The covington Package
Macros for Linguistics

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Abstract

This package, initially a collection of Michael A. Covington’s private macros, provides numerous minor \LaTeX{} enhancements for linguistics, including multiple diacritics on the same letter, interlinear glosses (word-by-word translations), Discourse Representation Structures, example numbering, and semantic markup.

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∗Current maintainer. Please report issues via https://github.com/jspitz/covington
1 Introduction

This is the documentation for version 2.4 of covington (January 2, 2020), which is a \LaTeX\ package providing macros for typing some special notations common in linguistics.\footnote{The package has a long history. It started off as a collection of private macros back in the \LaTeX\ 2.09 days and was initially released as covington.sty (following the old 8.3 \textsc{fat} file name limit). In \emph{T\kern-.1667em\textsc{e}X} under \textsc{ms-dos}, the file was distributed as covingto.sty. Eventually, it has been renamed to covington and adapted to \LaTeX\ 2e.}

To use covington with \LaTeX\ 2e, load the package as usual by adding the command \texttt{\usepackage{covington}} to your document preamble. The package has the following options:

\begin{itemize}
  \item \texttt{force}: Force the redefinition of environments that have already been defined by other packages or the class.

  This applies to the \texttt{example}, \texttt{examples}, \texttt{subexamples} and \texttt{exercise} environments, which are by default not touched if they are already defined before covington is loaded. See sec. 3.2, 3.3, 3.4 and 8 for details.

  \item \texttt{keeplayout}: Do not tweak the layout.

  Covington sets \texttt{\raggedbottom} and redefines the value of the \texttt{\textfloatsep} length. This just follows the preferences of the original package author and is not necessary for the package’s functionality. Yet for backwards compatibility reasons, we cannot change this. Thus, we provide the option described here to opt out this presetting.

  \item \texttt{noglossbreaks}: If this option is set, covington will try hard to prevent page breaks within glosses.

    If this option is not set, page breaks can occur between interlinearized text and free translation of a gloss, as well as between gloss preamble and interlinearized text, which is usually not what you will want. Nonetheless the option is not set by default. This is for backwards compatibility reasons (in order to not change page breaking of existing documents). Note that page breaks might still occur in some cases even if the option is set. In order to prevent them definitely, you can put the gloss in a parbox or minipage.

  \item \texttt{owncounter}: Use an own counter for numbered examples.

    By default, covington uses \LaTeX\’s equation counter for example numbering, so that if you use equations and numbered examples in the same paper, you get a single continuous series of numbers. While some people (including the original author of this package) consider this a feature, others might prefer to number equations and linguistic examples separately. If you count to the latter sort, use this option.
\end{itemize}

Please note the following package-related caveats:

\begin{itemize}
  \item If you are using covington and the uga (University of Georgia thesis style) package together, you should load uga before covington.
\end{itemize}
• If you are using covington with beamer-article, you should load beamer-article before covington.
• If you are using covington with the drs package, you should load drs before covington. See sec. 7.

In what follows we presume that you know how to use \TeX{} and have access to \TeX{} manuals.

2 Stacked diacritics

\TeX{} provides a generous range of diacritics that can be placed on or below any letter, such as:

\[ \breve{x} \check{x} \tilde{x} \hat{x} \bar{x} \]

which are typed, respectively, as:

\[
\breve{x} \check{x} \tilde{x} \hat{x} \bar{x}
\]

Out of the box, however, \TeX{} doesn’t give you a convenient way to put two diacritical marks on the same letter. To fill this gap, covington provides the following macros:

\[
\textbackslash twodias\{<upper\ diam.>\}\{<lower\ diam.>\}\{<char>\}
\]
to combine any two diacritics, e. g., \textbackslash twodias\{\breve\}\{\=\}\{a\} = ˜¯a

\textbackslash acm\{...\} for acute over macron, e. g., \textbackslash acm\{a\} = ´¯a
\textbackslash grm\{...\} for grave over macron, e. g., \textbackslash grm\{a\} = `¯a
\textbackslash cim\{...\} for circumflex over macron, e. g., \textbackslash cim\{a\} = ˆ¯a

The first of these is the general case\footnote{Alternatively, there’s also the old syntax \textbackslash twoacc\{upper\ diam.\}\{char\ with\ lower\ diam.\\}, e. g. \textbackslash twoacc\{\~\}\{\=\}\{a\} to the same effect, which is however discouraged due to its rather odd form.} and the latter three are special cases that are often used in Greek transcription. Now you can type \textit{Koiné} with both accents in place.

The vertical distance between the two diacritics can be adjusted via the macro \textbackslash SetDiaOffset\{<length>\} which lets you increase or decrease the vertical space that is currently in effect. If you’d use \textbackslash SetDiaOffset\{-0.25ex\}, the above examples would come out as

\[
\textbackslash twodias\{<upper\ diam.>\}\{<lower\ diam.>\}\{<char>\}
\]
to combine any two diacritics, e. g., \textbackslash twodias\{\~\}\{\=\}\{a\} = ˜¯a

\textbackslash acm\{...\} for acute over macron, e. g., \textbackslash acm\{a\} = ´¯a
\textbackslash grm\{...\} for grave over macron, e. g., \textbackslash grm\{a\} = `¯a
\textbackslash cim\{...\} for circumflex over macron, e. g., \textbackslash cim\{a\} = ˆ¯a

with a slightly better matching distance for the font used here.

Note that not all accent macros work in the \texttt{tabbing} environment. Use the \texttt{Tabbing} package or refer to \cite{six} for alternative solutions.
3 Numbered examples

Linguistic papers often include numbered examples. With covington, generating those is straightforward. In this section, we describe how you can typeset a self-stepping example number (see section 3.1), a single numbered example (sec. 3.2), a consecutive range of numbered examples (sec. 3.3), and alpha-numerically labeled sub-examples (sec. 3.4). All numbered examples can be referred to in the text via \label and \ref as usual (see sec. 3.6 for details).

3.1 Example numbers

The macro \exampleno generates a new example number, stepped by 1. It can be used anywhere you want the number to appear. For example, to display a sentence with a number at the extreme right, do this:

\begin{flushleft}
This is a sentence. \hfill (\exampleno)
\end{flushleft}

Here’s what you get:

This is a sentence.  

If you want to output the (current) number without stepping it, the starred form \exampleno* will do that.

Normally, however, you do not need to manually place \exampleno yourselves, as in the example above. For the common case where example numbers in parentheses are placed left to the example, covington provides more convenient solutions. These are described in turn.

3.2 The example environment

The example environment (alias covexample) displays a single example with a generated example number to the left of it. If you type

\begin{example}
This is a sentence.
\end{example}

or

\begin{covexample}
This is a sentence.
\end{covexample}

you get:

(2) This is a sentence.
The example can be of any length; it can consist of many lines (separated by `\n`), or even whole paragraphs.

If you need more space between the example number and the text, you can increase it by means of the length `\examplenumbersep` (which is preset to `0pt`). Doing `\setlength\examplenumbersep{1em}`, for instance, will increase the space by `1em` (negative values will decrease the space accordingly).

Note that, as of version 1.1, covington checks if there is already an `example` environment defined (e.g., by the class). If so, covington does not define its own one. However, there is always the alias environment `covexample` which can be used in order to produce covington’s example. If you use the package option `force`, covington will override existing `example` environments. In any case, the package will issue a warning if `example` is already defined (this is the case, for instance, if you use covington with the beamer class).

One way to number sub-examples is to use `itemize` or `enumerate` within an example, like this:

```
\begin{example}
\begin{itemize}
\item[(a)] This is the first sentence.
\item[(b)] This is the second sentence.
\end{itemize}
\end{example}
```

This prints as:

(3) (a) This is the first sentence.
     (b) This is the second sentence.

However, the `subexamples` environment, described in sec. 3.4, is usually more convenient for this task.

### 3.3 The examples environment

To display a series of examples together, each with its own example number, use `examples` (or `covexamples`) instead of `example` or `covexample`. The only difference is that there can be more than one example, and each of them has to be introduced by `\item`, like this:

```
\begin{examples}
\item This is the first sentence.
\item This is the second sentence.
\end{examples}
```

or, respectively:

```
\begin{covexamples}
\item This is the first sentence.
\item This is the second sentence.
\end{covexamples}
```
This prints as:

(4)  This is the first sentence.
(5)  This is the second sentence.

As for example, covington checks if there is already an examples environment defined, and if this is the case, covington does not define its own one. The alias environment covexamples is always available as a fallback. If you use the package option force, covington will override existing examples environments. The package will issue a warning if examples is already defined (this is the case, for instance, if you use covington with the beamer class), telling you how it has dealt with the situation.

3.4 The subexamples environment

Sometimes a set of (paradigmatic) sub-examples gets only one main example number with alphabetic sub-numbering, as in (6 a). To achieve this most conveniently, covington provides the subexamples (or covsubexamples) environment. The difference to examples/covexamples is the numbering:

\begin{subexamples}
\item This is the first sentence.
\item This is the second sentence.
\end{subexamples}

or, respectively:

\begin{covsubexamples}
\item This is the first sentence.
\item This is the second sentence.
\end{covsubexamples}

prints as:

(6)  (a)  This is the first sentence.
     (b)  This is the second sentence.

Again, covington checks if there is already an subexamples environment defined, and if this is the case, covington does not define its own one. The alias environment covsubexamples is always available as a fallback. If you use the package option force, covington will override existing subexamples environments. The package will issue a warning if subexamples is already defined.

The subexamples environment provides the following option:

preamble={⟨arbitrary text⟩}  Arbitrary text that is inserted in the first line (after the main number and before the first sub-example, which then follows in a new line). This might be useful, for instance, to give context information, to specify the language or the source in case of cited sub-examples. You can globally set the markup of this preamble text (see sec. 3.5).
For instance,
\begin{subexamples}[preamble={Here are two sentences}]
\item This is the first sentence.
\item This is the second sentence.
\end{subexamples}

or, respectively:
\begin{covsubexamples}[preamble={Here are two sentences}]
\item This is the first sentence.
\item This is the second sentence.
\end{covsubexamples}

prints as:

(7) Here are two sentences
(a) This is the first sentence.
(b) This is the second sentence.

The distance between example number and subnumber (letter) can be changed via the length \examplenumbersep (which is preset to 0pt). The distance between example subnumber and text can be changed via the length \subexamplenumbersep (preset to 0pt as well). In both cases, a positive value will increase, a negative value will decrease the respective distance. Doing
\setlength{\examplenumbersep}{-0.5em}
\setlength{\subexamplenumbersep}{0.5em}

for instance, will come out like this:

(8) (a) This is the first sentence.
(b) This is the second sentence.

3.5 Customizing number display and example markup

You can change the display of the example number by redefining (via \renewcommand+) the macro \covexnumber, which has the following default definition:
\newcommand{\covexnumber}[1]{(#1)}

with the variable #1 representing the number.

In the same vein, you can customize the display of the subexample letter by redefining the macro \covsubexnumber, which has the following default definition:
\newcommand{\covsubexnumber}[1]{(#1)}

To remove the parentheses from the subexample letter, for instance, to this:
\renewcommand{\covsubexnumber}[1]{#1}
You can also customize the markup of the example sentences by redefining the macro `\covexamplefs` (which is empty by default). To have all example sentences italicized, for instance, do:

\renewcommand*{\covexamplefs}{\itshape}

Note that this does, deliberately, not include the numbers, since those are controlled by another font setting macro, `\covexamplenofs`, which defaults to `\normalfont`. Of course you are free to redefine this as well, if you wish to do so.

Finally, you can customize the markup of the sub-example preamble text by redefining the macro `\subexpreamblefs`, which also defaults to `\normalfont`. To have it italicized, analogously do:

\renewcommand*{\subexpreamblefs}{\itshape}

### 3.6 Referring to examples

References to examples and sub-examples can be made the usual way via the \ref command (which refers to a \label that is placed in the respective example paragraph). The references do not have parentheses by default, i.e., a reference to the example in section 3.2 would be printed as 2, a reference to the sub-example in section 3.4 as 6 a. For convenience, though, Covington provides a command `\pxref` that also prints the parentheses, as in (2) and (6 a). It is defined as follows and can be redefined if needed:

\providecommand{\pxref}{\ref{#1}}

### 4 Glossing sentences word-by-word

To gloss a sentence is to annotate it word-by-word. Most commonly, a sentence in a foreign language is followed by a word-for-word translation (with the words lined up vertically) and then a smooth translation (not lined up), like this:

*Dit* *is* *een* *Nederlands* *voorbeeld*

This is a Dutch example

‘This is an example in Dutch.’

Covington provides different ways to typeset such glosses. The most convenient way is via gloss macros (see sec. 4.1), an alternative (and the traditional) way is via a set of commands (see sec. 4.2). Both are described in turn.

#### 4.1 Gloss macros

Covington provides two gloss macros:

- `\digloss[options]{\{gloss line 1\}}{\{gloss line 2\}}{\{free translation\}}` typesets two-line glosses with a translation line (the macro name puns on Greek *diglossia*, lit. ‘two tongues’, ‘bilingualism’).
\texttt{\textbackslash trigloss\{options\}\{gloss l.1\}\{gloss l.2\}\{gloss l.3\}\{free tr.\}}
typesets three-line\(^3\) glosses with a translation line (cf. Greek \textit{triglossía}, lit. ‘three
tongues’, ‘trilingualism’)

The example given above would thus be typed as:

\begin{verbatim}
\texttt{\textbackslash digloss\{}Dit is een Nederlands voorbeeld\}\\%
\{This is a Dutch example\}\\%
\{This is an example in Dutch.\}
\end{verbatim}

Note that:

- The \{free translation\} argument can be left empty. In this case, no translation
  line is added (and no extra space taken).
- The macros automatically markup the lines. By default, the first gloss line is in
  italics, subsequent lines are set upright, and the free translation in single quota-
  tion marks (using the language-sensitive \textsc{csquotes} macros if this package is
  loaded). This can be customized, though, via the macro options or globally (for
  the latter, see \textsc{sec. 4.3}).
- By default, page breaks might occur within glosses. In order to prevent it, the
  option \texttt{noglossbreaks} (see \textsc{sec. 1}) will help in many cases. If it doesn’t,
  you can wrap the whole gloss into a \textsc{minipage} or \textsc{parbox}.
- The words do not have to be typed lining up; \TeX{} counts and aligns them.
- On the other hand, multiple blanks are ignored, so you can, but do not need to,
  use the space key to line up the words to your liking in the \TeX{} file. The example
  above could thus also have been input like this, with no change to the output:

\begin{verbatim}
\texttt{\textbackslash digloss\{}Dit is een Nederlands voorbeeld\}\\%
\{This is a Dutch example\}\\%
\{This is an example in Dutch.\}
\end{verbatim}

- If the words in the two languages do not correspond one-to-one, you can use
  curly brackets to group words and a pair of empty curly brackets to mark null
  forms. For example, to print

\begin{verbatim}
Dit is een voorbeeldj\texttt{e} \texttt{in het Nederlands}\\%
This is a \texttt{little example} \texttt{in Dutch}\\%
\end{verbatim}

you would type:

\begin{verbatim}
\texttt{\textbackslash digloss\{}Dit \texttt{is een voorbeeldje \texttt{in het Nederlands}}\}\\%
\{This \texttt{is a \{little example\}} \texttt{in \{Dutch\}}\}\\%
\{This \texttt{is a little example \texttt{in Dutch.}}\}
\end{verbatim}

\(^3\)The additional line can be useful for instance to gloss cited forms, morphology, or an additional
translation. See \textsc{sec. 4.4} for examples.
The following ⟨options⟩ (key-value pairs) are provided for the two gloss macro:⁴

ex=⟨true|false⟩ Default: false. Wraps the gloss in an example environment (i.e., it is numberered).

tlr=⟨true|false⟩ Default: false. If set to true, the translation line (content of the ⟨free translation⟩ argument) is set right to the gloss lines, rather than into a new line below. Since the gloss itself is set in a box, this means the ⟨free translation⟩ will appear lined up with the first line of the gloss. This can be useful when no translation, but an aligned number or something similar, is to be inserted right to the gloss (please refer to sec. 4.4 for an example).

fsi=⟨font settings⟩ Adjusts the font settings of the first gloss line. Valid values are \LaTeX font switches such as \itshape, \bfseries etc.

fsii=⟨font settings⟩ Adjusts the font settings of the second gloss line. Valid values are \LaTeX font switches such as \itshape, \bfseries etc.

fsiii=⟨font settings⟩ Adjusts the font settings of the third gloss line. Valid values are \LaTeX font switches such as \itshape, \bfseries etc.

preamble=⟨arbitrary text⟩ Arbitrary text that is inserted on an own line before the interlinearized gloss. This might be useful, for instance, to give context information, to specify the language or the source in case of cited glosses.

The advantages over just adding a line manually above the gloss are that you can globally set the markup (see sec. 4.3), and that such lines are kept on the same page than the gloss with the option noglossbreaks (at least as long as preamble does not exceed one line). Furthermore, this option is the only way to add such text when the ex option is used.

If given as optional arguments to a \digloss or \trigloss macro, the options will only apply to this very gloss. If you want to make a permanent change, you can use the macro

\begin{itemize}
  \item \setglossoptions{⟨options⟩}
\end{itemize}

and pass either of the above options to it. This will apply to all subsequent glosses (until further global change and unless the setting is altered locally via macro option).

### 4.2 Glossing with low-level commands

The gloss macros described above build on low-level commands⁵ which can also be used directly (this was actually the only way up to covington 2.0 which introduced the macros). Low-level commands can be useful if you want to do fancy things in a gloss. Note, though, that using them also has limitations: Some commands cannot be used inside macros (such as footnotes), and the markup is not done automatically in

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⁴Please consult sec. 4.4 below for examples that showcase these options.

⁵The commands are adapted with permission from gloss.tex, by Marcel R. van der Goot.
all cases (as documented in what follows); furthermore, you cannot make use of the options the macros have. Thus, we strongly suggest to use the macros, unless you have very good reasons not to do that.

The following is a complete list of all low-level glossing commands:

\gll introduces two lines of words vertically aligned, and activates an environment very similar to \texttt{\flushleft}. The two lines are separated by a normal line break (carriage return). This is possible since the command makes the line-ending character active. As a consequence, however, this command does not work inside macros (such as \texttt{\footnote}).

\glll is like \gll except that it introduces \emph{three} lines of lined-up words.

\xgll is similar to \gll except that it does not make the line ending active. It thus works inside macros such as footnotes but requires explicit gloss line termination via \texttt{\xgle}.

\xglll is similar to \glll except that it does not make the line ending active. It thus works inside macros such as footnotes but requires explicit gloss line termination via \texttt{\xgle}.

\xgle is a gloss line ending marker to be used with \texttt{\xgll} and \texttt{\xglll}.

\glt ends the set of lined-up lines and introduces a line (or more) of translation. Note that this command does not markup the translation line (no automatic enquoting). Also, it outputs an empty line if no text follows.

\gln is like \glt but does not start a new line (useful when no translation follows but you want to put a number on the right).

\glot\{\emph{free translation}\} is an alternative to \glt and a smarter way to insert a translation line. Other than \glt, it marks up (by default: enquotes) the translation line. Also, it does not add an empty line if the translation is empty. This command has been introduced in covington 2.0.

\glosspreamble\{\emph{arbitrary text}\} lets you enter text that is printed immediately before the interlinearized gloss (on a line of its own). This might be useful, for instance, to give context information, to specify the language or the source in case of cited glosses. The advantages over just adding a line manually above the gloss are that you can globally set the markup (see sec. 4.3) and that such lines are kept on the same page than the gloss with the option \texttt{noglossbreaks}. Note, however, that page breaks might occur if this text spans multiple lines. In this case, you can wrap the whole gloss into a minipage. This command has been introduced in covington 2.1.

\glend ends the special \texttt{\flushleft}-like environment.

Using the low-level commands, the examples given in the previous section would be coded as follows:

\begin{verbatim}
\begin{verbatim}
\gll Dit is een Nederlands voorbeeld.
   This is a Dutch example.
\glt 'This is an example in Dutch.'
\glend
\end{verbatim}
\end{verbatim}
Observe that you need to markup (i.e., enquote) the translation line yourself if you use `\glt`. This is not so if you use `\glot`:

```
\gll Dit is een voorbeeldje in het Nederlands
    This is a (little example) in {} Dutch
\glt 'This is a little example in Dutch.'
\glend
```

The advantage of `\glot` is that you can easily customize the translation markup globally. Also, `\glot` uses the language-sensitive `csquotes` macros if this package is loaded (see sec. 4.3).

Since `\gll` and `\glll` locally activate the end of line in glosses in order to identify the different lines of the gloss (via category code change), they do not work inside macros (e.g., if the gloss is in a footnote). To work around this, special versions of the `\gll` and `\glll` commands are provided that do without the character activation: `\xgll` and `\xglll`, respectively. These can also be used in macro arguments; however, the end of each gloss line needs to be explicitly specified by the `\xgle` command in this case. If you want to put the above gloss in a footnote, thus, you would type:

```
\xgll Dit is een voorbeeldje in het Nederlands.\xgle
    This is a (little example) in {} Dutch.\xgle
\glend
```

Note, again, that the macros described in sec. 4.1 do not have this problem.

To sum up: With low-level commands, every glossed sentence begins with either `\gll`, `\xgll`, `\glll` or `\xglll`, then contains either `\glt` or `\gln`, and ends with `\glend`. Layout is critical in the part preceding `\glt` or `\gln`, and fairly free afterward.

### 4.3 Customization

The font settings of each gloss line can be customized globally by way of the global options macro `\setglossoptions` and the `fsi`, `fssi` or `fssii` key, respectively (see sec. 4.1). Alternatively, you can also redefine these macros:

```
\newcommand*{\glosslineone}[1]{{normalfont\itshape}{#1}}% font settings 1st gloss line
\newcommand*{\glosslinetwo}[1]{{normalfont\upshape}{#1}}% font settings 2nd gloss line
\newcommand*{\glosslinethree}[1]{{normalfont\upshape}{#1}}% font settings 3rd gloss line
```

The markup of the translation line (if the `\digloss` or `\trigloss` macro or the `\glot` low-level command is used) can be customized by redefining the following macro:

```
\newcommand*{\glosslinetrans}[1]{{covenquote(#1)}}
```
Note that for `\covenamequote`, as used in the default de/f_inition, covington checks at document begin whether the csquotes [5] package is loaded. If so, it uses its language-sensitive `\enquote*` macro for enquoting the translation. If not, a fallback quotation (using English single quotation marks) is used. The usage of csquotes is highly recommended!

The markup of the preamble line (which is not marked up at all by default) can be customized by redefining the macro:

\newcommand{\glosslinepreamble[1]{$\{1\}$}}

### 4.4 Examples

This section gives some further examples. First, a sentence with three lines aligned, instead of just two:

\begin{verbatim}
Hoc  est  aliud  exemplum
N.sg.nom  3sg  N.sg.nom  N.sg.nom
This  is  another  example
'This is another example.'
\end{verbatim}

In order to produce this, we use the \texttt{\trigloss} macro for a three-line gloss and pass the \texttt{fsii} option with the respective font switches in order to get small capitals in the second line:

\begin{verbatim}
\trigloss[fsii={\normalfont\scshape}]{Hoc est aliud exemplum}{n.sg.nom 3sg n.sg.nom n.sg.nom}{This is another example}{This is another example.}
\end{verbatim}

Next, an example with a gloss but no translation, with an example number at the right:

\begin{verbatim}
Hoc  habet  numerum
This  has  number
\end{verbatim}

That one was typed using the option \texttt{tlr}:

\begin{verbatim}
\digloss[tlr]{Hoc habet numerum}{This has number}{\hfill (\exampleno)}
\end{verbatim}

Third, we’ll put a glossed sentence inside the \texttt{example} environment, which is a very common way of using it:

\begin{verbatim}
(10) Hoc  habet  numerum  praepositum
   This  has  number  preposed
   'This one has a number in front of it.'
\end{verbatim}

This last example was, of course, typed as:
Although you could also construct it manually as:

\begin{example}
\digloss{Hoc habet numerum praepositum}
\begin{itemize}
\item This has number preposed
\item This one has a number in front of it.
\end{itemize}
\end{example}

And finally, an example that uses the Leipzig glossing rules ([1], cited example: p. 2) and also exemplifies the use of \texttt{preamble}:

\begin{example}[preamble={Lezgian (Haspelmath 1993:207)}]
Gila abur-u-n ferma hamišaluğ güğuna amuq’-da-č.
\begin{itemize}
\item now\phantom{O} they-\textsc{obl-gen} farm forever behind stay-\textsc{fut-neg}
\end{itemize}
\text{"Now their farm will not stay behind forever."}
\end{example}

Of course, you would use \texttt{\cite} in a real document for the citation. Also, if you adhere to the Leipzig glossing rules, you might want to check out the \texttt{leipzig} \LaTeX{} package that facilitates the use of the gloss abbreviations that have been entered and marked-up manually here.

\section{Phrase structure rules}

To print phrase structure rules such as $S \rightarrow NP \ VP$ you can use covington’s macro \texttt{\psr{\texttt{constituent}}}\{\texttt{\textsc{sub-constituents}}\} (for the given example, \texttt{\psr{\textit{S}}}\{\textit{NP-VP}\}).

\section{Feature structures}

To print a feature structure such as

\begin{verbatim}
[ case : nom \\
  person : P ]
\end{verbatim}

you can type:

\texttt{\fs{case:nom \& person:P}}
The feature structure can appear anywhere – in continuous text, in a displayed environment such as \texttt{flushleft}, or inside a phrase-structure rule, or even inside another feature structure.

To put a category label at the top of the feature structure, like this,

\[
N
\begin{array}{c}
\text{case} : \text{nom} \\
\text{person} : P
\end{array}
\]

here's what you type:

\begin{verbatim}
\lfs(N){case:nom \ person:P}
\end{verbatim}

And here is an example of a \texttt{rs}-rule made of labeled feature structures:

\[
\begin{array}{c}
S \\
[\text{tense} : T]
\end{array} \rightarrow \begin{array}{c}
NP \\
[\text{case} : \text{nom} \\
\text{number} : N]
\end{array} \begin{array}{c}
VP \\
[\text{tense} : T \\
\text{number} : N]
\end{array}
\]

which was obviously coded as:

\begin{verbatim}
\psr{\lfs(S){tense:T} \ lfs(NP){case:nom \ number:N} \ lfs(VP){tense:T \ number:N}}
\end{verbatim}

7 Discourse Representation Structures

Several macros in covington facilitate display of Discourse Representation Structures (\texttt{drs}es) in the box notation introduced by Hans Kamp [4]. The simplest one is \texttt{drs}, which takes two arguments: a list of discourse variables joined by $\sim$, and a list of \texttt{drses} conditions separated by \texttt{\ }. Nesting is permitted.

Note that the \texttt{drs} macro itself does not give you a displayed environment; you must use \texttt{flushleft} or the like to display the \texttt{drs}.

Here are some examples:

\begin{verbatim}
\begin{flushleft}
\drs(X)
\{
\hspace{1cm}
donkey(X)\ \\
\hspace{1cm}green(X)
\}
\end{flushleft}
\end{verbatim}

prints as:

\begin{verbatim}
X
\begin{tabular}{|l|}
\hline
\hspace{1cm} donkey(X) \\
\hspace{1cm} green(X) \\
\hline
\end{tabular}
\end{verbatim}
\begin{flushleft}
\texttt{drs}(X)
\begin{align*}
&\{ \text{named}(X, 'Pedro') \}\\texttt{drs}(Y) \\
&\{ \text{donkey}(Y) \}
&\text{owns}(X,Y)
\}
\end{align*}
\text{comes out as:}
\begin{align*}
X \\
\text{named}(X, 'Pedro') \Rightarrow
Y \\
\text{donkey}(Y) \\
\text{owns}(X,Y) \\
\Rightarrow \\
\text{feeds}(X,Y)
\end{align*}
\end{flushleft}

Note that the alignment of the input is fairly free, so you can also write the two arguments of \texttt{drs} in one line, like:
\begin{flushleft}
\texttt{drs}(X) \{ \text{donkey}(X) \ \text{\textcolor{green}{green}}(X) \}
\end{flushleft}

To display a sentence above the \texttt{drs}, use \texttt{sdrs}, which has one extra argument for this purpose, as in:
\begin{flushleft}
\begin{align*}
\begin{align*}
\texttt{sdrs}(A \textit{donkey is green.}) \\
&\{X\} \\
&\{\text{donkey}(X) \ \text{\textcolor{green}{green}}(X)\}
\end{align*}
\end{align*}
\end{flushleft}

which prints as:

\textit{A donkey is green.}

\begin{align*}
X \\
\text{donkey}(X) \\
\text{green}(X)
\end{align*}
Some \texttt{drs} connectives are also provided (normally for forming \texttt{drs}es that are to be nested within other \texttt{drs}es). The macro \texttt{\negdrs} forms a \texttt{drs} preceded by a negation symbol, so

\begin{verbatim}
\negdrs(X)
{
  donkey(X)
  green(X)
}
\end{verbatim}

comes out as

\begin{center}
\begin{tabular}{c}
  $X$
  \hline
  $\neg$
  donkey(X)
  green(X)
\end{tabular}
\end{center}

Finally, \texttt{\ifdrs} forms a pair of \texttt{drs}es joined by a big arrow, like this:

\begin{verbatim}
\ifdrs(X)
{
  donkey(X)
  hungry(X)
}
{
  feeds(Pedro,X)
}
\end{verbatim}

\begin{center}
\begin{tabular}{c}
  $X$
  \hline
  donkey(X)
  hungry(X)
  \Rightarrow
  feeds(Pedro,X)
\end{tabular}
\end{center}

If you have an “if”-structure appearing among ordinary predicates inside a \texttt{drs}, you may prefer to use \texttt{\alifdrs}, which is just like \texttt{\ifdrs} but shifted slightly to the left for better alignment:

\begin{center}
\begin{tabular}{c}
  $X$
  \hline
  donkey(X)
  hungry(X)
  \Rightarrow
  feeds(Pedro,X)
\end{tabular}
\end{center}

Note that for more extended \texttt{drs} representations, dedicated packages are meanwhile available, most notably the \texttt{drs} [2] and the \texttt{sdrt} [3] package. Both packages actually draw on covington, add some additional features and, in some cases, tweak the layout to (what strikes those package authors) the better. If the rather basic \texttt{drs} macros provided by covington do not suit you, please check if one of those packages does.
Note, though, that while sdrt introduces new (capitalized) macro naming which lets the package peacefully coexist with covington, drs simply re-uses covington’s macro names, which makes the two packages incompatible. In order to fix this, covington checks whether the drs macros are already defined when it is loaded; if so, it does not define its own ones. So if you want to use the drs macros of the drs package together with covington’s non-drs features, you can do so, provided that drs is loaded before covington. In that case, covington’s own drs macros are disabled.

8 Exercises

The exercise environment (alias covexercise) generates an exercise numbered according to chapter, section, and subsection (suitable for use in a large book; in this example, the subsection number is going to come out as 0). Here is an example:

Exercise 8.0.1 (Project) Prove that the above assertion is true.

This was coded as

\begin{exercise}[Project]
Prove that the above assertion is true.
\end{exercise}

The argument ([Project] in the example) is optional.

Note that, as of version 1.1, covington checks if there is already an exercise environment defined (e.g., by the class). If so, covington does not define its own one. However, there is always the alias environment covexercise which can be used in order to produce covington’s exercise. If you use the package option force, covington will override existing exercise environments. In any case, the package will issue a warning if exercise is already defined.

9 Reference Lists

To type a simple lsa-style hanging-indented reference list, you can use the reflist environment. (Note: reflist is not integrated with Bib\TeX in any way.\footnote{For Bib\TeX, there are several options: the lsa style, as used in the journal \textit{Language}, can be obtained by means of the style files lsalike.bst (http://www.icsi.berkeley.edu/ftp/pub/speech/jurafsky/lsalike.bst) or language.bst (http://ron.artstein.org/resources/language.bst); the latter uses natbib. The so-called \textit{Unified Style Sheet for Linguistics}, as proposed by the \textit{celx} (Committee of Editors of Linguistics journals), which slightly differs from the lsa style, is followed by the style file unified.bst (available at http://celxj.org/downloads/unified.bst). A biblatex style file for the unified style is available at https://github.com/semprag/biblatex-sp-unified or on CTAN as part of the univie-ling bundle.}) For example,

\begin{reflist}

Chomsky, Noam. 1965. Aspects of the theory of syntax. Cambridge,
\end{reflist}
prints as:


By default, the references have a hanging indentation of 3 em. This can be globally changed by altering the length \reflistindent. Doing \setlength\reflistindent{1.5em}, for instance, will shorten the indentation by half. Likewise, the length \reflistitemsep (6 pt by default) and \reflistparsep (ca. 4 pt by default) can be adjusted to alter the vertical separation (\itemsep and \parsep, for that matter) of reference entries.

Notice that within the reference list, "French spacing" is in effect — that is, spaces after periods are no wider than normal spaces. Thus you do not have to do anything special to avoid excessive space after people’s initials.

10 Semantic markup

The macro \sentence displays an italicized sentence (it is a combination of \flushleft and \itshape). If you type

\begin{verbatim}
\sentence(This is a sentence.)
\end{verbatim}

you get:

This is a sentence.

The font shape can be modified by redefining the following macro:

\begin{verbatim}
\newcommand*\sentencefs{\itshape}
\end{verbatim}

The following macros provide further markup options common in linguistics:

- \lexp{\textit{word}} is used to mark word forms (italic by default, as in \textit{word})
- \lcon{\textsc{concept}} is used to mark concepts (small caps by default, as in \textsc{concept})
- \lmean{\textquote{meaning}} is used to mark meaning (single quotes by default, as in ‘meaning’)

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Note that for \texttt{\textbackslash mean}, covington checks at document begin whether the csquotes [5] package is loaded. If so, it uses its language-sensitive \texttt{\textbackslash enquote*} macro for quoting. If not, a fallback quotation (using English single quotation marks) is used. The usage of csquotes is highly recommended!

Here are the definitions of the macros. They can be redefined via \texttt{\renewcommand}:\[
\begin{align*}
\providecommand{\exp}[1]{\textit{#1}} \\
\providecommand{\con}[1]{\textsc{#1}} \\
\providecommand{\mean}[1]{\covenquote{#1}}
\end{align*}
\]

\section{Big curly brackets (disjunctions)}

Last of all, the two-argument macro \texttt{\textbackslash either} expresses alternatives within a sentence or \texttt{psr}-rule:

\begin{align*}
\text{the } \texttt{\textbackslash either}\{\text{big}\}\{\text{large}\} \text{ dog } = \text{the } \{ \begin{array}{c}
\text{big} \\
\text{large}
\end{array} \} \text{ dog}
\end{align*}

\begin{align*}
\texttt{\textbackslash psr}(A\{B\texttt{-}\texttt{\textbackslash either}(C)\{D\}\texttt{-}\texttt{E})} = A \rightarrow B \left\{ \begin{array}{c}
C \\
D
\end{array} \right\} E
\end{align*}

That’s all there is for now. Suggestions for improving covington are welcome, and bug reports are actively solicited (via \url{https://github.com/jspitz/covington}). Please note, however, that this is free software, and the authors make no commitment to do any further work on it.

\section{Release history}

\subsection*{2.4 (2020 January 2)}

\begin{itemize}
\item Fix definition of covexercise theorem when no subsection counter is defined.
\end{itemize}

\subsection*{2.3 (2019 June 21)}

\begin{itemize}
\item Add preamble option to subexamples environment. See sec. 3.4.
\item Allow to use covington together with the \texttt{drs} package.
\item Documentation fixes and restructuring.
\end{itemize}

\subsection*{2.2 (2019 June 4)}

\begin{itemize}
\item Add new option \texttt{owncounter} that makes covington use an own counter for examples (rather than the equation counter).
\item Add starred \texttt{\textbackslash exampleno*} command that outputs the current example number value without stepping it. See sec. 3.1.
\end{itemize}
• Add macros \covexamplefs and \covexamplenofs for global setting of example text markup. See sec. 3.5.

2.1 (2019 May 12)
• Add new option noglossbreaks that tries to prevent page breaks within glosses.
• Add \glosspreamble command and preamble gloss macro option for arbitrary text preceding glosses.

2.0 (2018 December 10)
• Add new gloss macros (\digloss and \trigloss) for a more convenient, flexible and robust gloss insertion. See sec. 4.1.
• Add \glot command for customizable gloss translation line, together with customization possibilities. See sec. 4.2.
• Add possibility to customize \sentence font setting. See sec. 10.
• Add \lexp, \lcon and \lmean markup macros. See sec. 10.

1.8 (2018 December 7)
• Fix font markup of second gloss line (do not force rm).
• Add possibility to customize gloss line font setting. See sec. 3.5.
• Add possibility to customize example number display. See sec. 3.5.

1.7 (2018 September 8)
• Fix alignment in subexamples.
• Improve manual.

1.6 (2018 September 7)
• Introduce new environment subexamples (see sec. 3.4).
• Introduce new command \pxref (see sec. 3.6).

1.5 (2018 August 24)
• Introduce new option keeplayout which allows to opt-out the layout presets Covington does (\raggedbottom, \textfloatsep).
1.4 (2017 May 23)

- Introduce a new macro \twodias that supersedes the rather odd \twoacc (which is kept for backwards compatibility). See sec. 2 for details.
- Introduce macro \SetDiaOffset for more convenient setting of vertical distance in stacked diacritics. See sec. 2 for details.
- \LaTeX 2.09 is no longer officially supported (it might continue to work, but is not tested).

1.3 (2017 April 5)

- Gloss variants \xgll and \xglll that work inside macros (such as footnotes) but require explicit gloss line end markers (\xgle). See sec. 4 for details.
- New lengths \reflistindent, \reflistparsep and \reflistitemsep to globally adjust the indentation or vertical space, respectively, of reflist items. See sec. 9 for details.

1.2 (2016 August 26)

- New length \examplenumbersep to adjust (increase) the horizontal space between example number and example text. See sec. 3.2 for details.
- Add some more info about bibliography generation.

1.1a (2016 July 7)

- Fix encoding problem in documentation and some typos. No change in functionality.

1.1 (2016 July 6)

- The package now uses \newfont commands if available (fallback for \LaTeX 2.09 is still provided).
- Work around clash with classes/packages that define their own example and examples environments (most notably the beamer class) as well as exercise environments. The covington package no longer blindly attempts to define these environments. By default, it does not define them if they are already defined (covington’s own environments, however, are still available via aliases). By means of a new package option, a redefinition can also be forced. See sec. 3.2 and 3.3 for details.
- New length \twaccsep allows for the adjustment of the distance between stacked accents (see sec. 2).
- Update manual.
• New maintainer: J. Spitzmüller.
• License has been changed to LPPL (in agreement with M. Covington)
• Introduce version numbers. Arbitrarily, we start with 1.1.

2014 May 16
• Patches by Robin Fairbairns:
  – Setting of \textfloatsep uses \setlength rather than \renewcommand
  – Style file converted to unix line endings

2001 March 27
• It is no longer necessary to type \textit to get proper italic type in feature structures.
• Instructions have been rewritten with \LaTeX\ users in mind.

Older versions
• Multiple accents on a single letter (e.g., ã) are supported.
• This package is now called covington (with the o) and is compatible with \LaTeX\ 2.09 and nfss as well as \LaTeX\ 2.09.
• The vertical placement of labeled feature structures has been changed so that the category labels line up regardless of the size of the structures.

References