

# IMPLEMENTATION NOTES AND MANIFEST

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## 1. INTRODUCTION

1.1. **Issues using `rtxmi` from the `txfonts` collection.** This font supplies all the non-alphabetic glyphs (ie, everything except A–Z and a–z) in the OML encoding, but, not using the same names as in `oml.etx`. To get around this, we must base fontinst constructions not on its `afm`, but instead, use what may be thought of as an anonymous metric file constructed from its `tfm` via

```
tftopl -charcode-format=octal rtxmi rtxmi
```

so that `rtxmi.pl` identifies slots only by octal codes, not names, and identifies the encoding as `FONTSPECIFIC`, which usually means “as specified in the header of `rtxmi.pfb`.”) By including in the fontinst driver script a line

```
\declareencoding{FONTSPECIFIC}{oml}
```

we force the slots in `rtxmi` to be interpreted using the names in `oml.etx` so that, at the end, we have no problems using `oml` as the encoding for composite fonts built from `rtxmi`.

The original version of `txfonts` made use of whatever Times font was installed in  $\TeX$  Live, and as a non-free font, it was not available for modification. In this updated version, we use instead the alphabetic glyphs from `TeXGyreTermes` or `LinLibertine`, each of which presents no licensing issues. This allows us to make optical sizes of the math italic and symbol fonts, with a boost to the appearance and readability of subscripts, sub-subscripts and superscripts. (Unfortunately the STIX math italic letters are much heavier than Times, by nearly 15% in stem thickness of uppercase letters, and do not make a good substitute.)

## 2. CONVERTING LIBERTINE

Making Libertine text italic and Greek glyphs into math italic and Greek glyphs requires some preparation. In a number of cases, we want to substitute (virtually) Greek glyphs from Libertine into a math italic (or *mia*) font. As the Greek glyphs are not encoded, we proceed as follows:

```
afm2tfm fxlri -T libertinealt.enc -v fxlri-alt rfxlri-alt
```

which creates `rfxlri-alt.tfm` and `fxlri-alt.vpl` containing the Greek glyphs in the order they should be for  $\TeX$ , and which outputs, for the map file, the line

```
rfxlri-alt LinLibertineI " LibertineAltEncoding ReEncodeFont " <libertinealt.enc
```

and then

```
tftopl rfxlri-alt rfxlri-alt
```

makes `rfxlri-alt.pl`, from which fontinst may construct `rfxlri-alt.mtx`. The other `-alt` versions were constructed in a similar manner.

There is a `tfm` in the  $\TeX$ Live distribution named `fxlri-8r.tfm` which provides the `fxlri` in 8r encoding, which of course includes all the Roman letters. To get an equivalent for 7pt and 5pt requires us to open the original `fxlri.pfb,afm` in FontForge and subject them to the two stages of thickening and extending described above. The result should be

```

fxlri-7letters.{pfb,afm}
fxlri-5letters.{pfb,afm}
fxlzi-7letters.{pfb,afm}
fxlzi-5letters.{pfb,afm}

```

from which we produce four corresponding tfm files using, eg,

```
afm2tfm fxlri-7letters
```

which must be referenced in the `ntx.map` file with four lines like

```
fxlri-7letters LinLibertineI7 <fxlri-7letters.pfb
```

The same fonts are now used with a different encoding to tease out Greek letters and some other unencoded glyphs like alternate versions of J, g, v and y. Note that these are not available in the semibold font—we have to resort to other tricks for that. First, run four commands similar to

```
afm2tfm fxlri-7letters -T libertinealt.enc -v fxlri-7alt
```

which produces `fxlri-7alt.tfm` (must be referenced in the map file) and `fxlri-7alt.vpl` which will be used only in the creation of the virtual font `nxlmi7.tfm,vf` by `fontinst`.

**2.1. Making bold J and bold v.** These glyphs are missing in `fxlzi.pfb`, the semibold Linux Libertine that matched bold TX better than bold Linux Libertine, which seems to be a quite different font, more like bold Palatino. So, we take the Jcircumflex glyph and remove the circumflex to make a J and take the `v.alt` glyph from `fxlri` and embolden it by 40em to make a bold version of the math italic v. From this next font `fxlzi-jv.pfb` with just two glyphs, we make a tfm with

```
afm2tfm fxlzi-jv
```

which makes `fxlzi-jv.tfm`, a reference to which we must add to a `.map` file with

```
fxlzi-jv fxlzi-Jv <fxlzi-jv.pfb
```

assuming of course that in the course of making your font, you had given the internal name also as `fxlzi-Jv`. Finally, we have to make versions that work as 7pt and 5pt fonts using the same methods as described above, resulting in `fxlzi-jz{5,7}.{pfb,afm,tfm}` for our later use. For each afm, make a tfm using lines like

```
afm2tfm fxlzi-jv
```

and then, for each `.tfm`, make a `.pl` with

```
tftopl fxlzi-jv fxlzi-jv
```

and so on.

### 3. FILES IN THE DISTRIBUTION

This list is current as of June 13, 2012. The following abbreviations are used in the remarks:

**FF** means FontForge;

**EW** means “thicken vertical stems by 8% and extend width by a further 7% using FontForge”;

**EW<sup>2</sup>** means “perform EW twice”.

**PostScript font files:**

Size	Date			File	Remarks
706160	May	19	13:58	fxlri-5letters.pfb	EW <sup>2</sup> applied to fxlri
700152	May	19	13:58	fxlri-7letters.pfb	EW applied to fxlri
718693	May	19	14:03	fxlzi-5letters.pfb	EW <sup>2</sup> applied to fxlzi
711100	May	19	14:01	fxlzi-7letters.pfb	EW applied to fxlri
7981	May	19	20:33	fxlzi-jv.pfb	alt letters J and v using FF from fxlzi
7993	May	19	20:57	fxlzi-jv5.pfb	alt letters J and v using FF from fxlzi5-letters
7988	May	19	20:58	fxlzi-jv7.pfb	alt letters J and v using FF from fxlzi7-letters
4520	Apr	30	17:46	ntxbexb.pfb	integrals for cmsy7, cmex10, FF-thickened
5904	May	6	15:49	ntxbexmods.pfb	derived from cmex10.pfb, braces FF-thickened
3969	Apr	30	17:46	ntxexb.pfb	derived from cmex10.pfb, braces FF-thickened
5540	May	6	15:53	ntxexmods.pfb	derived from cmex10.pfb, braces FF-thickened
13201	May	16	14:14	rntxbmi.pfb	Alphabetic glyphs from TeXGyreTermes-BI
13273	May	16	14:23	rntxbmi5.pfb	EW <sup>2</sup> applied to rntxbmi
13288	May	16	14:21	rntxbmi7.pfb	EW applied to rntxbmi
12935	May	16	11:20	rntxmi.pfb	Alphabetic glyphs from TeXGyreTermes
17791	May	16	14:13	rntxmi5.pfb	EW <sup>2</sup> applied to rntxmi
17726	May	16	14:11	rntxmi7.pfb	EW applied to rntxmi
16562	May	15	21:49	rtxbmi5.pfb	EW <sup>2</sup> applied to rtxbmi
16605	May	15	21:51	rtxbmi7.pfb	EW applied to rtxbmi
20920	May	15	21:47	rtxmi5.pfb	EW <sup>2</sup> applied to rtxmi
21083	May	15	21:44	rtxmi7.pfb	EW applied to rtxmi
28831	May	15	17:43	txbsy5.pfb	EW <sup>2</sup> applied to txbsy
28622	May	15	10:58	txbsy7.pfb	EW applied to txbsy
29142	May	15	17:42	txsy5.pfb	EW <sup>2</sup> applied to txsy
29124	May	14	18:33	txsy7.pfb	EW applied to txsy

**Font metric files:**

Size	Date			File	Remarks
1064	May	20	13:21	fxlri-5alt.tfm	from fxlri-5letters with libertinealt.enc
2088	May	20	12:56	fxlri-5letters.tfm	from fxlri-5letters with 8r.enc
1072	May	20	13:15	fxlri-7alt.tfm	from fxlri-7letters with libertinealt.enc
2080	May	20	13:55	fxlri-7letters.tfm	from fxlri-7letters with 8r.enc
1064	May	20	13:21	fxlzi-5alt.tfm	from fxlzi-5letters with libertinealt.enc
2048	May	20	12:56	fxlzi-5letters.tfm	from fxlzi-5letters with 8r.enc
1052	May	20	13:21	fxlzi-7alt.tfm	from fxlzi-7letters with libertinealt.enc
2092	May	20	12:56	fxlzi-7letters.tfm	from fxlri-7letters with 8r.enc
344	May	19	20:41	fxlzi-jv.tfm	from fxlri-jv.pfb with J.alt, v.alt
344	May	19	21:01	fxlzi-jv5.tfm	from fxlri-jv5.pfb with J.alt, v.alt
344	May	19	21:00	fxlzi-jv7.tfm	from fxlri-jv7.pfb with J.alt, v.alt
1168	May	18	14:00	ntxbex.tfm	from ntxbex.pfb with metric changes
984	May	18	14:00	ntxbex.vf	ditto
728	Apr	30	17:31	ntxbexa.tfm	from txbexa.pfb with metric changes
668	Apr	30	17:31	ntxbexa.vf	ditto
512	May	1	21:16	ntxbexb.tfm	from ntxbexb.pfb
816	May	6	16:13	ntxbexmods.tfm	from ntxbexmods.pfb
1192	May	19	23:12	ntxbexv.tfm	from txbex, braces from ntxbexmods
1020	May	19	23:12	ntxbexv.vf	ditto
2184	May	17	13:23	ntxbmi.tfm	from txbmi with metric changes
1640	May	17	13:23	ntxbmi.vf	ditto

2188	May	17	13:21	ntxbmi1.tfm	from rtxbmi, rntxbmi with metric changes
1636	May	17	13:21	ntxbmi1.vf	ditto
2244	May	19	13:07	ntxbmi15.tfm	from rtxbmi5, rntxbmi5 with metric changes
2276	May	19	13:07	ntxbmi15.vf	
2232	May	19	13:07	ntxbmi17.tfm	from rtxbmi7, rntxbmi7 with metric changes
2160	May	19	13:07	ntxbmi17.vf	
2228	May	18	21:06	ntxbmi5.tfm	from rtxbmi5, rntxbmi5 with metric changes
2272	May	18	21:06	ntxbmi5.vf	
2220	May	19	17:17	ntxbmi7.tfm	from rtxbmi7, rntxbmi7 with metric changes
2156	May	19	17:17	ntxbmi7.vf	
2424	May	4	10:07	ntxbmia.tfm	from txbmia, txb, ntxbexb, rtxbmio, txbsyc, zxxbl7z
1308	May	4	10:07	ntxbmia.vf	
1596	Apr	30	17:31	ntxbsy.tfm	from txbsy with metric changes
1020	Apr	30	17:31	ntxbsy.vf	
1512	May	18	16:11	ntxbsy5.tfm	from txbsy5 with metric changes
1568	May	18	16:11	ntxbsy5.vf	
1520	May	18	16:47	ntxbsy7.tfm	from txbsy7 with metric changes
1448	May	18	16:47	ntxbsy7.vf	
1000	Apr	30	17:31	ntxbsya.tfm	from txbsya with metric changes
1020	Apr	30	17:31	ntxbsya.vf	
1008	Apr	30	17:31	ntxbsyb.tfm	from txbsyb with metric changes
868	Apr	30	17:31	ntxbsyb.vf	
1100	Apr	30	17:31	ntxbsyc.tfm	from txbsyc with metric changes
1436	Apr	30	17:31	ntxbsyc.vf	
1160	May	18	14:00	ntxex.tfm	from txex with metric changes
984	May	18	14:00	ntxex.vf	
708	Apr	30	17:31	ntxexa.tfm	from txexa with metric changes
664	Apr	30	17:31	ntxexa.vf	
176	May	1	21:16	ntxexb.tfm	from ntxexb.pfb
800	May	6	16:13	ntxexmods.tfm	from ntxexmods.pfb
1172	May	19	23:12	ntxexv.tfm	from txex, braces from ntxexmods
1016	May	19	23:12	ntxexv.vf	
2172	May	17	13:23	ntxmi.tfm	from txmi with metric changes
1640	May	17	13:23	ntxmi.vf	
2184	May	17	13:21	ntxmi1.tfm	from rtxmi, rntxmi with metric changes
1640	May	17	13:21	ntxmi1.vf	
2236	May	19	13:06	ntxmi15.tfm	from rtxmi5, rntxmi5 with metric changes
2276	May	19	13:06	ntxmi15.vf	
2216	May	19	13:06	ntxmi17.tfm	from rtxmi7, rntxmi7 with metric changes
2160	May	19	13:06	ntxmi17.vf	
2220	May	18	21:06	ntxmi5.tfm	from rtxmi5, rntxmi5 with metric changes
2272	May	18	21:06	ntxmi5.vf	
2200	May	19	17:17	ntxmi7.tfm	from rtxmi7, rntxmi7 with metric changes
2156	May	19	17:17	ntxmi7.vf	
2380	May	3	22:27	ntxmia.tfm	from txmia, txr, ntxexb, rtxmio, txsyc, zxxrl7z
1304	May	3	22:27	ntxmia.vf	
1556	Apr	30	17:31	ntxsy.tfm	from txsy with metric changes
1068	Apr	30	17:31	ntxsy.vf	
1528	May	18	16:12	ntxsy5.tfm	from txsy5 with metric changes
1620	May	18	16:12	ntxsy5.vf	
1504	May	18	16:47	ntxsy7.tfm	from txsy7 with metric changes
1484	May	18	16:47	ntxsy7.vf	
984	Apr	30	17:31	ntxsya.tfm	from txsya with metric changes
1020	Apr	30	17:31	ntxsya.vf	

996	Apr	30	17:31	ntxsyb.tfm	from txsyb with metric changes
864	Apr	30	17:31	ntxsyb.vf	
1088	Apr	30	17:31	ntxsyc.tfm	from txsyc with metric changes
1436	Apr	30	17:31	ntxsyc.vf	
2876	May	20	14:47	nxmlbmi.tfm	from txbmi, fxlzi-8r, fxlzi-jv, rfxlzi-alt
1800	May	20	14:47	nxmlbmi.vf	
2048	May	20	14:47	nxmlbmi5.tfm	from rtxbmi5, fxlzi-5letters, fxlzi-jv5, fxlzi-5alt
2448	May	20	14:47	nxmlbmi5.vf	
2036	May	20	14:47	nxmlbmi7.tfm	from rtxbmi7, fxlzi-7letters, fxlzi-jv7, fxlzi-7alt
2304	May	20	14:47	nxmlbmi7.vf	
2480	May	23	14:16	nxmlbmia.tfm	from txbmia, txb, ntxbexb, rtxbmio, rfxlz-alt, zxxbl7z
1420	May	23	14:16	nxmlbmia.vf	
2852	May	20	14:47	nxmlmi.tfm	from txmi, fxlri-8r (Roman), rfxlri-alt (Greek)
1792	May	20	14:47	nxmlmi.vf	
2008	May	20	14:47	nxmlmi5.tfm	from rtxmi5, fxlri-5letters (Roman), rfxlri-5alt (Greek)
2296	May	20	14:47	nxmlmi5.vf	
2020	May	20	14:47	nxmlmi7.tfm	from rtxmi7, fxlri-7letters (Roman), rfxlri-7alt (Greek)
2296	May	20	14:47	nxmlmi7.vf	
2400	May	23	14:16	nxmlmia.tfm	from txmia, txr, ntxexb, rtxmio, rfxlr-alt, zxxrl7z
1416	May	23	14:16	nxmlmia.vf	
884	May	22	20:58	rfxlr-alt.tfm	from fxlri with libertinealt.enc
1072	May	5	10:32	rfxlri-alt.tfm	from fxlri with libertinealt.enc
916	May	22	21:22	rfxlz-alt.tfm	from fxlz with libertinealt.enc
1052	May	19	17:30	rfxlzi-alt.tfm	from fxlzi with libertinealt.enc
592	May	17	13:45	rntxbmi.tfm	from rntxbmi.pfb (Times BI)
760	May	17	13:46	rntxbmi5.tfm	from rntxbmi5.pfb
740	May	17	13:46	rntxbmi7.tfm	from rntxbmi7.pfb
600	May	16	14:49	rntxmi.tfm	from rntxmi (Times Italic)
772	May	17	13:46	rntxmi5.tfm	from rntxmi5.pfb
764	May	17	13:47	rntxmi7.tfm	from rntxmi7.pfb
1112	May	17	13:48	rtxbmi5.tfm	from rtxbmi5.pfb
1100	May	17	13:48	rtxbmi7.tfm	from rtxbmi7.pfb
992	Apr	22	20:44	rtxbmio.tfm	unslanted rtxbmi
1116	May	17	13:48	rtxmi5.tfm	from rtxmi5.pfb
1100	May	17	13:48	rtxmi7.tfm	from rtxmi7.pfb
992	Apr	22	20:41	rtxmio.tfm	unslanted rtxmi
1156	May	18	16:02	txbsy5.tfm	from txbsy5.pfb
1160	May	18	15:52	txbsy7.tfm	from txbsy7.pfb
1172	May	18	16:03	txsy5.tfm	from txsy5.pfb
1156	May	18	15:52	txsy7.tfm	from txsy7.pfb
6812	Apr	22	15:16	t1xbij.tfm	items below (suffix j) from tx with osf
2152	Apr	22	15:16	t1xbij.vf	
6892	Apr	22	15:18	t1xbj.tfm	
2176	Apr	22	15:18	t1xbj.vf	
7136	Apr	22	15:13	t1xbslj.tfm	
2184	Apr	22	15:13	t1xbslj.vf	
6956	Apr	22	15:17	t1xij.tfm	
2148	Apr	22	15:17	t1xij.vf	
6716	Apr	22	13:56	t1xrj.tfm	
2168	Apr	22	13:56	t1xrj.vf	
6928	Apr	22	15:14	t1xslj.tfm	
2184	Apr	22	15:14	t1xslj.vf	
2524	Apr	22	15:16	txbij.tfm	
936	Apr	22	15:16	txbij.vf	

2452	Apr	22	15:18	txbj.tfm
932	Apr	22	15:18	txbj.vf
2680	Apr	22	15:14	txbslj.tfm
940	Apr	22	15:14	txbslj.vf
2584	Apr	22	15:17	txij.tfm
936	Apr	22	15:17	txij.vf
2408	Apr	22	13:55	txrj.tfm
932	Apr	22	13:55	txrj.vf
2636	Apr	22	15:14	txslj.tfm
936	Apr	22	15:14	txslj.vf
4428	Apr	22	15:16	tyxbij.tfm
1744	Apr	22	15:16	tyxbij.vf
4520	Apr	22	15:18	tyxbj.tfm
1740	Apr	22	15:18	tyxbj.vf
4724	Apr	22	15:13	tyxbslj.tfm
1748	Apr	22	15:13	tyxbslj.vf
4424	Apr	22	15:17	tyxij.tfm
744	Apr	22	15:17	tyxij.vf
4332	Apr	22	13:56	tyxrj.tfm
11740	Apr	22	13:56	tyxrj.vf
4536	Apr	22	15:15	tyxslj.tfm
1744	Apr	22	15:15	tyxslj.vf

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#### Miscellaneous, other than documentation:

Size	Date		File	Remarks	
2533	May	22	19:16	libertinealt.enc	special encoding for libertine alt and Greek
1467	Apr	30	17:30	lylntxr.fd	font definitions for LY1 encoded newtx text
1520	Apr	30	17:30	lylntxss.fd	font definitions for LY1 encoded newtx sans
1516	Apr	30	17:30	lylntxtt.fd	font definitions for LY1 encoded newtx typewriter
56340	May	23	16:44	newtxmath.sty	
3264	May	23	16:48	newtxtext.sty	
1914	May	23	10:09	ntx.map	map file that must be enabled
1287	May	19	13:13	omlntxmi.fd	font definitions for newtxmath letters
917	May	19	22:21	omlnxlmf.fd	font definitions for newtxmath libertine letters
765	May	18	16:10	omsntxsf.fd	font definitions for newtxmath symbols
561	Apr	30	19:42	omxntxex.fd	font definitions for newtxmath largesymbols
572	Apr	30	19:42	omxntxexv.fd	font definitions for newtxmath largesymbols variant
1478	Apr	30	17:30	otlntxr.fd	font definitions for OT1 encoded newtx text
1523	Apr	30	17:30	otlntxss.fd	font definitions for OT1 encoded newtx sans
1494	Apr	30	17:30	otlntxtt.fd	font definitions for OT1 encoded newtx typewriter
1449	Apr	30	17:30	tlntxr.fd	font definitions for T1 encoded newtx text
1504	Apr	30	17:30	tlntxss.fd	font definitions for T1 encoded newtx sans
1500	Apr	30	17:30	tlntxtt.fd	font definitions for T1 encoded newtx typewriter
1460	Apr	30	17:30	tslntxr.fd	font definitions for TS1 encoded newtx text
1504	Apr	30	17:30	tslntxss.fd	font definitions for TS1 encoded newtx sans
1483	Apr	30	17:30	tslntxtt.fd	font definitions for TS1 encoded newtx typewriter
558	Apr	22	15:55	untxexa.fd	font definitions for newtxmath largesymbolsA
957	May	22	22:15	untxmia.fd	font definitions for newtxmath lettersA
558	Apr	30	17:30	untxsya.fd	font definitions for newtxmath AMSa
558	Apr	30	17:30	untxsyb.fd	font definitions for newtxmath AMSb

558	Apr	30	17:30	untxsysc.fd	font definitions for newtxmath symbolsC
1460	Apr	30	17:30	untxtt.fd	font definitions for newtx typewriter
1421	Apr	22	15:36	ly1ntxrj.fd	font definitions for LY1 newtx, osf
1432	Apr	22	15:37	ot1ntxrj.fd	font definitions for OT1 newtx, osf
1404	Apr	22	15:35	t1ntxrj.fd	font definitions for T1 newtx, osf
1487	Apr	22	12:57	ts1ntxrj.fd	font definitions for TS1 newtx, osf

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#### 4. SOURCES FOR SOME FILES IN THE DISTRIBUTION

For every line in the table below, there is also a bold version-eg, **rntxbmi.sfd**.

Source	Output	Method
TeXGyreTermes	rntxmi.sfd	FF to copy A--Z, a--z
rntxmi.sfd	rntxmi.{pfb,afm}	Generated by FF
rntxmi.afm	rntxmi.tfm	afm2tfm rntxmi rntxmi
rntxmi.sfd	rntxmi-2.sfd	EW
rntxmi-2.sfd	rntxmi7.{pfb,afm}	Generated by FF
rntxmi7.afm	rntxmi7.tfm	afm2tfm rntxmi7 rntxmi7
rntxmi-2.sfd	rntxmi-4.sfd	EW
rntxmi-4.sfd	rntxmi5.{pfb,afm}	Generated by FF
rntxmi5.afm	rntxmi5.tfm	afm2tfm rntxmi5 rntxmi5
rtxmi.{pfb,afm}	rtxmi.sfd	Open pfb+afm in FF
rtxmi.sfd	rtxmi-2.sfd	EW
rtxmi-2.sfd	rtxmi7.{pfb,afm}	Generated from FF
rtxmi7.afm	rtxmi7.tfm	