## Hyphenation Exception Log

Barbara Beeton

Below is a list of words that TEX fails to hyphenate properly. This is the annual update; the list last appeared in Volume 8, No. 3, starting on page 266. Everything listed there is repeated here.

The first column gives results from TEX's \showhyphens{...}; entries in the second column are suitable for inclusion in a \hyphenation{...} list.

In most instances, inflected forms are not shown for nouns and verbs; note that all forms must be specified in a \hyphenation{...} list if they occur in your document.

Thanks to all who have submitted entries to the list. Since some suggestions demonstrated a lack of familiarity with the rules of the hyphenation algorithm, here is a short reminder of the relevant idiosyncrasies. Hyphens will not be inserted before the second letter, nor after the third-from-last letter of a word; thus no word shorter than five letters will be hyphenated. (For the details, see *The TEXbook*, page 454. For a digression on other views of hyphenation rules, see below under "English Hyphenation".) This particular rule is violated in some of the words listed; however, if a word is hyphenated correctly by TEX except for "missing" hyphens at the beginning or end, it has not been included here.

Some other permissible hyphens have been omitted for reasons of style or clarity. While this is at least partly a matter of personal taste, an author should think of the reader when deciding whether or not to permit just one more break-point in some obscure or confusing word. There really are times when a bit of rewriting is preferable.

One other warning: Some words can be more than one part of speech, depending on context, and have different hyphenations; for example, 'analyses' can be either a verb or a plural noun. If such a word appears in this list, hyphens are shown only for the portions of the word that would be hyphenated the same regardless of usage. These words are marked with a '*'; additional hyphenation points, if needed in your document, should be inserted with discretionary hyphens.

The reference used to check these hyphenations is *Webster's Third New International Dictionary*, Unabridged.

## English Hyphenation

It has been pointed out to me that the hyphenation rules of British English are based on the etymology of the words being hyphenated as opposed to the "syllabic" principles used in the U.S. Furthermore, in the U.K., it is considered bad style to hyphenate a word after only two letters.

In order to make TEX defer hyphenation until after three initial letters, some new patterns can be added, as communicated to me my Donald Knuth:

> To suppress hyphenation after two letters, you need new patterns of the form .ab6 for all pairs of letters ab that begin words of English. I think the number of such pairs is well under 200.

Running PATGEN on a British, rather than a U.S., dictionary would probably result in a useful, but smaller, set of patterns, as more ambiguities might be expected in an etymologically-segmented word base. This is just a guess; I would be interested in a report on actual results, if anyone has tried it.

## The List

| | |
|---|---|
| academy | acad-e-my |
| al-ge-brais-che | al-ge-brai-sche |
| anal-yse | an-a-lyse |
| anal-y-ses | analy-ses * |
| anomaly(ies) | anom-aly(ies) |
| an-tideriva-tive | an-ti-deriv-a-tive |
| anti-nomy(ies) | an-tin-o-my(ies) |
| an-tirev-o-lu-tion-ary | an-ti-rev-o-lu-tion-ary |
| ap-pendix | ap-pen-dix |
| asymp-totic | as-ymp-tot-ic |
| at-mo-sphere | at-mos-phere |
| at-tributed | at-trib-uted |
| au-toma-tisierter | auto-mati-sier-ter |
| ban-dleader | band-leader |
| base-li-neskip | \base-line-skip |
| Be-di-enung | Be-die-nung |
| be-haviour | be-hav-iour |
| bib-li-ographis-che | bib-li-o-gra-phi-sche |
| bid-if-fer-en-tial | bi-dif-fer-en-tial |
| biomath-e-mat-ics | bio-math-e-mat-ics |
| bornolog-i-cal | bor-no-log-i-cal |
| Brow-n-ian | Brown-ian |
| buz-zword | buzz-word |
| cartwheel | cart-wheel |
| cholesteric | cho-les-teric |
| Columbia | Co-lum-bia |
| congress | con-gress |
| Czechoslo-vakia | Czecho-slo-va-kia |
| database | data-base |
| dat-a-p-ath | data-path |

| | | | |
|---|---|---|---|
| `defini-tive` | de-fin-i-tive | `Mas-sachusetts` | Mass-a-chu-setts |
| `democratism` | de-moc-ra-tism | `met-a-lan-guage` | meta-lan-guage |
| `de-mos` | demos | `mi-croe-co-nomics` | micro-eco-nomics |
| `dis-tribute` | dis-trib-ute | `mi-crofiche` | mi-cro-fiche |
| `Di-jk-stra` | Dijk-stra | `mis-ogamy` | mi-sog-a-my |
| `duopolist` | du-op-o-list | `mod-elling` | mod-el-ling |
| `duopoly` | du-op-oly | `molecule` | mol-e-cule |
| `dy-namis-che` | dy-na-mi-sche | `mo-noen-er-getic` | mono-en-er-getic |
| `eco-nomics` | eco-nom-ics | `monopole` | mono-pole |
| `economist` | econ-o-mist | `monopoly` | mo-nop-oly |
| `elec-trome-chan-i-cal` | electro-mechan-i-cal | `monos-pline` | mono-spline |
| `elec-tromechanoa-cous-tic` | | `monos-trofic` | mono-strofic |
| | electro-mechano-acoustic | `mul-ti-pli-ca-ble` | mul-ti-plic-able |
| `En-glish` | Eng-lish | `mul-tiuser` | multi-user  (better |
| `equiv-ari-ant` | equi-vari-ant | | with explicit hyphen) |
| `Eu-le-rian` | Euler-ian | `ne-ofields` | neo-fields |
| `ex-traor-di-nary` | ex-tra-or-di-nary | `Noethe-rian` | Noe-ther-ian |
| `Febru-ary` | Feb-ru-ary | `none-mer-gency` | non-emer-gency |
| `fermions` | fermi-ons | `nonequiv-ari-ance` | non-equi-vari-ance |
| `flowchart` | flow-chart | `noneu-clidean` | non-euclid-ean |
| `Forschungsin-sti-tut` | For-schungs-in-sti-tut | `non-i-so-mor-phic` | non-iso-mor-phic |
| `funk-t-sional` | funk-tsional | `nonpseu-do-com-pact` | non-pseudo-com-pact |
| `Gaus-sian` | Gauss-ian | `non-s-mooth` | non-smooth |
| `ge-o-met-ric` | geo-met-ric | `No-ord-wi-jk-er-hout` | Noord-wijker-hout |
| `gnomon` | gno-mon | `oligopolist` | oli-gop-o-list |
| `Greif-swald` | Greifs-wald | `oligopoly` | oli-gop-oly |
| `Grothendieck` | Grothen-dieck | `paradigm` | par-a-digm |
| `Grundlehren` | Grund-leh-ren | `parabolic` | par-a-bol-ic |
| `Hamil-to-nian` | Hamil-ton-ian | `parametrized` | pa-ram-e-trized |
| `heroes` | he-roes | `paramil-i-tary` | para-mil-i-tary |
| `Her-mi-tian` | Her-mit-ian | `paramount` | para-mount |
| `hex-adec-i-mal` | hexa-dec-i-mal | `petroleum` | pe-tro-le-um |
| `holon-omy` | ho-lo-no-my | `phe-nomenon` | phe-nom-e-non |
| `ho-mo-th-etic` | ho-mo-thetic | `Poincare` | Poin-care |
| `ide-als` | ideals | `polyene` | poly-ene |
| `id-i-o-syn-crasy` | idio-syn-crasy | `poly-go-niza-tion` | polyg-on-i-za-tion |
| `ig-nores-paces` | ignore-spaces | `poroe-las-tic` | poro-elas-tic |
| `in-finitely` | in-fin-ite-ly | `postam-ble` | post-am-ble |
| `in-finites-i-mal` | in-fin-i-tes-i-mal | `Po-ten-tial-gle-ichung` | Po-ten-tial-glei-chung |
| `in-fras-truc-ture` | in-fra-struc-ture | `pream-ble` | pre-am-ble |
| `in-ter-dis-ci-plinary` | in-ter-dis-ci-pli-nary | `preloaded` | pre-loaded |
| `Japanese` | Japan-ese | `pre-pro-ces-sor` | pre-proces-sor |
| `jeremi-ads` | je-re-mi-ads | `pre-s-plit-ting` | \pre-split-ting |
| `Kadomt-sev` | Kad-om-tsev | `pro-cess` | process |
| `Karl-sruhe` | Karls-ruhe | `pseu-dod-if-fer-en-tial` | pseu-do-dif-fer-en-tial |
| `Ko-rteweg` | Kor-te-weg | `pseud-ofi-nite` | pseu-do-fi-nite |
| `Leg-en-dre` | Le-gendre | `pseud-ofinitely` | pseu-do-fi-nite-ly |
| `Le-ices-ter` | Leices-ter | `pseud-o-forces` | pseu-do-forces |
| `Lip-s-chitz(ian)` | Lip-schitz(-ian) | `pseu-doword` | pseu-do-word |
| `macroe-co-nomics` | macro-eco-nomics | `quadrat-ics` | qua-drat-ics |
| `Manch-ester` | Man-ches-ter | `quadra-ture` | quad-ra-ture |
| `manuscript` | man-u-script | `quasiequiv-a-lence` | qua-si-equiv-a-lence |
| `marginal` | mar-gin-al | `quasi-hy-ponor-mal` | qua-si-hy-po-nor-mal |
| `Marko-vian` | Mar-kov-ian | `quasir-ad-i-cal` | qua-si-rad-i-cal |

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quasiresid-ual         qua-si-resid-ual
qua-sis-mooth          qua-si-smooth
qua-sis-ta-tion-ary    qua-si-sta-tion-ary
qu-a-si-tri-an-gu-lar  qua-si-tri-an-gu-lar
re-ar-range-ment       re-arrange-ment
Rie-man-nian           Rie-mann-ian
righ-teous(ness)       right-eous(-ness)
schedul-ing            sched-ul-ing
schot-tis-che          schot-tische
Schrodinger            Schro-ding-er
Schwarzschild          Schwarz-schild
semidef-i-nite         semi-def-i-nite
semi-ho-mo-th-etic     semi-ho-mo-thet-ic
seroepi-demi-o-log-i-cal
                       sero-epi-de-mi-o-log-i-cal
ser-vomech-a-nism      ser-vo-mech-anism
setup                  set-up
severely               se-vere-ly
solenoid               so-le-noid
spheroid               spher-oid
spinors                spin-ors
stan-dalone            stand-alone
startling              star-tling
statis-tics            sta-tis-tics
stochas-tic            sto-chas-tic
Stokess-che            Stokes-sche
summable               sum-ma-ble
tele-g-ra-pher         te-leg-ra-pher
tech-nis-che           tech-ni-sche
ther-moe-las-tic       ther-mo-elas-tic
times-tamp             time-stamp
ve-r-all-ge-mein-erte  ver-all-ge-mein-erte
Verteilun-gen          Ver-tei-lun-gen
vs-pace                \vspace
Wahrschein-lichkeit-s-the-o-rie
                       Wahr-schein-lich-keits-the-o-rie
waveg-uide             wave-guide
whitesided             white-sided
whites-pace            white-space
widespread             wide-spread
Winch-ester            Win-ches-ter
workhorse              work-horse
wraparound             wrap-around
Yingy-ong Shuxue Jisuan
                       Ying-yong Shu-xue Ji-suan
```

<div style="border:1px solid">

# Fonts

</div>

## LaTeX Fonts and Suggested Magnifications

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In [1], BART CHILDS has presented several tables which contain fonts used by TeX and LaTeX. Such tables with all fonts required by a macro package are urgently needed in order to allow (TeX) system administrators or users to customize their fonts. But Bart Childs' tables miss some required fonts of LaTeX. Before I list all missing fonts I will give an overview about the way LaTeX does its font handling.

The data in this article is based on a UNIX tape from PIERRE MACKAY which was written in the beginning of June, 1988.

## 1. Font Handling of LaTeX

The font handling of LaTeX is described in the file lfonts.tex [4]. This file consists of four parts: First the principles of font usage are explained and commands are declared to realize these principles. Then all preloaded fonts are specified and the usage of the fonts is defined. Finally follows the definition of some LaTeX-specific symbols.

### 1.1. Principles

For LaTeX users several size-changing commands are available. According to the selected document style option they address different type sizes. Table 1 gives an overview about the used type sizes; it is taken from [5]. To realize the switch to the different type sizes, lfonts.tex contains a size changing (internal) command for each pt-size that is needed, e.g. \xpt for the switch to the 10pt-fonts and \viiipt for the 8pt-fonts. After giving one of these commands, the typeface change will be done in this size, e.g. \xpt\bf leads to the usage of font cmbx10 and \viiipt\bf addresses font cmbx8 (sic!).

In LaTeX fonts are grouped in three classes: (1) preloaded, (2) loaded-on-demand, and (3) unavailable. Please note that the expression 'preloaded' has a different meaning here than in the article of Bart Childs. There fonts are named 'preloaded' if they are provided in plain.tex with the control sequence \preloaded, i.e. the fonts of which the font metrics (from the TFM files) are loaded during an INITEX run and written to the FMT file, but which are not available directly for