Babel support for the German language (new orthography)

Johannes Braams Bernd Raichle Walter Schmidt
Jürgen Spitzmüller*

v2.10 (2018/03/29)

Abstract

This manual documents the babel language definition file `ngermanb.ldf` for German (new orthography). The file is part of the babel-german bundle.

1 Aim and usage

The file `ngermanb.ldf` provides the babel package with all language definition macros (language specific strings and settings) for the German language, including the Austrian and Swiss varieties of German.[1] Furthermore, it assures that the correct hyphenation patterns for the respective language or variety are used.[2] The file adheres to the reformed (1996 ff.) orthography. For traditional (1901–1996) German orthography support, please refer to the complementary `germanb.ldf` file.

In order to use the language definitions provided here, you need to use the babel package and pass the respective language name as an option, either of

- `\usepackage[ngerman]{babel}`
- `\usepackage[naustrian]{babel}`
- `\usepackage[nswissgerman]{babel}`

Using multiple varieties in parallel is possible; consult the babel manual [2] for details.

*Current maintainer. Please report issues via `https://github.com/jspitz/babel-german`.

[1] The file `ngermanb.ldf` started as a re-implementation of the package `ngerman.sty` by Bernd Raichle (cf. [6]), which itself builds on `german.sty`, originally developed by Hubert Partl (cf. [4]) and later maintained by Bernd Raichle as well. The initial re-implementation was done by Johannes Braams.

[2] Currently, these are the default hyphenation patterns for post-1996 German spelling (`dehyphn-x` via the hyph-utf8 [5] package). For some years now, ever-improving 'experimental' new hyphenation patterns are available via the dehyph-exptl package [3]. They are not used by babel-german yet due to their experimental status. Please refer to the documentation of dehyph-exptl for instructions how to use these experimental patterns with babel-german.

2 Shorthands

For all three varieties of German, the character `"` is made active in order to provide some shorthand macros for frequently used special characters as well as for better control of hyphenation, line breaks and ligatures. Table 1 provides an overview of the shorthands that are provided by `ngermanb.ldf`.

Table 1: The extra definitions made by `ngermanb.ldf`

`"a`	Umlaut ⟨ä⟩ (shorthand for `\"a`). Similar shorthands are available for all other lower- and uppercase vowels (umlauts: `"a`, `"o`, `"u`, `"A`, `"O`, `"U`; tremata: `"e`, `"i`, `"E`, `"I`).
`"s`	German ⟨ß⟩ (shorthand for `\ss{}`); but cf. sec. 3.
`"z`	German ⟨ß⟩ (shorthand for `\ss{}`). Differs to `"s` in uppercase version; but cf. sec. 3.
`"S`	`\uppercase{"s}`, typeset as ⟨SS⟩(⟨ß⟩ must be written as ⟨SS⟩ in uppercase writing).
`"Z`	`\uppercase{"z}`, typeset as ⟨SZ⟩. In traditional spelling, ⟨ß⟩ could also be written as ⟨SZ⟩ instead of ⟨SS⟩ in uppercase writing. Note that, with reformed orthography, the ⟨SZ⟩ variant has been deprecated in favour of ⟨SS⟩ only.
`"|`	Disable ligature at this position (e. g., at morpheme boundaries, as in `Auf"|lage`).
`"-`	An additional breakpoint that does still allow for hyphenation at the breakpoints preset in the hyphenation patterns (as opposed to `\-`).
`"=`	An explicit hyphen with a breakpoint, allowing for hyphenation at the other points preset in the hyphenation patterns (as opposed to plain `-`); useful for long compounds such as `IT"=Dienstleisterinnen`.
`"~`	An explicit hyphen without a breakpoint. Useful for cases where the hyphen should stick at the following syllable, e. g., `bergauf und "~ab`.
`""`	A breakpoint that does not output a hyphen if the line break is performed (consider parenthetical extensions as in `(pseudo"~)""wissenschaftlich`).
`"/`	A slash that allows for a linebreak. As opposed to `\slash{}`, hyphenation at the breakpoints preset in the hyphenation patterns is still allowed.
`"‘`	German left double quotes ⟨„⟩.
`"’`	German right double quotes ⟨“⟩.
`"<`	French/Swiss left double quotes ⟨«⟩.
`">`	French/Swiss right double quotes ⟨»⟩.

New feature in v. 2.9!

Table 2 lists some babel macros for quotation marks that might be used as an alternative to the quotation mark shorthands provided by `ngermanb.ldf`.

Table 2: Alternative commands for quotation marks (provided by babel)

`\glqq`	German left double quotes ⟨„⟩.
`\grqq`	German right double quotes ⟨“⟩.
`\glq`	German left single quotes ⟨‚⟩.
`\grq`	German right single quotes ⟨‘⟩.
`\flqq`	French/Swiss left double quotes ⟨«⟩.
`\frqq`	French/Swiss right double quotes ⟨»⟩.
`\flq`	French/Swiss left single quotes ⟨‹⟩.
`\frq`	French/Swiss right single quotes ⟨›⟩.
`\dq`	The straight quotation mark character ⟨"⟩.

3 Variety-specific options

New feature in v. 2.10!

In Swiss (and Liechtensteinian) German writing, the use of ⟨ß⟩ is rather uncommon. Swiss writers would normally use ⟨ss⟩ where German or Austrian writers use the ⟨ß⟩ character (e. g., *Buße* vs. *Busse*). When texts (or names) from other German speaking areas are quoted, however, the spelling is often maintained (particularly in scholarly writing where the spelling of quoted text is not supposed to be touched).

We assume that Swiss writers will normally input ⟨ss⟩ directly when they mean ⟨ss⟩, and we assume furthermore that the ⟨ß⟩-related shorthands `"s` and `"z` are useful also for Swiss writers when they actually need ⟨ß⟩, the more so since the ⟨ß⟩ is not as directly accessable on Swiss keyboards as it is on German and Austrian ones. On the other hand, there might be occasions where writers want to transfer a text from German or Austrian Standard into Swiss Standard German and adapt the spelling on the fly, i. e., transform all ⟨ß⟩ into ⟨ss⟩.

For this special case, we provide an option to make the ⟨ß⟩-related shorthands `"s` and `"z` expand to the respective digraphs, ⟨ss⟩ and ⟨sz⟩, rather than to ⟨ß⟩. This is not the default behavior with `nswissgerman` since, as mentioned, there are situations when the ⟨ß⟩ is (and has to be) used in Swiss writing, and normally, no shorthand is needed to input (or output) two simple ⟨s⟩ characters. You can opt-in (and out) digraphical expansion of ⟨ss⟩ and ⟨sz⟩ on a global and local level:

- To globally switch on the digraphical expansion, use the Babel modifier `toss` (read: 'to ⟨ss⟩') with `nswissgerman`. I. e., pass `nswissgerman.toss` (rather than `nswissgerman`) as babel option.
- To switch on the digraphical expansion only locally, you can use the boolean switch `\ntosstrue`. Likewise, `\ntossfalse` switches off (both locally and globally set) digraphical expansion.

This results in the following deviant behavior of two shorthands:

`"s`	Expands to digraph ⟨ss⟩
`"z`	Expands to digraph ⟨sz⟩

4 Implementation

4.1 General settings

First, we define some helper macros that help us to identify later on which variety of German we are currently dealing with.

```
\def\bbl@opt@ngerman{ngerman}
\def\bbl@opt@ngermanb{ngermanb}
\def\bbl@opt@naustrian{naustrian}
\def\bbl@opt@nswissgerman{nswissgerman}
```

If `ngermanb.ldf` is read via the deprecated babel option `ngermanb`, we make it behave as if `ngerman` was specified.

```
\ifx\CurrentOption\bbl@opt@ngermanb
  \def\CurrentOption{ngerman}
\fi
```

The macro `\LdfInit` takes care of preventing that this file is loaded more than once with the same option, checking the category code of the `@` sign, etc.

```
\LdfInit\CurrentOption{captions\CurrentOption}
```

If `ngermanb.ldf` is read as an option, i.e., by the `\usepackage` command, `ngerman` could be an 'unknown' language, so we have to make it known. We check for the existence of `\l@ngerman` and issue a warning if it is unknown.

```
\ifx\l@ngerman\@undefined
  \@nopatterns{German (new orthography)}
  \adddialect\l@ngerman0
\fi
```

We set `naustrian` and `nswissgerman` as dialects of `ngerman`, since they use the same hyphenation patterns than `ngerman`. If no `ngerman` patterns are found, we issue a warning.

```
\ifx\CurrentOption\bbl@opt@naustrian
  \ifx\l@ngerman\@undefined
    \@nopatterns{German (new orthography), needed by Austrian (new orthography)}
    \adddialect\l@naustrian0
  \else
    \adddialect\l@naustrian\l@ngerman
  \fi
\fi
\ifx\CurrentOption\bbl@opt@nswissgerman
  \ifx\l@ngerman\@undefined
    \@nopatterns{German (new orthography), needed by Swiss German (new orthography)}
    \adddialect\l@nswissgerman0
  \else
    \adddialect\l@nswissgerman\l@ngerman
  \fi
\fi
```

4.2 Language-specific strings (captions)

The next step consists of defining macros that provide language specific strings and settings.

`\@captionsngerman` The macro `\@captionsngerman` defines all strings used in the four standard document classes provided with LaTeX for German. This is an internal macro that is inherited and modified by the following macros for the respective language varieties.

```
\@namedef{@captionsngerman}{%
  \def\prefacename{Vorwort}%
  \def\refname{Literatur}%
```

```
  \def\abstractname{Zusammenfassung}%
  \def\bibname{Literaturverzeichnis}%
  \def\chaptername{Kapitel}%
  \def\appendixname{Anhang}%
  \def\contentsname{Inhaltsverzeichnis}%
  \def\listfigurename{Abbildungsverzeichnis}%
  \def\listtablename{Tabellenverzeichnis}%
  \def\indexname{Index}%
  \def\figurename{Abbildung}%
  \def\tablename{Tabelle}%
  \def\partname{Teil}%
  \def\enclname{Anlage(n)}%
  \def\ccname{Verteiler}%
  \def\headtoname{An}%
  \def\pagename{Seite}%
  \def\seename{siehe}%
  \def\alsoname{siehe auch}%
  \def\proofname{Beweis}%
  \def\glossaryname{Glossar}%
}
```

`\captionsngerman` The macro `\captionsngerman` is identical to `\@captionsngerman`, but only defined if `ngerman` is requested.

```
\ifx\CurrentOption\bbl@opt@ngerman
  \@namedef{captionsngerman}{%
    \@nameuse{@captionsngerman}%
  }
\fi
```

`\captionsnaustrian` The macro `\captionsnaustrian` builds on `\@captionsngerman`, but redefines some strings following Austrian conventions (for the respective variants, cf. [1]). It is only defined if `naustrian` is requested.

```
\ifx\CurrentOption\bbl@opt@naustrian
  \@namedef{captionsnaustrian}{%
    \@nameuse{@captionsngerman}%
    \def\enclname{Beilage(n)}%
  }
\fi
```

`\captionsnswissgerman` The macro `\captionsnswissgerman` builds on `\@captionsngerman`, but redefines some strings following Swiss conventions (for the respective variants, cf. [1]). It is only defined if `nswissgerman` is requested.

```
\ifx\CurrentOption\bbl@opt@nswissgerman
  \@namedef{captionsnswissgerman}{%
    \@nameuse{@captionsngerman}%
    \def\enclname{Beilage(n)}%
  }
\fi
```

4.3 Date localizations

\month@ngerman The macro \month@ngerman defines German month names for all varieties.

```
\def\month@ngerman{\ifcase\month\or
  Januar\or Februar\or M\"arz\or April\or Mai\or Juni\or
  Juli\or August\or September\or Oktober\or November\or Dezember\fi}
```

\datengerman The macro \datengerman redefines the command \today to produce German dates. It is only defined if ngerman is requested.

```
\ifx\CurrentOption\bbl@opt@ngerman
  \def\datengerman{\def\today{\number\day.~\month@ngerman
      \space\number\year}}
\fi
```

\datenswissgerman The macro \datenswissgerman does the same for Swiss German dates. The result is identical to German. This macro is only defined if nswissgerman is requested.

```
\ifx\CurrentOption\bbl@opt@nswissgerman
  \def\datenswissgerman{\def\today{\number\day.~\month@ngerman
      \space\number\year}}
\fi
```

\datenaustrian The macro \datenaustrian redefines the command \today to produce Austrian versions of the German dates. Here, the naming of January („Jänner“) differs from the other German varieties. The macro is only defined if naustrian is requested.

```
\ifx\CurrentOption\bbl@opt@naustrian
  \def\datenaustrian{\def\today{\number\day.~\ifnum1=\month
    J\"anner\else \month@ngerman\fi \space\number\year}}
\fi
```

4.4 Extras

\extrasnaustrian \extrasnswissgerman \extrasngerman \noextrasnaustrian \noextrasnswissgerman \noextrasngerman The macros \extrasngerman, \extrasnaustrian and \extrasnswissgerman, respectively, will perform all the extra definitions needed for the German language or the respective variety. The macro \noextrasngerman is used to cancel the actions of \extrasngerman. \noextrasnaustrian and \noextrasnswissgerman behave analoguously.

First, the character " is declared active for all German varieties. This is done once, later on its definition may vary.

```
\initiate@active@char{"}
```

Depending on the option with which the language definition file has been loaded, the macro \extrasngerman, \extrasnaustrian or \extrasnswissgerman is defined. Each of those is identical: they load the shorthands defined below and activate the " character.

```
\@namedef{extras\CurrentOption}{%
  \languageshorthands{ngerman}%
}
\expandafter\addto\csname extras\CurrentOption\endcsname{%
  \bbl@activate{"}}
```

toss
\ntosstrue
\ntossfalse

For Swiss German, we allow optionally to expand the ⟨ß⟩-related shorthands the Swiss way, i. e. as ⟨ss⟩ (globally, if the modifier `toss` is used or locally if `\ntosstrue`.).

```
\newif\ifntoss\ntossfalse
\newif\ifbbl@ntoss\bbl@ntossfalse
\ifx\bbl@mod@nswissgerman\@undefined\else
  \@expandtwoargs\in@{,toss,}{,\bbl@mod@nswissgerman,}
  \ifin@
    \ntosstrue
  \fi
  \addto\extrasnswissgerman{%
    \ifntoss\bbl@ntosstrue\else\bbl@ntossfalse\fi}
\fi
```

Next, again depending on the option with which the language definition file has been loaded, the macro `\noextrasngerman`, `\noextrasnaustrian` or `\noextrasnswissgerman` is defined. These deactivate the `"` character and thus turn the shorthands off again outside of the respective variety.

```
\expandafter\addto\csname noextras\CurrentOption\endcsname{%
  \bbl@deactivate{"}}
\ifx\CurrentOption\bbl@opt@nswissgerman
  \addto\noextrasnswissgerman{\bbl@ntossfalse}
\fi
```

In order for TEX to be able to hyphenate German words which contain 'ß' (in the `OT1` position `^^Y`) we have to give the character a nonzero `\lccode` (see Appendix H, the TEXbook).

```
\expandafter\addto\csname extras\CurrentOption\endcsname{%
  \babel@savevariable{\lccode25}%
  \lccode25=25}
```

The umlaut accent macro `\"` is changed to lower the umlaut dots. The redefinition is done with the help of `\umlautlow`.

```
\expandafter\addto\csname extras\CurrentOption\endcsname{%
  \babel@save\"\umlautlow}

\expandafter\addto\csname noextras\CurrentOption\endcsname{%
  \umlauthigh}
```

The current version of the 'new' German hyphenation patterns (`dehyphn.tex`) is to be used with `\lefthyphenmin` and `\righthyphenmin` set to 2.

```
\providehyphenmins{\CurrentOption}{\tw@\tw@}
```

For German texts we need to assure that `\frenchspacing` is turned on.

```
\expandafter\addto\csname extras\CurrentOption\endcsname{%
  \bbl@frenchspacing}
\expandafter\addto\csname noextras\CurrentOption\endcsname{%
  \bbl@nonfrenchspacing}
```

4.5 Active characters, macros & shorthands

The following code is necessary because we need an extra active character. This character is then used as indicated in table 1.

In order to be able to define the function of `"`, we first define a couple of 'support' macros.

`\dq` We save the original double quotation mark character in `\dq` to keep it available, the math accent `\"` can now be typed as `"`.

Furthermore, we define some helper macros for contextual ⟨ß⟩ handling.

```
\begingroup \catcode`\"12
\def\x{\endgroup
  \def\dq{"}
  \def\@SS{\mathchar"7019 }
  \def\bbl@ss{\ifbbl@ntoss ss\else\textormath{\ss}{\@SS{}}\fi}
  \def\bbl@SS{SS}
  \def\bbl@sz{\ifbbl@ntoss sz\else\textormath{\ss}{\@SS{}}\fi}
  \def\bbl@SZ{SZ}
}
\x
```

Now we can define the doublequote shorthands: the umlauts,

```
\declare@shorthand{ngerman}{"a}{\textormath{\"{a}\allowhyphens}{\ddot a}}
\declare@shorthand{ngerman}{"o}{\textormath{\"{o}\allowhyphens}{\ddot o}}
\declare@shorthand{ngerman}{"u}{\textormath{\"{u}\allowhyphens}{\ddot u}}
\declare@shorthand{ngerman}{"A}{\textormath{\"{A}\allowhyphens}{\ddot A}}
\declare@shorthand{ngerman}{"O}{\textormath{\"{O}\allowhyphens}{\ddot O}}
\declare@shorthand{ngerman}{"U}{\textormath{\"{U}\allowhyphens}{\ddot U}}
```

tremata,

```
\declare@shorthand{ngerman}{"e}{\textormath{\"{e}}{\ddot e}}
\declare@shorthand{ngerman}{"E}{\textormath{\"{E}}{\ddot E}}
\declare@shorthand{ngerman}{"i}{\textormath{\"{\i}}%
                                {\ddot\imath}}
\declare@shorthand{ngerman}{"I}{\textormath{\"{I}}{\ddot I}}
```

German ß,

```
\declare@shorthand{ngerman}{"s}{\bbl@ss}
\declare@shorthand{ngerman}{"S}{\bbl@SS}
\declare@shorthand{ngerman}{"z}{\bbl@sz}
\declare@shorthand{ngerman}{"Z}{\bbl@SZ}
```

German and French/Swiss quotation marks,

```
\declare@shorthand{ngerman}{"`}{\glqq}
\declare@shorthand{ngerman}{"'}{\grqq}
\declare@shorthand{ngerman}{"<}{\flqq}
\declare@shorthand{ngerman}{">}{\frqq}
```

and some additional commands (hyphenation, line breaking and ligature control):

```
\declare@shorthand{ngerman}{"-}{\nobreak\-\bbl@allowhyphens}
\declare@shorthand{ngerman}{"|}{%
```

```
  \textormath{\penalty\@M\discretionary{-}{}{\kern.03em}%
               \allowhyphens}{}}
\declare@shorthand{ngerman}{""}{\hskip\z@skip}
\declare@shorthand{ngerman}{"~}{\textormath{\leavevmode\hbox{-}}{-}}
\declare@shorthand{ngerman}{"=}{\penalty\@M-\hskip\z@skip}
\declare@shorthand{ngerman}{"/}{\textormath
  {\bbl@allowhyphens\discretionary{/}{}{/}\bbl@allowhyphens}{}}
```

`\mdqon` `\mdqoff` All that's left to do now is to define a couple of commands for reasons of compatibility with `german.sty`.

```
\def\mdqon{\shorthandon{"}}
\def\mdqoff{\shorthandoff{"}}
```

The macro `\ldf@finish` takes care of looking for a configuration file, setting the main language to be switched on at `\begin{document}` and resetting the category code of `@` to its original value.

```
\ldf@finish\CurrentOption
```

4.6 `naustrian.ldf`, `ngerman.ldf` and `nswissgerman.ldf`

Babel expects a ⟨*lang*⟩`.ldf` file for each ⟨*lang*⟩. So we create portmanteau ldf files for `naustrian`, `ngerman` and `nswissgerman`.[3] These files themselves only load `ngermanb.ldf`, which does the real work:

```
\input ngermanb.ldf\relax
```

Change History

[3] For `naustrian` and `ngerman`, this is not strictly necessary, since babel provides aliases for these languages (pointing to `ngermanb`). However, since babel does not officially support these aliases anymore after the language definition files have been separated from the core, we provide the whole range of ldf files for the sake of completeness.

References

[1] Ammon, Ulrich et al.: *Variantenwörterbuch des Deutschen. Die Standardsprache in Österreich, der Schweiz und Deutschland sowie in Liechtenstein, Luxemburg, Ostbelgien und Südtirol.* Berlin, New York: De Gruyter.

[2] Braams, Johannes and Bezos, Javier: *Babel.* http://www.ctan.org/pkg/babel.

[3] Deutschsprachige Trennmustermannschaft: *dehyph-exptl – Experimental hyphenation patterns for the German language.* https://ctan.org/pkg/dehyph-exptl.

[4] Partl, Hubert: *German TEX*, *TUGboat* 9/1 (1988), p. 70–72.

[5] Manuel Pégourié-Gonnard et al.: *hyph-utf8 – Hyphenation patterns expressed in UTF-8.* https://ctan.org/pkg/hyph-utf8.

[6] Raichle, Bernd: *German.* http://www.ctan.org/pkg/german.