

Fancy Cross-referencing

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Abstract

`fancyref.sty` is a package for fancy cross-referencing. See the files `README` and `COPYING` for additional information.

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1 Introduction

Besides the notorious FAQ problem “I get a section number when referring to a figure!”¹, cross-referencing with L^AT_EX is simple: You set a `\label` and refer to it with `\ref` and `\pageref`. These commands just work.

Some lazy people soon had the idea to write a `\fullref` command to save some keystrokes:

```
\newcommand*\fullref{[1]{\ref{#1} on page~\pageref{#1}}}
```

After that, people sometimes got page references to the current page which cluttered the text with redundant information.

Perhaps one of these people was FRANK MITTELBACH, who was so annoyed that he wrote the `varioref` package [7]. It provides a `\vref` command which generates output dependent on the difference between the page number of the label and the page number of the cross-reference, e. g. like “on the next page” or “on page 27”. No output will be generated if label and cross-reference fall onto the same page. This is really great, especially as the package supports lots of *languages*.

If you write larger documents with lots of sections and figures, you probably will find out that it is important to keep track of your labels. If you have a section labeled `britain` and a figure labeled `england`, it is only a question of time until you mix them up. To avoid this, most people *prefix* the label with an abbreviation for the type of the referenced object, e. g. `fig` is widely used for figure labels. Also it is common practice to separate this classifying prefix from the label by a *delimiter* character, normally `:` is used by convention [4, p. 41].

¹Just put `\label` *after* `\caption`.

If your labels look like `sec:britain` or `fig:england` a mix-up will belong to the past.

In almost all cases when you are referencing to a figure, you will add a descriptive *string* like “Figure”, because the counter only is not very helpful to the reader. Hence, some people write macros for this purpose:

```
\newcommand*\figref}[1]{\figurename~\ref{#1}}
```

`\figurename` is much better than hard-coding “Figure” into the macro, because in this way the command not only works in other languages, but also if you redefine the string:

```
\renewcommand*\figurename}{Picture}
```

Both captions of figures and cross-references will now happily use the new string.

In many journals cross-references to figures are emphasized by usage of bold face or (much worse) underlining. This enables the reader (who is normally quickly browsing through an article) to find the description of an interesting figure. Of course you can add a `\textbf` to the definition above, however, you will run into trouble, if you want to use the `varioref` package. Neither

```
\newcommand*\figref}[1]{\textbf{\figurename~\vref{#1}}}
```

nor

```
\newcommand*\figref}[1]{\textbf{\figurename}~\vref{#1}}
```

will produce the desired output: You will get “**Figure 1 on page 2**” or “**Figure 1** on page 2” instead of “**Figure 1** on page 2”. What you can do in this case is to hack the strings used by `varioref.sty`, e. g. like:

```
\renewcommand*\reftextfaraway}[1]{%
  \normalfont on page~\pageref{#1}%
}
```

But this is dependent on the language and does not work within italic text.

Also, you will not want bold face for every cross-reference to a figure, only for the “main” cross-reference. And you will not want the page number to appear in every cross-reference when explaining a picture consisting of subfigures: “The left part of Figure 1 on the

following page shows England. The right part of Figure 1 on the next page shows Great Britain.” So your set of macros will grow further by `\mainfigref` and `\shortfigref`. And of course the same applies to tables as well. Slowly, cross-referencing starts to get messy ...

Ok, you got the idea. I felt the need for a more general solution. The `fancyref` package supports different *languages* (at the moment only english and german) and allows customization of the classifying *prefixes*, the *delimiter* character and the *strings* used in cross-references. Most important, it provides user-definable *formats*. Enough advocacy, here we go!

2 Loading

You will need:

1. L^AT_EX 2_ε (at least the 1995/06/01 release)
2. The `varioref` package (part of the standard L^AT_EX tools, normally included in every distribution)
3. The `german` or `babel` package [8, 2] (if you want to write not only in english)

The loading is simple:

```
\usepackage{fancyref}
```

English is used as the default language.

2.1 Language Options

At the moment only english and german are supported languages, others might follow.

german If you write a german text:

```
\usepackage{german} % \usepackage[german]{babel}
\usepackage[german]{fancyref}
```

english If you write a mixed english/german text:

```
\usepackage{german} % \usepackage[english,german]{babel}
\usepackage[english,german]{fancyref}
```

As with `babel.sty` the last language given in the optional argument is the current language. For `german.sty` you will have to use the `\selectlanguage` command [8, p. 7] for english as current language.

Do *not* pass the language as a global option to the document class! Due to a feature of the L^AT_EX option handler

```
\documentclass[english,danish]{article}
\usepackage{babel,fancyref}
```

will result in danish headings (“Figur”) and english strings for the cross-references (“Figure”), without a warning or an error [6, p.20]. The correct usage

```
\documentclass{article}
\usepackage[english,danish]{babel,fancyref}
```

gives a package error, as expected, because danish is not (yet) supported (see section 4.4 on page 9).

2.2 Spacing Options

The spacing between the string and the counter can be adjusted, see also section 4.3 on page 8.

loose Loose spacing, like in “Figure 1”, which is the default, can be turned on explicitly by:

```
\usepackage[loose]{fancyref}
```

tight Tight spacing, like in “Figure 1” will be obtained with:

```
\usepackage[tight]{fancyref}
```

Most textbooks on typography recommend loose spacing (i.e. a normal word space) in this context, but tight spacing (half a word space) is recommended in abbreviated formats like “Fig. 1” [9, p. 220].

2.3 Format Options

The usage of page numbers for the cross-references can be controlled by using different `fancyref` formats, see section 4.5 on page 11. The two most common variants are provided also as package options.

plain Output without a page number, like “Figure 1”, is used if the `plain` option is specified:

```
\usepackage[plain]{fancyref}
```

vario Output like from the `varioref` package (“Figure 1 on the following page”) is used by default, but you could give the `vario` option explicitly:

```
\usepackage[vario]{fancyref}
```

2.4 Hook Options

→ Sec. 4.5, p. 11 The appearance of a cross-reference can not only be controlled by individual formats which depend on the type of the referenced object, but also by a *hook* which is executed for *every* cross-reference, see section 4.6 on page 13. Two variants of this hook can be activated by package options (but only one at a time).

margin You can place all cross-references into the margin, like above. This is achieved by:

```
\usepackage[margin]{fancyref}
```

If you want to do this, you should be aware of the limited space in the margin and use abbreviated formats. In my opinion marginal cross-references are sensible only for floats, for which I already defined the `margin` formats (see section 4.5 on page 11), so this option should better be considered as an example of a hook. The above example was indeed done manually. (-;

paren You can put all cross-references into parentheses, like this: (section 3). This is achieved by:

```
\usepackage[paren]{fancyref}
```

Neither use this option in combination with the `margin` option nor with the `margin` formats!

3 Usage

The cross-referencing is done by two almost identical macros.

\fref `\fref` is used within a sentence and gives lower-case output, like “figure 1”.

\Fref `\Fref` is used at the beginning of a sentence and gives output with normal capitalization, like “Figure 1”. For german users the macros make no difference, “Abbildung 1” remains “Abbildung 1” even within a sentence. How sensible! (-;

There seems to be no reliable heuristic to determine the start of a sentence, so you either have to cope with two macros or accept “Figure 1” even within a sentence.

Both macros take one optional argument, the format of the cross-reference, and one mandatory argument, consisting of the classifying prefix, the delimiter character and the label itself:

```
\fref[<format>]{<prefix><delim><label>}
\Fref[<format>]{<prefix><delim><label>}
```

A typical cross-reference will thus look like this,

```
\fref{fig:england}
```

with `fig` as the prefix, `:` as the delimiter and `britain` as the label, using the default format. The formats, the prefixes and the delimiter character are described in detail in the following section.

4 Customization

4.1 Prefixes

`\...labelprefix` The following table shows the defaults of the various prefixes I already defined for you.

Object	Macro	Prefix
Chapter	<code>\fancyrefchaplabeledprefix</code>	<code>chap</code>
Section	<code>\fancyrefseclabeledprefix</code>	<code>sec</code>
Equation	<code>\fancyrefeqlabelprefix</code>	<code>eq</code>
Figure	<code>\fancyreffiglabelprefix</code>	<code>fig</code>
Table	<code>\fancyreftablabeledprefix</code>	<code>tab</code>
Enumeration	<code>\fancyrefenumlabelprefix</code>	<code>enum</code>
Footnote	<code>\fancyreffnlabelprefix</code>	<code>fn</code>

If you need to add a prefix, use the following syntax:

```
\newcommand*{<macro>}{<prefix>}
```

For example, if you need theorems in your document, you could use:

```
\newcommand*{\fancyrefthmlabeledprefix}{thm}
```

Note that the name of the macro does not matter, but names fitting into the scheme are highly recommended. Be consistent. After that, you will need to define your own `fancyref` formats for the new prefixes. Read section 4.5 on page 11. And let me know of objects for which I should supply prefixes.

`\...changeprefix` If you need to change a prefix (either one I already provided or one you added later), use the following syntax:

```
\fancyrefchangeprefix{<macro>}{<prefix>}
```

For example, if you are labeling your equations with `eqn` instead of `eq` (I guess this will be the most common change):

```
\fancyrefchangeprefix{\fancyrefeqlabelprefix}{eqn}
```

4.2 Delimiters

`\fancyrefargdelim` The default delimiter character is the colon (:). If you need to change it, for example to `-`, use the following syntax:

```
\renewcommand*{\fancyrefargdelim}{-}
```

There is no restriction to one character, you could also use `too-long`, but you definitely should use a delimiter that never, ever occurs within the real label. A single *letter* would be a very bad idea.

4.3 Spacing

`\...spacing` Quite unlikely that someone is not happy with at least one of the package options for this purpose, but one never knows ...

The following table shows the definition of the spacing macros.

Macro	Definition	Example
<code>\fancyrefloosespacing</code>	<code>~</code>	Figure 1
<code>\fancyreftightspacing</code>	<code>\,</code>	Figure 1
<code>\fancyrefdefaultspacing</code>	<code>\fancyrefloosespacing</code>	Figure 1

You could switch from loose to tight spacing and vice versa even after the package is loaded:

```
\renewcommand*{\fancyrefdefaultspacing}{%
  \fancyreftightspacing
}
```

You could loosen the tight spacing or tighten the loose spacing by using for example

```
\renewcommand*{\fancyrefloosespacing}{\kern.25em}
```

but you should not change `\fancyrefdefaultspacing` in this way, because you would lose flexibility: Almost all `fancyref` formats (except the `margin` formats) use `\fancyrefdefaultspacing`, so it is clever to adjust `\fancyreftightspacing` and `\fancyrefloosespacing` and then to switch between the two variants. But I doubt that this will ever be necessary.

4.4 Names

`\dotsname` The following table shows some strings that are already provided by many document classes. If they do not exist, I will define them, otherwise I will not touch their values (in case you have changed them already).

Macro	English string	German string
<code>\chaptername</code>	Chapter	Kapitel
<code>\figurename</code>	Figure	Abbildung
<code>\pagename</code>	Page	Seite
<code>\tablename</code>	Table	Tabelle

`\Fref\dotsname` The next table shows the strings used for cross-references at the beginning of a sentence.

Macro	English string	German string
<code>\Frefchapname</code>	<code>\chaptername</code>	<code>\chaptername</code>
<code>\Frefenumname</code>	Item	Punkt
<code>\Frefeqname</code>	Equation	Gleichung
<code>\Freffigname</code>	<code>\figurename</code>	<code>\figurename</code>
<code>\Freffnname</code>	Footnote	Fußnote
<code>\Frefonname</code>	On	Auf
<code>\Frefpgname</code>	<code>\pagename</code>	<code>\pagename</code>
<code>\Frefsecname</code>	Section	Abschnitt
<code>\Frefseename</code>	See	Siehe
<code>\Frefstabname</code>	<code>\tablename</code>	<code>\tablename</code>

The `fancyref` package uses own macros to achieve maximum flexibility: If you redefine `\figurename` to “Picture”, both the caption

and the cross-references will use this string. If brevity is more important to you than consistency, you could also use “Picture” within the caption and “Pic.” for the cross-references. The necessary code is:

```
\renewcommand*{\figurename}{Picture}
\renewcommand*{\Freffigname}{Pic.}
```

`\fref...name` Within a sentence you should use “picture” instead of “Picture”. The `fancyref` package takes care of this for you and defines the corresponding macros (`\fref...name`) with automatically generated lower-case strings.

`\Frefonname` `\Frefonname` and `\Frefseename` are not used by any `fancyref` formats, but you could use them for your additional formats. An interesting idea would be to use an arrow (\rightarrow) for `\Frefseename`:

```
\renewcommand*{\Frefseename}{%
  \ensuremath{\mathsurround 0pt\rightarrow}%
}
```

If do this, there will be no need to redefine `\frefseename` manually, because the `\MakeLowercase` command [6, p.26] used internally to generate the lower-case strings can cope even with such strange things. (-:

`\Fref...shortname` The table shows some abbreviated strings used for cross-references with the `margin` formats. I do not like abbreviations very much,² because they need to be introduced carefully (written out at the first occurrence) and even then make a document less readable. Also, at the beginning of a sentence, abbreviations should be written out, so you run into inconsistencies (also known as trouble). In my opinion they are reasonable for the `margin` formats, so only the strings necessary for these formats are defined. If you are a big fan of PCMCIA³ or abbreviations or simply do not bear my propaganda, you are on your own.

Macro	English string	German string
<code>\Freffigshortname</code>	Fig.	Abb.
<code>\Frefpgshortname</code>	P.	S.
<code>\Frefstabshortname</code>	Tab.	Tab.

Lower-case versions of these strings (`\fref...shortname`) are generated automatically again.

`\...addcaptions` If you add new prefixes (section 4.1 on page 7), you will probably

²I am stubborn, DIRK, am I not? (-;

³People Cannot Memorize Computer Industry’s Acronyms.

also need further strings, e. g. `\frefthmname`. If you write a multilingual document, they should automatically be changed with the active language. For this case the `fancyref` package offers the following command,

```
\fancyrefaddcaptions{<language>}{<stringdefs>}
```

which can be used only in the preamble of the document. In the above example you would use:

```
\fancyrefaddcaptions{english}{%
  \newcommand*\Frefthmname{Theorem}%
  \newcommand*\frefthmname{%
    \MakeLowercase{\Frefthmname}%
  }%
}
\fancyrefaddcaptions{german}{%
  \newcommand*\Frefthmname{Satz}%
  \newcommand*\frefthmname{\Frefthmname}%
}
```

If you can supply such additional strings or further languages, please do and send me a mail.

4.5 Formats

The output of the `\fref` and `\Fref` commands depends on the used `fancyref` format. For all the different objects that can be cross-referenced, two `fancyref` formats, `plain` and `vario`, are already defined. In addition, for the floating objects (`figure` or `table` environments) two other `fancyref` format called `margin` and `main` are available. The following table shows sample output of these `fancyref` formats.

Object	Format	Output
Chapter	<code>vario</code>	chapter 1 on the following page
	<code>plain</code>	Chapter 1
Equation	<code>vario</code>	Equation (1) on the previous page
	<code>plain</code>	equation (1)
Figure	<code>margin</code>	→ Fig. 1, p. 1
	<code>main</code>	figure 1 on the facing page
	<code>vario</code>	Figure 1 on the page before
	<code>plain</code>	figure 1

The `fancyref` formats for sections, enumerations and footnotes give output similar to those for chapters, whereas the formats for tables correspond to the `fancyref` formats for figures.

`\...defaultformat`

If no optional argument is specified for the `\fref` or `\Fref` command, the `vario` format will be used. You can change this default `fancyref` format to plain:

```
\renewcommand{\fancyrefdefaultformat}{plain}
```

If you do not like some of these `fancyref` formats or you need some more, e. g. for theorems, algorithms etc., you will have to define them yourself. If you define some nice formats, please let me know, perhaps I will add them in a future version of this package.

`\frefformat`

`\Frefformat`

The definition is done by means of two almost identical macros. `\frefformat` declares (or changes) the formats used within a sentence, whereas `\Frefformat` does the same for the formats used at the beginning of a sentence. Unfortunately this means that you need to do the work twice.)-:

Both macros take three mandatory arguments, the name of the `fancyref` format, the prefix macro and the description of the format itself:

```
\frefformat{<format>}{<prefix macro>}<output>}
\Frefformat{<format>}{<prefix macro>}<output>}
```

Within the third argument `#1` will be replaced by the counter of the referenced object (i. e. the output of a `\ref` command), `#2` will be replaced by the page number (i. e. the output of a `\pageref` command) and `#3` will be replaced by the output of a `\vpageref` command (“on the facing page”, “on page 1”).

As an example, I will modify the output foss-references to figures done with the `main` format:

```
\frefformat{main}{\fancyreffiglabelprefix}{%
  \MakeUppercase{\freffigname}\fancyrefdefaultspacing#1#2%
}%
\Frefformat{main}{\fancyreffiglabelprefix}{%
  \MakeUppercase{\Freffigname}\fancyrefdefaultspacing#1#2%
}%
```

These redefinitions will make `\fref[main]{fig:foo}` come out as “FIGURE 1 on page 1”. The page number will always be printed explicitly, not like `varioref.sty` output. By use of the `\freffigname`,

`\Freffigname` and `\fancyrefdefaultspacing` commands it is ensured that further modifications of the string as well as the spacing and language options of the package will work. A quick and dirty hack would have been:

```
\frefformat{main}{\fancyreffiglabelprefix}{FIGURE~#1#2}
\Frefformat{main}{\fancyreffiglabelprefix}{FIGURE~#1#2}
```

The usage of the defined macros for spacing and naming like in the first example is of course highly recommended. Do not blame me, if your lazyness leads to inconsistencies. (-;

Note that in either case you *must* use the prefix *macro*, not the string itself!

4.6 Hooks

`\fancyrefhook` After all the work of the `fancyref` formats has been done, the result is passed as an argument to a hook command called `\fancyrefhook`. Normally, this hook does nothing but simply passing on the output. If you want to change this hook, use the following syntax:

```
\renewcommand{\fancyrefhook}[1]{\langle definition \rangle}
```

Within `\langle definition \rangle`, `#1` will be replaced by the output of the `fancyref` format.

You can use this hook for all kinds of weird stuff, e. g. if you want to have huge cross-references, use the following code:

```
\renewcommand*{\fancyrefhook}[1]{\huge #1}
```

In this simple example the `*`-form of `\renewcommand` may be used, because the hook does not contain whole paragraphs [5, p.14]. This makes debugging of your code easier.

A more complex (and totally brain-dead) example does not work with the `*`-form:

```
\renewcommand{\fancyrefhook}[1]{%
  \begin{itemize}%
    \item #1%
  \end{itemize}%
}
```

If you define really *useful* and “typographically correct” hooks, please send me a mail, so I can include your work in future versions of this package. (-;

5 Examples

See the example file `freftest.tex` and its output, `freftest.dvi`.

6 Bugs

None, as my beta testers, DIRK KUYPERS and ROBIN S. SOCHA, told me. (-;

If you encounter problems after having changed all your cross-references to the macros provided by `fancyref.sty`, please go through the following checklist:

1. Make sure that you either use `:` as a delimiter or that have changed it as described in section 4.2 on page 8.
2. Make sure that you either use the default prefixes or that you have changed them as described in section 4.1 on page 7. Especially do *not* try to modify the prefixes with the `\renewcommand` command.
3. Make sure that you have defined all necessary formats in addition to those provided by me. The definition of `fancyref` formats is described in section 4.5 on page 11.
4. Make sure that you have eliminated all old superfluous strings like `Figure` or `\figurename` in your source code. Just replacing all `\ref` commands with `\fref` will *not* be sufficient.

As far as I know, there is only one *real* problem: If you are working on a multi-author document where each author is used to a different set of prefixes and prefers a different delimiter, be *extremely cautious* when redefining the prefixes and the delimiter. You will get really funny errors, if the current delimiter is `-`, the prefix for equations is `eqn` and you try to make a cross-reference to an equation in a part written by another author who used `:` and `eq` in his `\label` commands.

With the current implementation the only solution is to temporarily redefine the prefix and the delimiter, do the cross-reference and switch back to the original definitions again. This is annoying, of course.)-:

As a consequence, I would recommend either to drop this cross-reference or to try to convince your co-authors that your prefixes and delimiter are the best. Sorry.

7 Implementation

7.1 Documentation Driver

```
1 <*driver>
2 \documentclass[12pt,a4paper]{ltxdoc} \usepackage{fancyref}
3 \begin{document}
4   \DocInput{fancyref.dtx}
5 \end{document}
6 </driver>
```

7.2 fancyref.sty

```
7 <*package>
```

7.2.1 Identification

As this package uses the `\MakeLowercase` command, it does not work with older L^AT_EX 2_ε versions.

```
8 \NeedsTeXFormat{LaTeX2e}[1995/06/01]%
```

The package identifies itself with its release date, a version number and a short description.

```
9 \ProvidesPackage{fancyref}[%
10 1999/02/03 v0.9c Fancy cross-referencing%
11 ]%
```

7.2.2 Initialization

`\@fancyref@add@to` This macro is adapted from `babel.def`. If a command (the first argument) is undefined, it will be defined by the content of the second argument. If the command is defined already, the content of the second argument will be appended to the old definition of the command. The macro will be used to add further definitions to the `\captions...` commands provided by the `babel` package or `german.sty`.

```
12 \newcommand*{\@fancyref@add@to}[2]{%
13   \ifx#1\@undefined
14     \newcommand*{#1}{#2}%
15   \else
16     \ifx#1\relax
17       \newcommand*{#1}{#2}%
18     \else
19       \bgroup
20         \toks@\expandafter{#1#2}%
21         \xdef#1{\the\toks@}%

```

```

22     \egroup
23     \fi
24     \fi
25 }%
```

`\...addcaptions` This macro adds strings (the second argument) to the `\captions...` commands⁴ provided by the `babel` package or `german.sty`, or it simply defines these new strings. The name of the language is given in the first argument.

To make the new strings become effective, the current language is saved⁵ at the beginning of the document, the code defining the strings is executed and the language for the captions is switched back again.

```

26 \newcommand*{\@fancyref@temp}{\@empty}%
27 \newcommand*{\fancyrefaddcaptions}[2]{%
28   \@ifundefined{captions#1}{%
29     #2%
30   }{%
31     \expandafter
32       \@fancyref@add@to\csname captions#1\endcsname{#2}%
33     \AtBeginDocument{%
34       \let\@fancyref@temp=\language
35       \csname captions#1\endcsname
36       \csname captions\@fancyref@temp\endcsname
37       \let\@fancyref@temp=\@empty
38     }%
39   }%
40 }%
```

`\fancyrefhook` It may be clever to define a hook that is executed for every `\fref` or `\Fref` command. For the moment the hook does nothing but simply inserting its argument. I will do something more useful with it later in this file. *You* can use it also for the way of cross-referencing the world is waiting for. (-;

Send me a mail, if you think you have defined a really nifty hook, so I can include it in future versions of this package.

```

41 \newcommand*{\fancyrefhook}[1]{#1}%
```

⁴Credits go to BERND RAICHLE who told me how to do this in a politically correct way.

⁵Credits go to FELIX NEUBAUER, who pointed out that this should be done in a temporary command rather than a token register to avoid an error in combination with `babel.sty` or `german.sty` and automatically generated lists like the `toc`, `lof` or `lot` files.

`\...spacing` These two macros are used to define the spacing between the type of the referenced object and the counter of the object, for example between “Figure” and “1” in “Figure 1”. Normally there is no need to change these definitions.

```
42 \newcommand*\fancyrefloosespacing{\~}%
43 \newcommand*\fancyreftightspacing{\,\,}%
```

`\...defaultformat` Now the default fancyref format is initialized. The real value will be set later depending on the package options.

```
44 \newcommand*\fancyrefdefaultformat{\@empty}%
```

Now some strings are initialized. The real values will be declared later depending on the package options.

```
45 \newcommand*\Frefchapname{\@empty}%
46 \newcommand*\Frefenumname{\@empty}%
47 \newcommand*\Frefeqname{\@empty}%
48 \newcommand*\Freffigname{\@empty}%
49 \newcommand*\Freffname{\@empty}%
50 \newcommand*\Frefonname{\@empty}%
51 \newcommand*\Frefpgname{\@empty}%
52 \newcommand*\Frefsecname{\@empty}%
53 \newcommand*\Frefseename{\@empty}%
54 \newcommand*\Freftabname{\@empty}%
55 \newcommand*\Freffigshortname{\@empty}%
56 \newcommand*\Frefpgshortname{\@empty}%
57 \newcommand*\Freftabshortname{\@empty}%
58 \newcommand*\frefchapname{\@empty}%
59 \newcommand*\frefenumname{\@empty}%
60 \newcommand*\frefeqname{\@empty}%
61 \newcommand*\freffigname{\@empty}%
62 \newcommand*\freffname{\@empty}%
63 \newcommand*\frefonname{\@empty}%
64 \newcommand*\frefpgname{\@empty}%
65 \newcommand*\frefsecname{\@empty}%
66 \newcommand*\frefseename{\@empty}%
67 \newcommand*\freftabname{\@empty}%
68 \newcommand*\freffigshortname{\@empty}%
69 \newcommand*\frefpgshortname{\@empty}%
70 \newcommand*\freftabshortname{\@empty}%
```

7.2.3 Option Declaration

`english` Now the package options are declared. Send me a mail, if you define

options for other languages than english or german.

```
71 \DeclareOption{english}{%
```

Some strings for cross-referencing in english are added (if the command `\captionseenglish` is existing) or simply defined.

```
72 \fancyrefaddcaptions{english}{%
```

I better do not touch these strings, because they are used in many document classes and may be already changed by the user. Therefore they will be defined only if they did not exist before [5].

```
73 \providecommand*\chaptername{Chapter}%
```

```
74 \providecommand*\figurename{Figure}%
```

```
75 \providecommand*\pagename{Page}%
```

```
76 \providecommand*\tablename{Table}%
```

`\Fref...name` The fancyref package uses its own strings for cross-referencing purposes. In this way you can use “Chapter” for chapter headings but “Chap.” for cross-referencing.

However, I do not recommend abbreviations for cross-references, because they look ugly at the beginning of a sentence and should be avoided in these places according to most typographers. Also, the scientific publisher Springer does not allow abbreviation of the words “table” or “Tabelle” (I suppose because of ambiguity with “tabbing” or “Tabulator”).

The macros `\Frefonname` and `\Frefseename` may be useful in new, user-defined fancyref formats (see page 27).

All macro names start with a capital S, because they will be used for cross-references at the beginning of a sentence, where usually capital letters are used.

```
77 \renewcommand*\Frefchapname{\chaptername}%
```

```
78 \renewcommand*\Frefenumname{Item}%
```

```
79 \renewcommand*\Frefeqname{Equation}%
```

```
80 \renewcommand*\Freffigname{\figurename}%
```

```
81 \renewcommand*\Freffnname{Footnote}%
```

```
82 \renewcommand*\Frefonname{On}%
```

```
83 \renewcommand*\Frefpgrname{\pagename}%
```

```
84 \renewcommand*\Frefsecname{Section}%
```

```
85 \renewcommand*\Frefseename{See}%
```

```
86 \renewcommand*\Freftabname{\tablename}%
```

`\Fref...shortname` These macros are used for cross-references placed in the margin. In marginal notes compact information is crucial due to the limited space,

so abbreviated versions of the strings are used. For my general opinion about abbreviations see above.

```
87 \renewcommand*\Freffigshortname}{Fig.}%
88 \renewcommand*\Frefpgshortname}{P.}%
89 \renewcommand*\Frefstabshortname}{Tab.}%
```

`\fref...name` Now the lower-case versions of the language dependent strings (starting with a lower-case `s`) are declared. As these macros are generated automatically by use of the `\MakeLowercase` command, there is no need to customize them, except you want to use for example “Table” at the start of a sentence and “tabular” within a sentence. Inconsistencies like this should of course be avoided.

```
90 \renewcommand*\frefchapname}{%
91 \MakeLowercase{\Frefchapname}%
92 }%
93 \renewcommand*\frefenumname}{%
94 \MakeLowercase{\Frefenumname}%
95 }%
96 \renewcommand*\frefeqname}{%
97 \MakeLowercase{\Frefeqname}%
98 }%
99 \renewcommand*\freffigname}{%
100 \MakeLowercase{\Freffigname}%
101 }%
102 \renewcommand*\freffnname}{%
103 \MakeLowercase{\Freffnname}%
104 }%
105 \renewcommand*\frefonname}{%
106 \MakeLowercase{\Frefonname}%
107 }%
108 \renewcommand*\frefpgname}{%
109 \MakeLowercase{\Frefpgname}%
110 }%
111 \renewcommand*\frefsecname}{%
112 \MakeLowercase{\Frefsecname}%
113 }%
114 \renewcommand*\frefseenname}{%
115 \MakeLowercase{\Frefseenname}%
116 }%
117 \renewcommand*\frefstabname}{%
118 \MakeLowercase{\Frefstabname}%
119 }%
120 \renewcommand*\freffigshortname}{%
```

```

121     \MakeLowercase{\Freffigshortname}%
122   }%
123   \renewcommand*\frefpgshortname}{%
124     \MakeLowercase{\Frefpgshortname}%
125   }%
126   \renewcommand*\frefstabshortname}{%
127     \MakeLowercase{\Frefstabshortname}%
128   }%

```

The closing brace of the second argument of `\fancyrefaddto`:

```
129 }%
```

If `\captionenglish` is defined (`babel.sty` or `german.sty` are used), the language is switched to `english`. In either case the `varioref` package will be called with the option `english` to provide english strings like “on the following page”, see `varioref.dvi`.

```

130 \@ifundefined{captionenglish}{%
131 }{%
132   \selectlanguage{english}%
133 }%
134 \PassOptionsToPackage{\CurrentOption}{varioref}%

```

The closing brace of the `english` option:

```
135 }%
```

german The definition of the german strings is more simple. Except for `\Frefonname` and `\Frefseename` the lower-case versions of the macros are identical with the upper-case version. Damn, my mother tongue seems to be a rather simple language. (-;

A check for the existence of `\captionsgerman` should not be necessary as in almost all cases german \LaTeX nicians use either `babel.sty` or `german.sty`, but one never knows ... The language is switched and the `varioref` package is prepared accordingly.

```

136 \DeclareOption{german}{%
137   \fancyrefaddcaptions{german}{%
138     \providecommand*\chaptername}{Kapitel}%
139     \providecommand*\figurename}{Abbildung}%
140     \providecommand*\pagename}{Seite}%
141     \providecommand*\tablename}{Tabelle}%
142     \renewcommand*\Frefchapname}{\chaptername}%
143     \renewcommand*\Frefenumname}{Punkt}%
144     \renewcommand*\Frefeqname}{Gleichung}%
145     \renewcommand*\Freffigname}{\figurename}%
146     \renewcommand*\Freffigshortname}{Abb.}%

```

```

147 \renewcommand*\Freffnname}{Fu\ss note}%
148 \renewcommand*\Frefonname}{Auf}%
149 \renewcommand*\Frefpgrname}{\pagename}%
150 \renewcommand*\Frefpgrshortname}{S.}%
151 \renewcommand*\Frefsecname}{Abschnitt}%
152 \renewcommand*\Frefseename}{Siehe}%
153 \renewcommand*\Freftablename}{\tablename}%
154 \renewcommand*\Freftabshortname}{Tab.}%
155 \renewcommand*\frefchapname}{\Frefchapname}%
156 \renewcommand*\frefenumname}{\Frefenumname}%
157 \renewcommand*\frefeqname}{\Frefeqname}%
158 \renewcommand*\freffigname}{\Freffigname}%
159 \renewcommand*\freffigshortname}{\Freffigshortname}%
160 \renewcommand*\frefnname}{\Frefnname}%
161 \renewcommand*\frefonname}{%
162 \MakeLowercase{\Frefonname}%
163 }%
164 \renewcommand*\frefpgrname}{\Frefpgrname}%
165 \renewcommand*\frefpgrshortname}{\Frefpgrshortname}%
166 \renewcommand*\frefsecname}{\Frefsecname}%
167 \renewcommand*\frefseename}{%
168 \MakeLowercase{\Frefseename}%
169 }%
170 \renewcommand*\freftablename}{\Freftablename}%
171 \renewcommand*\freftabshortname}{\Freftabshortname}%
172 }%
173 \@ifundefined{captionsgerman}{%
174 }{%
175 \selectlanguage{german}%
176 }%
177 \PassOptionsToPackage{\CurrentOption}{varioref}%
178 }%

```

loose This option sets up loose spacing between string and counter like “Figure 1”. This spacing is recommended, because `varioref.sty` is using it also (on a hard-coded base), and so inconsistencies can be avoided. Do not take things too seriously, the inter-word spacing varies quite a bit from line to line. Even a trained eye will not always be able to distinguish between “tight” and “loose” spacing. Compared with favourite WYTYSYDG⁶ word processors the spacing will be tight in either case. (-;

```
179 \DeclareOption{loose}{%
```

⁶What You Thought You Saw You Didn’t Get.

```

180 \newcommand*\fancyrefdefaultspacing}{%
181   \fancyrefloosespacing
182 }%
183 }%

```

margin This option is an example for a application of `\fancyrefhook`. It places all cross-references into the margin, typesetting them in `\footnotesize` and `\raggedright`. For details see the definition of the `margin` format on page 28.

Do *not* use the `margin` option in combination with those `margin` formats. As this would need nested `\marginpar` commands, you will get `Float(s) lost.` error messages.

Also, you should use abbreviated formats in combination with the `margin` option, because there is not enough space for a message like “Figure 1 on the following page” out there.

I would recommend the usage of marginal cross-references only for floats. The according formats are already defined, so take this options as an example for what is possible.

```

184 \DeclareOption{margin}{%
185   \renewcommand*\fancyrefhook}[1]{%
186     \mbox{}%
187     \marginpar{%
188       \raggedright\hspace{0pt}\footnotesize
189       \ensuremath{\m@th\rightarrow}~#1%
190     }%
191   }%
192 }%

```

paren Another example for an application of `\fancyrefhook`. It simply puts parentheses around every cross-reference. This does not make much sense, if you intend to use marginal notes for cross-referencing purposes: If you combine this option with the `margin` option, the last specified option “wins”. If you use the `margin` formats defined later, you will get parentheses around marginal notes, which is ugly.

```

193 \DeclareOption{paren}{%
194   \renewcommand*\fancyrefhook}[1]{(#1)}%
195 }%

```

plain If this package option is given, only the plain counter of the referenced object will be used, no page number will be printed at all.

```

196 \DeclareOption{plain}{%
197   \renewcommand*\fancyrefdefaultformat}{plain}%
198 }%

```

tight This option may be useful, if you prefer tight spacing between string and counter. According to most textbooks on typography this is the recommended spacing between parts of abbreviations like “i. e.” or “Fig. 1”.

```
199 \DeclareOption{tight}{%
200   \newcommand*\fancyrefdefaultspacing{%
201     \fancyreftightspacing
202   }%
203 }
```

vario If this package option is given, all cross-referencing commands will use the `vario` format with variable output of the page number, like with `varioref.sty`. This is the default.

```
204 \DeclareOption{vario}{%
205   \renewcommand*\fancyrefdefaultformat{vario}%
206 }
```

Other local options will be passed to the `varioref` package after causing an error message. If you use e. g. `danish` as a *global* option (see `clsguide.dvi`), you will get *english fancyref* strings without a warning or an error, hence be careful. This is *not* the fault of the `fancyref` package, but a feature of the $\text{\LaTeX} 2_{\epsilon}$ option handler. You *really* should load the package according to section 2 on page 4.

```
207 \DeclareOption*{%
208   \PackageError{fancyref}{%
209     Unknown option ‘‘\CurrentOption’’%
210   }{%
211     The option ‘‘\CurrentOption’’ was not declared in
212     package ‘‘fancyref’’,\MessageBreak
213     perhaps you have only misspelled its name.\MessageBreak
214     Currently only the languages ‘‘english’’ and
215     ‘‘german’’ are defined.\MessageBreak
216     Try typing <return> to proceed. Most likely your
217     output will be wrong,\MessageBreak
218     e. g. ‘‘Figure’’ instead of ‘‘Abbildung’’.%
219   }%
220   \PassOptionsToPackage{\CurrentOption}{varioref}%
221 }
```

7.2.4 Option Processing

If no options are specified, english strings for cross-referencing, loose spacing between string and counter, and variable output of the page

numbers will be used by default. Otherwise the options are processed in the order given by the calling command.

```
222 \ExecuteOptions{english,loose,vario}%
223 \ProcessOptions*
```

7.2.5 Loading Files

This package uses a nice feature of the `varioref` package to generate variable output depending on the difference between the page number on which the cross-reference occurs and the page number of the referenced object. `varioref.sty` is therefore required.

```
224 \RequirePackage{varioref}%
```

7.2.6 Defining Commands

`\dotslabelprefix` Most users distinguish between labels for figures and tables to avoid a mix-up. This is usually done by prefixing the labels with `fig` or `tab`. These definitions declare the defaults for this classifying part.

```
225 \newcommand*{\fancyrefchaplabelprefix}{chap}%
226 \newcommand*{\fancyrefenumlabelprefix}{enum}%
227 \newcommand*{\fancyrefeqlabelprefix}{eq}%
228 \newcommand*{\fancyreffiglabelprefix}{fig}%
229 \newcommand*{\fancyreffnlabelprefix}{fn}%
230 \newcommand*{\fancyrefseclabelprefix}{sec}%
231 \newcommand*{\fancyreftabllabelprefix}{tab}%
```

To enable user changes of these prefixes it is necessary to do some list processing.⁷ There is one command list for each prefix. It contains a number of macros that will rename the formatting commands defined for this prefix. Initially, the package defines the `\@fancyref@ren` command as empty, by means of `\newcommand*`. In this way, even with the `\def` command other macros cannot be overwritten by accident.⁸

`\@dotsappend@ren` The first argument of the following command is one of those command lists, the second argument is a `fancyref` format. A macro renaming the corresponding formatting command will be appended to the command list.

```
232 \newcommand*{\@fancyref@ren}{\@empty}%
```

⁷Credits go to CARSTEN HEINZ and HEIKO OBERDIEK for providing and optimizing this code. I did not understand a single token in the beginning. (-;

⁸Credits go to BERND RAICHLE for this nice little trick, which is used throughout this package.

```

233 \newcommand*{\@fancyref@append@ren}[2]{%
234   \ifx\relax#1%
235     \def#1{\@fancyref@ren{#2}}%
236   \else
237     \expandafter\def\expandafter#1%
238     \expandafter{#1\@fancyref@ren{#2}}%
239   \fi
240 }%

```

`\@...check@prefix` This command does most of the work, when a prefix is to be renamed. First, the old, saved prefix for the corresponding object type is recalled.

```

241 \newcommand*{\@fancyref@check@prefix}[1]{%
242   \expandafter\let\expandafter\@fancyref@old@prefix
243   \csname @fancyref@saved@prefix\string#1\endcsname

```

The old prefix is compared with the prefix given by the argument.

```

244   \ifx\@fancyref@old@prefix#1%

```

If the prefixes are different, the renaming macros are set up. Their only argument will be a `fancyref` format.

```

245   \else
246     \def\@fancyref@ren##1{%

```

The prefixing part of the name will be changed, if the renaming macros are called with the corresponding argument.

More precisely, the definition of the old formatting command is copied to a new command including the new prefix in its name.

```

247     \expandafter
248     \let\csname fr###1@#1\expandafter\endcsname
249     \csname fr###1@\@fancyref@old@prefix\endcsname

```

Then the old command is deleted.

```

250     \expandafter
251     \let\csname fr###1@\@fancyref@old@prefix\endcsname
252     \@undefined
253   }%

```

Now the command list containing the renaming macros for the given prefix is executed.

```

254   \csname @fr@ren@list\string#1\endcsname

```

The procedure is repeated for the upper-case formatting commands.

```

255   \def\@fancyref@ren##1{%
256     \expandafter
257     \let\csname Fr###1@#1\expandafter\endcsname

```

```

258         \csname Fr@##1@\@fancyref@old@prefix\endcsname
259     \expandafter
260         \let\csname Fr@##1@\@fancyref@old@prefix\endcsname
261         \@undefined
262     }%
263     \csname @Fr@ren@list\string#1\endcsname

Finally the new prefix for the corresponding object type is saved.
264     \expandafter\let
265         \csname @fancyref@saved@prefix\string#1\endcsname#1%
266     \fi
267 }%

```

`\...changeprefix` This user command changes the default prefix for an object type (the first argument) to a new string (the second argument). Then the renaming of the formatting commands is done.

```

268 \newcommand*{\fancyrefchangeprefix}[2]{%
269     \renewcommand*{#1}{#2}%
270     \@fancyref@check@prefix{#1}%
271 }%

```

`\frefformat` This macro is used to define new formats for the typesetting of cross-references. It takes three arguments, the first is the name of the declared format, the second is the prefix macro used for this format (e.g. `\fancyreffiglabelprefix` for cross-references to figures) and the third describes the output generated by the cross-reference.

Within the third argument `#1` will be replaced by the counter of the referenced object (i. e. the output of a `\ref` command), `#2` will be replaced by the page number (i. e. the output of a `\pageref` command) and `#3` will be replaced by the output of a `\vpageref` command.

```

272 \newcommand{\frefformat}[2]{%

```

It is checked if the prefix has changed and the already existing formatting commands are renamed.

```

273     \@fancyref@check@prefix{#2}%

```

Then the `fancyref` format given in the first argument is appended to the command list for the prefix given in the second argument.

```

274     \expandafter\@fancyref@append@ren
275     \csname @fr@ren@list\string#2\endcsname{#1}%

```

Finally the formatting command is defined.

```

276     \@namedef{fr@#1@#2}##1##2##3%
277 }%

```

`\Frefformat` The definition of the command for declaring `fancyref` formats used at the beginning of a sentence is almost the same, the only difference is that upper-case commands like `\Fr@sample@ex` are used internally. This enables usage of “figure” within a sentence and “Figure” at the beginning of a sentence.

```
278 \newcommand{\Frefformat}[2]{%
279   \@fancyref@check@prefix{#2}%
280   \expandafter\@fancyref@append@ren
281   \csname @Fr@ren@list\string#2\endcsname{#1}%
282   \@namedef{Fr@#1@#2}##1##2##3%
283 }%
```

Format Definition. Now it is time for the definition of the `fancyref` formats. Generally the `vario` formats use the features of the `varioref` package, whereas the `plain` formats provide the name of the referenced object and its counter, but no page number.

Of course the various macros for spacing, classifying prefixes and names of the referenced object are used. This will ensure that the default formats also work after redefining e.g. `\chaptername` to “Fool” and `\fancyrefchaplabelex` to “moron”. Cross-references generated by `\fref{moron:bar}` will then come out correctly as “fool 1”.

```
284 \frefformat{vario}{\fancyrefchaplabelex}{%
285   \frefchapname\fancyrefdefaultspacing#1#3%
286 }%
287 \frefformat{plain}{\fancyrefchaplabelex}{%
288   \frefchapname\fancyrefdefaultspacing#1%
289 }%
290 \frefformat{vario}{\fancyrefenumlabelprefix}{%
291   \frefenumname\fancyrefdefaultspacing#1#3%
292 }%
293 \frefformat{plain}{\fancyrefenumlabelprefix}{%
294   \frefenumname\fancyrefdefaultspacing#1%
295 }%
```

The formats for the cross-references to equations are more complex, because I wanted to support the `\tagform@` command of the `amsmath` package [1]:

```
\makeatletter
\renewcommand{\tagform@}[1]{\textup{[#1]}}
\makeatother
```

will make both the equation numbers and the cross-references generated e. g. by `\fref{eq:bar}` come out as “[1]”. Even within a formula a cross-referenced equation number will *not* be typeset in italics.

```

296 \@ifundefined{tagform@}{%
297   \frefformat{vario}{\fancyrefeqlabelprefix}{%
298     \frefeqname\fancyrefdefaultspacing\textup{(#1)}#3%
299   }%
300   \frefformat{plain}{\fancyrefeqlabelprefix}{%
301     \frefeqname\fancyrefdefaultspacing\textup{(#1)}%
302   }%
303 }{%
304   \frefformat{vario}{\fancyrefeqlabelprefix}{%
305     \frefeqname\fancyrefdefaultspacing
306     \textup{\tagform@{#1}}#3%
307   }%
308   \frefformat{plain}{\fancyrefeqlabelprefix}{%
309     \frefeqname\fancyrefdefaultspacing
310     \textup{\tagform@{#1}}%
311   }%
312 }%

```

For figures and tables an additional `fancyref` format called `margin` is provided to put cross-references into the margin.

`\mbox{}` will fix an alignment problem, if the `\marginpar` command occurs prior to the first word of a paragraph, see [4, p. 75]. `\hspace{0pt}` enables hyphenation of the very first word of the `\marginpar` command.

Marginal notes are typeset in a smaller font and `\raggedright`. The `\rightarrow` is typeset in math mode without the horizontal space usually added by `\mathsurround`.

In marginal notes tight spacing is appropriate, because due to the limited space in the margins abbreviated strings are used.

```

313 \frefformat{margin}{\fancyreffiglabelprefix}{%
314   \mbox{ }\marginpar{%
315     \raggedright\hspace{0pt}\footnotesize
316     \ensuremath{\m@th\rightarrow}~%
317     \Freffigshortname\fancyreftightspacing#1,
318     \frefpgshortname\fancyreftightspacing#2%
319   }%
320 }%

```

The `main` format should be used for that cross-reference which explains the referenced object in detail. Scientific papers usually are browsed

very quickly, perhaps the reader stops at a figure or a table and begins to search for the explanation of this float. Hence it is very helpful to typeset this main cross-reference in bold face and to provide the full information including the page number (with support of the `varioref` package). These main formats are defined only for floats, i. e. figures or tables, because for other, non-floating objects the “main” cross-reference usually can be found very near to the object.

```
321 \frefformat{main}{\fancyreffiglabelprefix}{%
322   \textbf{\freffigname\fancyrefdefaultspacing#1}#3%
323 }%
```

The rest of the format definitions should now be straight forward.

```
324 \frefformat{vario}{\fancyreffiglabelprefix}{%
325   \freffigname\fancyrefdefaultspacing#1#3%
326 }%
327 \frefformat{plain}{\fancyreffiglabelprefix}{%
328   \freffigname\fancyrefdefaultspacing#1%
329 }%
330 \frefformat{vario}{\fancyreffnlabelprefix}{%
331   \freffnname\fancyrefdefaultspacing#1#3%
332 }%
333 \frefformat{plain}{\fancyreffnlabelprefix}{%
334   \freffnname\fancyrefdefaultspacing#1%
335 }%
336 \frefformat{vario}{\fancyrefseclabelprefix}{%
337   \frefsecname\fancyrefdefaultspacing#1#3%
338 }%
339 \frefformat{plain}{\fancyrefseclabelprefix}{%
340   \frefsecname\fancyrefdefaultspacing#1%
341 }%
342 \frefformat{margin}{\fancyreftabllabelprefix}{%
343   \mbox{} \marginpar{%
344     \raggedright \hspace{0pt} \footnotesize
345     \ensuremath{\m@th \rightarrow} ~%
346     \Frefstabshortname \fancyreftightspacing#1,
347     \frefpgshortname \fancyreftightspacing#2%
348   }%
349 }%
350 \frefformat{main}{\fancyreftabllabelprefix}{%
351   \textbf{\frefstabname\fancyrefdefaultspacing#1}#3%
352 }%
353 \frefformat{vario}{\fancyreftabllabelprefix}{%
354   \frefstabname\fancyrefdefaultspacing#1#3%
```

```

355 }%
356 \frefformat{plain}{\fancyreftablprefix}{%
357   \frefname\fancyrefdefaultspacing#1%
358 }%

Now it is time for the upper-case versions of the format definitions.

359 \Frefformat{vario}{\fancyrefchaplabelprefix}{%
360   \Frefchapname\fancyrefdefaultspacing#1#3%
361 }%
362 \Frefformat{plain}{\fancyrefchaplabelprefix}{%
363   \Frefchapname\fancyrefdefaultspacing#1%
364 }%
365 \Frefformat{vario}{\fancyrefenumlabelprefix}{%
366   \Frefenumname\fancyrefdefaultspacing#1#3%
367 }%
368 \Frefformat{plain}{\fancyrefenumlabelprefix}{%
369   \Frefenumname\fancyrefdefaultspacing#1%
370 }%
371 \@ifundefined{tagform@}{%
372   \Frefformat{vario}{\fancyrefeqlabelprefix}{%
373     \Frefeqname\fancyrefdefaultspacing\textup{(#1)}#3%
374   }%
375   \Frefformat{plain}{\fancyrefeqlabelprefix}{%
376     \Frefeqname\fancyrefdefaultspacing\textup{(#1)}%
377   }%
378 }{%
379   \Frefformat{vario}{\fancyrefeqlabelprefix}{%
380     \Frefeqname\fancyrefdefaultspacing
381     \textup{\tagform@{#1}}#3%
382   }%
383   \Frefformat{plain}{\fancyrefeqlabelprefix}{%
384     \Frefeqname\fancyrefdefaultspacing
385     \textup{\tagform@{#1}}%
386   }%
387 }%
388 \Frefformat{margin}{\fancyreffiglabelprefix}{%
389   \mbox{} \marginpar{%
390     \raggedright \hspace{0pt} \footnotesize
391     \ensuremath{\m@th \rightarrow} ~%
392     \Freffigshortname \fancyreftightspacing#1,
393     \frefpgshortname \fancyreftightspacing#2%
394   }%
395 }%
396 \Frefformat{main}{\fancyreffiglabelprefix}{%

```

```

397 \textbf{\Freffigname\fancyrefdefaultspacing#1}#3%
398 }%
399 \Frefformat{vario}{\fancyreffiglabelprefix}{%
400 \Freffigname\fancyrefdefaultspacing#1#3%
401 }%
402 \Frefformat{plain}{\fancyreffiglabelprefix}{%
403 \Freffigname\fancyrefdefaultspacing#1%
404 }%
405 \Frefformat{vario}{\fancyreffnlabelprefix}{%
406 \Freffnname\fancyrefdefaultspacing#1#3%
407 }%
408 \Frefformat{plain}{\fancyreffnlabelprefix}{%
409 \Freffnname\fancyrefdefaultspacing#1%
410 }%
411 \Frefformat{vario}{\fancyrefseclabelprefix}{%
412 \Frefsecname\fancyrefdefaultspacing#1#3%
413 }%
414 \Frefformat{plain}{\fancyrefseclabelprefix}{%
415 \Frefsecname\fancyrefdefaultspacing#1%
416 }%
417 \Frefformat{margin}{\fancyreftablabeledprefix}{%
418 \mbox{} \marginpar{%
419 \raggedright \hspace{0pt} \footnotesize
420 \ensuremath{\m@th \rightarrow} ~%
421 \Frefstabshortname\fancyreftightspacing#1,
422 \frefpgshortname\fancyreftightspacing#2%
423 }%
424 }%
425 \Frefformat{main}{\fancyreftablabeledprefix}{%
426 \textbf{\Frefstabname\fancyrefdefaultspacing#1}#3%
427 }%
428 \Frefformat{vario}{\fancyreftablabeledprefix}{%
429 \Frefstabname\fancyrefdefaultspacing#1#3%
430 }%
431 \Frefformat{plain}{\fancyreftablabeledprefix}{%
432 \Frefstabname\fancyrefdefaultspacing#1%
433 }%

```

... much tedious work!

`\fancyrefargdelim` The following definition sets up the default for the delimiting character between the “classifying” part and the “labeling” part of a label, e. g. in `fig:foo` the colon is used as a delimiter. This can be customized, but most users will stick to the conventional `:`.

```
434 \newcommand*{\fancyrefargdelim}{:}%
```

The following code saves the backslash char in a token register, so it can be used in `\PackageError` messages.⁹ Sorry, I do not understand the code due to its `\catcode` and grouping hacking. Still much to learn ...

```
435 \begingroup \catcode'\|=0 |catcode'\|=12
436 |toks0={|endgroup
437 |def|backslashchar{\}}
438 |the|toks0 \relax
```

`\@...page@ref` This macro is a hacked version of the `\vpageref` command from the `varioref` package, which removes a space that is superfluous for my purpose.

```
439 \newcommand*{\@fancyref@page@ref}{\@ifnextchar [%]
440 \@vpageref{\@vpageref [\unskip] ]}%
441 }%
```

`\@f@ref` This macro now does the real work. It tests if the specified format for the given classifying prefix exists. If it does, the formatting command is called with three arguments: The counter of the referenced object (`\ref`), the page number of the referenced object (`\pageref`) and the page number resulting from a `\vpageref`. The output of the formatting command will be passed as an argument to the `\fancyrefhook` command (see page 16). If the formatting command does not exist, a package error occurs.

```
442 \newcommand*{\@f@ref}[4]{%
443 \@ifundefined{#1r@#2@#3}{%
444 \PackageError{fancyref}{%
445 \backslashchar#1ref\space format ‘‘#2’’
446 undefined\MessageBreak
447 for label type ‘‘#3’’%
448 }{%
449 The format ‘‘#2’’ was not defined for the label type
450 ‘‘#3’’\MessageBreak
451 and the \backslashchar#1ref\space command. Perhaps
452 you have only misspelled its name.\MessageBreak
453 Otherwise you will have to define it with
454 \protect\new#1refformat\MessageBreak
455 prior to using it.%
456 }%
```

⁹Credits go to BERND RAICHLE for this dirty trick.

```

457 }{%
458   \fancyrefhook{%
459     \@nameuse{#1r#2@#3}%
460     {\ref{#3\fancyrefargdelim#4}}%
461     {\pageref{#3\fancyrefargdelim#4}}%
462     {\@fancyref@page@ref{#3\fancyrefargdelim#4}}%
463   }%
464 }%
465 }%

```

`\fref` This macro is the front-end for the user. Its first, optional argument is the format of the cross-reference, the second, mandatory argument is the label of the cross-referenced object. If no optional argument is provided, `\fancyrefdefaultformat` will be used as a format.

The second argument is then split at the delimiting character (`\fancyrefargdelim`, see page 31) into a classifying prefix and the labeling part. I am sorry that I do not understand the `\@fref` command completely. But it works really well,¹⁰ and passes four arguments to the `\@f@ref` command: Lower-case flag, format, classifying prefix and labeling part.

```

466 \newcommand*\@fref{\@empty}%
467 \newcommand*\fref}[2][\fancyrefdefaultformat]{%
468   \edef\@fref{%
469     \def\noexpand\@fref
470       #####1\fancyrefargdelim###2\noexpand\@fref{%
471         \noexpand\@f@ref{f}{#1}{#####1}{###2}}%
472   }%
473 }%
474 \@fref
475 \@fref#2\@fref
476 }%

```

`\Fref` This macro works exactly the same way as `\fref`. It should be used at the beginning of a sentence and hence passes an upper-case **S** to the `\@f@ref` command. STEFAN ULRICH¹¹ told me kindly that it is very difficult to implement a reliable heuristic to check for the start of a sentence. So I decided to leave this as an exercise for the reader. (-;

¹⁰Credits go to DAVID CARLISLE who once again send me the cut-and-paste solution for my problems.

¹¹He will easily notice that his name was typeset without his additions to the soul package [3]. (-;

```

477 \newcommand*\@Fref{\@empty}%
478 \newcommand*\Fref[2][\fancyrefdefaultformat]{%
479   \edef\@Fref{%
480     \def\noexpand\Fref
481       #####1\fancyrefargdelim#####2\noexpand\Fref{%
482         \noexpand\@f@ref{F}{#1}{#####1}{#####2}%
483       }%
484   }%
485   \@Fref
486   \@Fref#2\@Fref
487 }%
488 \</package>

```

References

- [1] American Mathematical Society. *AMS- \LaTeX Version 1.2 User's Guide*, Nov. 1996. Version 1.02.
- [2] BRAAMS, J.: *Babel, a multilingual package for use with \LaTeX 's standard document classes*. Zoetermeer, Jan. 1997.
- [3] FRANZ, M.: *The soul package*, Dec. 1998. Version 1.1a.
- [4] GOOSSENS, M.; MITTELBACH, F.; SAMARIN, A.: *Der \LaTeX -Begleiter*. Addison-Wesley, Bonn, 1st edn., 1994.
- [5] \LaTeX 3 Project Team. *\LaTeX 2 ϵ for authors*, Jun. 1997.
- [6] \LaTeX 3 Project Team. *\LaTeX 2 ϵ for class and package writers*, Jun. 1998.
- [7] MITTELBACH, F.: *The varioref package*. Mainz, May 1998. Version 1.1g.
- [8] RAICHLE, B.: *Kurzbeschreibung – german.sty (Version 2.5)*. Deutschsprachige Anwendervereinigung \TeX e. V., May 1996. Version 2.5c.
- [9] WILLBERG, H. P.; FORSSMAN, F.: *Lesetypographie*. Hermann Schmidt, Mainz, 1997.