The changepage and chngpage packages

Author: Peter Wilson, Herries Press
Maintainer: Will Robertson
will dot robertson at latex-project dot org

v1.2b and v1.0c, 2009/10/20

Abstract
Provides command \ifoddpage to detect the current page ‘side’, environment adjustwidth to locally change the margins of the text, and commands \changenewtext and \changepage for more radical changes to the page design mid-way through a document.

changepage is the new version of chngpage to be compatible with memoir. chngpage is now deprecated for this reason.

Contents
I User documentation 1
1 Detecting odd or even pages 2
2 Adjusting the margins 2
3 Changing the text block 3
4 Changing the entire page design 4

II Implementation 6
5 The changepage package 6
6 The chngpage package 10

Part I
User documentation

Load the package like this:

\usepackage[strict]{changepage}

Or for deprecated uses:

\usepackage[strict]{chngpage}
1 Detecting odd or even pages

The \checkoddpage command can be used anywhere in the body of a document to determine if TeX is typesetting on an odd or even numbered page. If on an odd page then \ifoddpage is set \texttt{true}, otherwise (on an even page) \ifoddpage is set \texttt{false}.

Strict page checking works by the \checkoddpage command generating a label and then checking the \pageref for the label (actually, a special version of \pageref is required and is used internally by \checkoddpage). This mechanism requires at least two \TeX passes to ensure that the labels have settled (on the initial pass there will be no labels in the *.aux file to be checked).

The label identifier is composed of the command \cplabel and an automatically generated number. \cplabel, initially defined as ‘\_’, can be changed in the preamble if it will cause a clash with any author-defined labels. The default labels will be of the form ‘\_\langle N\rangle’ where \langle N\rangle is a positive integer.

For chngpage, use \cplabelprefix instead of \cplabel.

The package option ‘strict’ turns on strict page checking — the default is not to use strict checking. Strict page checking can be turned on or off at any time by the commands \strictpagecheck or \easypagecheck. The easy page check just tests the page number to see if it is odd or even, which does not always give the correct result because of \TeX’s asynchronous output mechanism.

2 Adjusting the margins

Within an \adjustwidth environment the left and right margins can be adjusted. The environment takes two required length arguments:

\begin{adjustwidth}{}{-8em}

A positive length value will increase the relevant margin (shortening the text lines) while a negative length value will decrease the margin (lengthening text lines). An empty length argument means no change to the margin. At the end of the environment the margins revert to their original values.

For example, to extend the text into the right margin:

\begin{adjustwidth}{}{-8em}

The starred version, \adjustwidth*, causes the values of the margins to switch between odd and even pages.

For example, if the document is being set twosided it might be advantageous to have any wider text extending into the outside margin:

\begin{adjustwidth*}{}{-8em}

To have the adjusted text horizontally centered with respect to any surrounding text, the margins should be adjusted equally:
For interest, \begin{quotation}
\begin{adjustwidth}{2.5em}{2.5em}
The environment may also be used inside a float if the contents are a bit too wide for the text block, but can still fit within the physical page:
\begin{figure}
\begin{adjustwidth}{-2em}{-2em}
\includegraphics{wide}
\caption{Wide figure}
\end{adjustwidth}
\end{figure}
\end{quote}

Sometimes, because of the asynchronous nature of the TeX output routine, the margin switching may be incorrect (like \marginpar sometimes) near the top of a page. This can be corrected by using the package option ‘strict’ (i.e., \usepackage[strict]{chngpage}), which causes adjustwidth to use the \checkoddpage command (see below).

A disadvantage of the strict option is that the package generates a new label for each adjustwidth environment, and \TeX{} may run out of space if there are an excessive number of labels in the document.

Whether or not the strict option is used, ‘strict adjustwidths’ can be turned on by putting the command \strictpagecheck before the environment, and turned off by using \easypagecheck.

\textbf{NOTE:} In a twocolumn document, the adjustwidth environment treats both columns equally. For example, if the width is meant to be wider at the outer margin, then on odd pages the extra width will be at the right of any column, and on even pages the extra will be at the left of any column. You can get interesting effects by careful hand tuning on two column pages.

\section{Changing the text block}

The \texttt{\change...} command is for changing the size and horizontal position of the text block on a page. The command takes 5 arguments, each of which is a length or is empty. i.e.,

\begin{verbatim}
\change{(text height)}{(text width)}{(even-side margin)}{(odd-side margin)}{(column sep)}
\end{verbatim}

The given lengths are added to the corresponding current lengths and the remainder of the current page is typeset using the changed text block layout. The new layout remains in effect until another \change... command is issued.
4 Changing the entire page design

The \changepage command is for changing the general layout of a page. The command takes 9 arguments, each of which is a length or is empty. The first 5 arguments are the same as for \changtext and have the same effect. The last four arguments are:

\changepage{⟨5 args⟩}{⟨topmargin⟩}{⟨headheight⟩}{⟨headsep⟩}{⟨footskip⟩}

These lengths are added to the corresponding current lengths and thus modify the vertical positions of the elements of the page. The remainder of the current page is typeset using the changed text block and page layout. The new layout remains in effect until another \change... command is issued.

NOTE 1 Not supplying a value for a length argument is equivalent to giving it a zero length value.

NOTE 2 For any given page, everything is constant except for the textwidth and columnsep (for example, what is the meaning of two topmargins on a single column page?). It is therefore best to change anything else at the start of a new page. Further, any changes only apply to whole paragraphs. If you want an odd shaped paragraph use either the hanging package or the TEX \parshape command.

For example, to change from single column pages to double column pages where the text block is both shorter and wider, then to revert back to the initial layout:

... single column normal page
\newpage % or \clearpage
\changtext{-5\baselineskip}{10em}{-5em}{-5em}{}
\twocolumn
... two column pages
\clearpage
\changtext{5\baselineskip}{-10em}{5em}{5em}{}
\onecolumn
... normal pages

Note the adjustments to the margins which will keep the vertical centerline of the textblock at the same position on the page.

As another example, to increase the width of a single paragraph:

\changtext{0pt}{5em}{\}{}{\}%
Start of wider paragraph text ...
... end of paragraph.

\changenext{-5em}{}

Start of a normal paragraph ...

Under some circumstances you can include a \change{} command as part of the argument to \afterpage (from the afterpage package) and it may work. Similarly it may work in a heading style used for \thispagestyle to change a single page.
Part II
Implementation

5 The changepage package

LaTeX2e file ‘changepage.sty’ generated by the ‘filecontents’ environment from source ‘changepage’ on 2009/10/20.

\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{changepage}[2009/10/20 \v1.0c \change_page_and_change_page_layout]

Don’t use this with memoir

\if\cp@whoopsusingmemoir
  \newcommand*{\cp@whoopsusingmemoir}{}
\fi
\newcommand*{\cp@whoopsusingmemoir}{\ifclassloaded{memoir}{\def{\cp@whoopsusingmemoir}{\endinput}}{\cp@whoopsusingmemoir}}

New \if for the strict option

\ifstrictpagecheck
  \newif{\ifstrictpagecheck}
  \strictpagecheckfalse
\fi

User commands for switching strict page checking on/off

\newcommand*{\strictpagecheck}{\strictpagechecktrue}
\newcommand*{\easypagecheck}{\strictpagecheckfalse}

Declare and process options

\DeclareOption{strict}{\strictpagechecktrue}
\ProcessOptions

New commands for strict checking of odd/even page. Works by writing a label and then checking its pageref.

\ifoddpage
  \newif{\ifoddpage}
  \newcounter{cp@cntr}\global\setcounter{cp@cntr}{0}
  \newcommand{\cplabel}{^_}
  \gdef\thepmemc@@page{\the\c@page}
  \long\def{\pmemprotected@write}{\protected@write}
\fi
End newcommands for strict checking of odd/even page.

Copy of some of the code from the ifmtarg package to save requiring ifmtarg
Set the page output parameters

\DeclareRobustCommand{\ch@ngetext}{% 
  \setlength{\@colht}{\textheight}\setlength{\@colroom}{% \textheight}\setlength{\vsize}{\textheight}\setlength{\columnwidth}{% \textheight}\if@twocolumn% \advance\columnwidth-\columnsep \divide\columnwidth\tw@% \@firstcolumntrue% \fi% \setlength{\hsize}{\columnwidth}% \setlength{\linewidth}{\hsize}}

\DeclareRobustCommand{\changetext}[5]{% 
  \@ifmtarg{#1}{}{\addtolength{\textheight}{#1}}% 
  \@ifmtarg{#2}{}{\addtolength{\textwidth}{#2}}% 
  \@ifmtarg{#3}{}{\addtolength{\evensidemargin}{#3}}% 
  \@ifmtarg{#4}{}{\addtolength{\oddsidemargin}{#4}}% 
  \@ifmtarg{#5}{}{\addtolength{\columnsep}{#5}}% 
  \ch@ngetext}

\DeclareRobustCommand{\changepage}[9]{% 
  \@ifmtarg{#1}{}{\addtolength{\textheight}{#1}}% 
  \@ifmtarg{#2}{}{\addtolength{\textwidth}{#2}}% 
  \@ifmtarg{#3}{}{\addtolength{\evensidemargin}{#3}}% 
  \@ifmtarg{#4}{}{\addtolength{\oddsidemargin}{#4}}% 
  \@ifmtarg{#5}{}{\addtolength{\columnsep}{#5}}% 
  \ch@ngetext% 
  \@ifmtarg{#6}{}{\addtolength{\topmargin}{#6}}% 
  \@ifmtarg{#7}{}{\addtolength{\headheight}{#7}}% 
  \@ifmtarg{#8}{}{\addtolength{\headsep}{#8}}% 
  \@ifmtarg{#9}{}{\addtolength{\footskip}{#9}}}

\newenvironment{adjustwidth}[2]{% adjustwidth
  \begin{list}{}{%
    \topsep\z@% \listparindent\parindent% \parsep\parskip% \@ifmtarg{#1}{\setlength{\leftmargin}{\z@}}% \@ifmtarg{#2}{\setlength{\rightmargin}{\z@}}%

8
\newenvironment{adjustwidth*}[2]{% 
\begin{list}{}{% 
\topsep\z@% 
\listparindent\parindent% 
\parsep\parskip% 
\checkoddpage 
\ifoddpage% 
\@ifmtarg{#1}{\setlength{\leftmargin}{\z@}}% 
{\setlength{\leftmargin}{#1}}% 
\@ifmtarg{#2}{\setlength{\rightmargin}{\z@}}% 
{\setlength{\rightmargin}{#2}}% 
\else% 
\@ifmtarg{#2}{\setlength{\leftmargin}{\z@}}% 
{\setlength{\leftmargin}{#2}}% 
\@ifmtarg{#1}{\setlength{\rightmargin}{\z@}}% 
{\setlength{\rightmargin}{#1}}% 
\fi 
\item[]\end{list}

\endinput
6 The \texttt{chngpage} package

LaTeXe file ‘chngpage.sty’ generated by the ‘filecontents’ environment from source ‘changepage’ on 2009/10/20.

PLEASE NOTE: THIS PACKAGE IS DEPRECATED IN FAVOUR OF \texttt{CHANGEPAGE.STY} FOR REASONS OF COMPATIBILITY WITH THE MEMOIR CLASS. The two are equivalent; please do not use this one for new documents or packages.

\NeedsTeXFormat{LaTeX2e}
\ProvidesPackage{chngpage}[2009/10/20 \texttt{v1.2b \_change\_page\_layout}]

Note: internal package commands all include the string \texttt{cp@}. New \texttt{\if} for the strict option.

\ifcpstrict , \newif\ifcpstrict
\cpstrictfalse

Declare and process options.

\texttt{strict} , \DeclareOption{strict}{\cpstricttrue} \texttt{strict}
\ProcessOptions\relax

New commands for strict checking of odd/even page. Works by writing a label and then checking its pageref.
Rewritten in v1.2 to handle roman, Roman, etc page numbers as well as arabic; also eliminates special code to handle hyperref. Based on the code in the memoir class.

\ifcpoddpage % \newif\ifcpoddpage
\cp@cnt % \newcounter{cp@cnt}
\cp@tempcnt % \newcounter{cp@tempcnt}
\cplabelprefix % \newcommand{\cplabelprefix}{^_}

\begingroup
\let\thecp@page\relax
#2\let\protect\@unexpandable@protect
\edef\reserved@a{\write#1{#3}}\reserved@a
\endgroup

\def\the\cp@page{\the\c@page}
\long\def\cp@protected@write#1#2#3{% modified \protected@write
\begingroup
\let\the\cp@page\relax
%2\let\protect\@unexpandable@protect
\edef\reserved@a{\write#1{\#3}}\%\reserved@a\endgroup

10
\checkoddpage \DeclareRobustCommand{\checkoddpage}{% \cpoddpagefalse \stepcounter{cp@cnt} \cplabel{\cplabelprefix\thecp@cnt}\relax \ifodd\c@cp@tempcnt\cpoddpagetrue\fi}

\newcommand{\cplabel}[1]{\@bsphack \cp@protected@write@\auxout{}{% \string\newcplabel{#1}{\thecp@page}}}\@esphack}

\newcommand{\newcplabel}{\newcommand{\cp@labelref}[1]{% \expandafter\ifx\csname cp@#1\endcsname\relax 0\else \csname cp@#1\endcsname \fi}}

End newcommands for strict checking of odd/even page.

Copy of some of the code from the ifmtarg package to save requiring ifmtarg.

\begin{group}
\catcode\Q=3
\long\gdef@ifmtarg#1{% \@xifmtarg#1QQ\@secondoftwo\@firstoftwo\@nil}
\long\gdef@ifmtarg#1#2Q#3#4#5\@nil{#4}
\end{group}

Set the page output parameters.

\ch@ngetext \DeclareRobustCommand{\ch@ngetext}{% \setlength{\@colht}{\textheight}\setlength{\@colroom}{\% \textheight}\% \setlength{\vsize}{\textheight}\setlength{\columnwidth}{\% \textwidth}\% \if@twocolumn\% \advance\columnwidth-\columnsep\divide\columnwidth\tw@\% \@firstcolumntrue\%}
\fi\setlength{\hsize}{\columnwidth}\
\setlength{\linewidth}{\hsize}\
}\}

\DeclareRobustCommand{\changetext}[5]{% 
\ifmtarg{#1}{}{\addtolength{\textheight}{#1}}% 
\ifmtarg{#2}{}{\addtolength{\textwidth}{#2}}% 
\ifmtarg{#3}{}{\addtolength{\evensidemargin}{#3}}% 
\ifmtarg{#4}{}{\addtolength{\oddsidemargin}{#4}}% 
\ifmtarg{#5}{}{\addtolength{\columnsep}{#5}}% 
\changetext% 
}\}

\DeclareRobustCommand{\changepage}[9]{% 
\ifmtarg{#1}{}{\addtolength{\textheight}{#1}}% 
\ifmtarg{#2}{}{\addtolength{\textwidth}{#2}}% 
\ifmtarg{#3}{}{\addtolength{\evensidemargin}{#3}}% 
\ifmtarg{#4}{}{\addtolength{\oddsidemargin}{#4}}% 
\ifmtarg{#5}{}{\addtolength{\columnsep}{#5}}% 
\ifmtarg{#6}{}{\addtolength{\topmargin}{#6}}% 
\ifmtarg{#7}{}{\addtolength{\headheight}{#7}}% 
\ifmtarg{#8}{}{\addtolength{\headsep}{#8}}% 
\ifmtarg{#9}{}{\addtolength{\footskip}{#9}}% 
}\}

\newenvironment{adjustwidth}[3][\@empty]{% 
\begin{list}{}{% 
\topsep\z@% 
\listparindent\parindent% 
\parsep\parskip% 
\ifmtarg{#2}{\setlength{\leftmargin}{\z@}}{\setlength{% 
\leftmargin}{#2}}% 
\ifmtarg{#3}{\setlength{\rightmargin}{\z@}}{\setlength{% 
\rightmargin}{#3}}% 
\ifx\@empty\_1\relax\else 
\coddpagefalse 
\ifcppstrict\checkoddpage\else 
\ifodd\c@page\coddpagetrue\fi 
\fi 
\ifcoddpage\else\_\_\_\_ even numbered page 
\fi 
\fi 
}
\item \{
\end{list}
\endinput

\langle\text{eof}\rangle