴈ	ⴈ
ḳan	კ	Ⴉ	ⴉ
las	ლ	Ⴊ	ⴊ
man	მ	Ⴋ	ⴋ
nar	ნ	Ⴌ	ⴌ

[8] The letter *ho* does only have a majuscule form.

	Mxedruli	*Xucuri*	
		majuscules *Mrg(v)lovani*	minuscules *Ḳutxovani*
on	ო	Ⴓ	ա
ṗar	პ	Ⴑ	ա
žan	ჟ	Ⴒ	պ
ran	რ	Ⴓ	ա
san	ს	Ⴑ	ա
ṭar	ტ	Ⴒ	ը
un	უ	Ⴓ	ապ
par	ფ	Ⴓ	ա
kan	ქ	Ⴓ	փ
ġan	ღ	Ⴓ	ո
q̇ar	ყ	Ⴒ	գ
šan	შ	Ⴓ	ց
čin	ჩ	Ⴓ	ի
can	ც	Ⴓ	ը
dzil	ძ	Ⴓ	ա
c̣il	წ	Ⴓ	ա
č̣ar	ჭ	Ⴓ	ղ
xan	ხ	Ⴓ	ը
džan	ჯ	Ⴓ	ջ
ha	ჰ	Ⴓ	ա
qar	ჴ	Ⴒ	կ
hē	ჱ	Ⴓ	ի
ho	ჵ	Ⴓ	–
jo	ჲ	Ⴓ	յ
wi	ჳ	Ⴒ	վ

3 Examples

3.1 ვეპხის ტყაოსანი – The Knight in the Tiger's Skin

The following example are two stanzas from *Šota Rustaveli*'s *Veṗxis Ṭq̇aosani* "The Knight in the Tiger's Skin".[9]

[9]This example you can find slightly changed in the example file `vepxis.tex`.

ვეპხის ტყაოსანი

შოთა რუსთაველი

ღმერთსი შემვედრე, ნუთუ კვლა დამხსნას სოფლისა შრომასა,
ცეცხლს, წყალსა და მიწასა, ჰაერთა თანა მრომასა;
მომცნეს ფრთენი და აღვფრინდე, მივჰხვდე მას ჩემსა ნდომასა,
დღისით და ღამით ვჰხედვიდე მზისა ელვათა კრთომასა.

მზე უშენოდ ვერ იქმდების, რათგან შენ ხარ მასა წილი,
განალამცა მას ეახელ მისი ეტლი, არ თუ წბილი!
მუნა გნახო, მადვე გსახო, ბანმინათლო ბული ჩრდილი,
თუ სიცოცხლე მწარე მქონდა, სოკვდილიმცა 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}
.gmertsi +semvedre, nutu .kvla damxsnas soplisa
      +sromasa,\\
cecxls, .cqalsa da mi.casa, haerta tana mromasa;\\
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!\\
muna gnaxo, madve gsaxo, banminatlo buli +crdili,\\
tu sicocxle m.care mkonda, so.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[10] 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

გამომცემლობა „განათლება"
თბილისი — 1977

წინამდებარე ქართულ–გერმანულ ლექსიკონში შერჩეულია ქართული ენის ლექსიკიდან სიტყვები, რომლებიც ყველიზე მეტად იხმარება სალაპარაკო ენაში, აბრეთვე მხატვრულ, პოლიტიკურ, მეცნიერულ და სასწავლო ლიტერატურაში. განმარტებულია სიტყვის ყველა ძირითადი მნიშვნელობა და ილუსტრარებულია ნიმუშებით. ვცდილობდით, სათანადო ფრაზეოლოგიზმების მოშველიბით განგვემარტა სიტყვის ნიუანსობრივი გაგებანიც.

The input was:

[10] 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
{\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, .poli.ti.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:

ᒐᑕᕝᑕᓱᒥᓴᑕᕝᑐ ᕐᑕᑕᒥᒥᒐ ᑕᑕᕝᒥᒐᑕᕝᑐ.

ᓴ

1. – ᕝᓇᕝᓇ ᒉᒥᒐᓇᔪ ᔪᓱᒉᒐᕝᒥᒥᒐ ᔪᓇᓴᑕᒐᑕ ᓴᒥᑕᕝᒥᕝᕐᒐ ᒐᓇᔪᓱᒉᑕᒐᕝᕝᒥᒐᑕᒐᑕ. ᕝᑐᒥᑕᑕ ᒐᒥᓱᓇᕝᑐᒥ ᕐᒥᕝᒥᒐᑕᑕᑕ. ᑕᒐᑕ ᕐᓇᕝᓇᔪᕝᒥᒉ ᑕᑎᕐᓇᒐᑕᕝᕝᑕᒐᒉᑕ ᕐᓇ-

ᲠᲐᲨᲢᲚ ᲐᲢᲐᲪᲛᲚᲔᲠᲔᲢᲘᲐᲨ ᲨᲠ ᲐᲔᲪᲘᲐᲨᲢᲚ:

2. – ᲚᲠᲨᲠ ᲠᲐᲚ ᲐᲘᲐᲠᲔᲚᲐ ᲐᲜᲐ ᲐᲑᲠᲠ. ᲐᲢᲘᲪᲛᲘᲢ ᲢᲘᲪᲛᲐᲠᲘᲠᲔᲠᲔᲡ? ᲐᲠᲔᲡ-ᲐᲢᲘᲪᲛᲘ ᲠᲐᲔᲠᲔᲢᲘᲠ ᲠᲠᲐᲚᲚᲘᲪᲠᲠᲔᲠᲔᲚᲘ ᲐᲚᲔᲚ ᲠᲘᲐᲘᲚᲔᲠᲠᲔᲠᲔᲚᲘ ᲨᲠ ᲐᲘᲠᲢᲨᲔᲚᲘ ᲘᲠᲠᲪᲘᲪᲠᲔᲚᲔᲚ-ᲘᲢᲐᲠᲨᲘ ᲐᲚᲔᲚ.

3. – ᲠᲐᲘᲠᲠᲐᲘᲠ ᲢᲚᲐᲠ ᲢᲚᲢ ᲢᲢᲐᲘᲠᲨᲢᲚ ᲐᲢᲘᲢᲢᲚᲠ. ᲑᲢᲐᲐᲔᲘᲪᲠᲠ ᲨᲠ ᲑᲘᲠᲢᲔᲚ ᲐᲢᲐᲘᲪᲛᲚᲔᲠᲔᲢᲘᲐᲚ ᲐᲚᲔᲘᲠᲠᲔᲠ.

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:

სოდომიფლა ოფიცა თლოსა.

ᲣᲠ

11. – *ᲛᲔᲠᲛᲔᲠ ᲘᲪᲘᲗᲝᲓᲐ ᲓᲐ ᲗᲙᲣᲐ: ᲙᲐᲪᲡᲐ ᲕᲘᲡᲛᲔ ᲔᲡᲜᲔᲡ ᲐᲠ ᲔᲠ.*

12. – *ᲓᲐ ᲗᲙᲣᲐ ᲛᲔᲛᲐᲡᲐ ᲛᲐᲛᲐᲝ. ᲛᲐᲛᲐᲝ ᲛᲔᲛᲔᲠᲛᲔ ᲛᲔᲠᲝᲚᲘ ᲛᲔᲠᲘᲚᲘ ᲛᲔᲠᲘᲚᲘᲡᲐ. ᲓᲐ ᲒᲐᲜᲘᲥᲕᲘ ᲛᲐᲗ ᲡᲐᲪᲮᲝᲕᲠᲔᲑᲔᲚᲘ ᲘᲒᲘ.*

The input was

```
  \begin{xucr}
  \begin{center}\Large
  saxarebai1 lu.kai1s tavisai1.

  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 drebelisa.
  da ganuqo mat sacxovrebeli 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								
'010								
'020								
'030								
'040		!						’
'050	(	)		+	,	-	.	/
'060	0	1	2	3	4	5	6	7
'070	8	9	:	;		=		?
'100								
'110								
'120								
'130				[	\	]	^	
'140								
'150								
'160								
'170				–	—			¨

	0	1	2	3	4	5	6	7
'000								
'010								
'020								
'030								
'040		!						’
'050	(	)		+	,	-	.	/
'060	0	1	2	3	4	5	6	7
'070	8	9	:	;		=		?
'100								
'110								
'120								
'130				[	\	]		
'140								
'150								
'160								
'170				–	—			

5 Files

The package consists of the following files:

`readme`	A very short information file.
`inputs/Umxed.fd`	Font definition files for use with NFSS2.
`inputs/Uxuc.fd`	
`inputs/mxedruli.sty`	LaTeX Style File.
`inputs/xucuri.sty`	
`mf/mxed.mf`	The standard generation file for METAFONT.
`mf/mxed10.mf`	Driver file for normal *Mxedruli*. Run METAFONT on this file to generate *Mxedruli* for any other resolution than 300 dpi.
`mf/mxedbf10.mf`	As before, but bold *Mxedruli*.
`mf/mxedi10.mf`	As before, but italics *Mxedruli*.
`mf/mxedc10.mf`	As before, but capital *Mxedruli*.
`mf/mxedacc.mf`	Accents for other Kartvelian languages (Svan).
`mf/mxedbase.mf`	METAFONT macros etc.
`mf/mxedcaps.mf`	"Capital" letters.
`mf/mxedd.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 *Xucuri*. Run METAFONT on this file to generate *Xucuri* for any other resolution than 300 dpi.
`mf/xucbase.mf`	METAFONT macros etc.
`mf/xucfont.mf`	*Xucuri* majuscules.
`mf/xucd.mf`	Digits (can be replaced by Computer Modern digits, cf. below).
`mf/xucl.mf`	*Xucuri* minuscules.
`mf/xucp.mf`	Punctuation (can be replaced by Computer Modern punctuation, cf. below).
`alphabets.tex`	An example showing both Xucuri and Mxedruli
`mxeddoc.ps`	This documentation.
`ossetic.tex`	A short example of Ossetic text, written in *Mxedruli*.
`vepxis.tex`	The first *Mxedruli*-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.

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:[11]

```
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.

[11] Do so analogously for `mxedbf10`, `mxedi10`, `mxedc10` and `xuc10` respectively.