Here is an example of \texttt{\textbackslash pszigzag}:

\begin{verbatim}
  \pszigzag[coilarm=.5,\texttt{linearc}=.1][<-->](4,0)
\end{verbatim}

Note that \texttt{\textbackslash pszigzag} uses the \texttt{\textbackslash linearc} parameters, and that the beginning and ending segments may be longer than \texttt{\textbackslash coilarm} to take up slack.

\texttt{\textbackslash psCoil} just draws the coil horizontally from \texttt{\textbackslash angle1} to \texttt{\textbackslash angle2}. Use \texttt{\textbackslash rput} to rotate and translate the coil, if desired. \texttt{\textbackslash psCoil} does not use the \texttt{\textbackslash coilarm} parameter. For example, with \texttt{\textbackslash coilaspect=0} we get a sine curve:

\begin{verbatim}
  \psCoil[coilaspect=0,coilheight=1.33,coilwidth=.75,linewidth=1.5pt]{0}{1440}
\end{verbatim}

\texttt{pst-coil.tex} also contains coil and zigzag node connections. You must also load \texttt{pst-node.tex} / \texttt{pst-node.sty} to use these. The node connections are:

\begin{verbatim}
\nccoil*[\texttt{\textbackslash par}][\texttt{\textbackslash arrows}]{\texttt{\textbackslash nodeA}}{\texttt{\textbackslash nodeB}}
\nczigzag*[\texttt{\textbackslash par}][\texttt{\textbackslash arrows}]{\texttt{\textbackslash nodeA}}{\texttt{\textbackslash nodeB}}
\npcoil*[\texttt{\textbackslash par}][\texttt{\textbackslash arrows}]{(x_1,y_1)(x_2,y_2)}
\npczigzag*[\texttt{\textbackslash par}][\texttt{\textbackslash arrows}]{(x_1,y_1)(x_2,y_2)}
\end{verbatim}

The end points are chosen the same as for \texttt{\textbackslash ncline} and \texttt{\textbackslash pcline}, and otherwise these commands work like \texttt{\textbackslash pscoil} and \texttt{\textbackslash pszigzag}. For example:

\begin{verbatim}
\cnode(.5,.5){.5}{A}
\cnode[\texttt{\textbackslash fillstyle=\textbackslash solid,\textbackslash fillcolor=\textbackslash lightgray}](3.5,2.5){.5}{B}
\nccoil[\texttt{\textbackslash coilwidth=.3}][<-->]{A}{B}
\end{verbatim}

34 Special coordinates

The command

\begin{verbatim}
\end{verbatim}
\SpecialCoor

enables a special feature that lets you specify coordinates in a variety of ways, in addition to the usual Cartesian coordinates.\textsuperscript{16} Processing is slightly slower and less robust, which is why this feature is available on demand rather than by default, but you probably won’t notice the difference.

Here are the coordinates you can use:

\begin{itemize}
\item \textbf{\textit{(x,y)}} The usual Cartesian coordinate. E.g., \((3,4)\).
\item \textbf{\textit{(r;a)}} Polar coordinate, with radius \textit{r} and angle \textit{a}. The default unit for \textit{r} is \textit{unit}. E.g., \((3;110)\).
\item \textbf{\textit{(node)}} The center of \textit{node}. E.g., \((A)\).
\item \textbf{\textit{([par]node)}} The position relative to \textit{node} determined using the angle, \textit{nodesep} and \textit{offset} parameters. E.g., \(([\textit{angle}=45]A)\).
\item \textbf{\textit{(!ps)}} Raw PostScript code. \textit{ps} should expand to a coordinate pair. The units \textit{xunit} and \textit{yunit} are used. For example, if I want to use a polar coordinate \((3;110)\) that is scaled along with \textit{xunit} and \textit{yunit}, I can write
\begin{verbatim}
(!3 110 cos mul 3 110 sin mul)
\end{verbatim}
\item \textbf{\textit{(coor1|coor2)}} The \textit{x} coordinate from \textit{coor1} and the \textit{y} coordinate from \textit{coor2}. \textit{coor1} and \textit{coor2} can be any other coordinates for use with \SpecialCoor. For example, \((A|1in;30)\).
\end{itemize}

\SpecialCoor also lets you specify angles in several ways:

\begin{itemize}
\item \textbf{\textit{num}} A number, as usual, with units given by the \texttt{degrees} command.
\end{itemize}

\textsuperscript{16}There is an obsolete command \texttt{Polar} that causes coordinates in the form \((r,a)\) to be interpreted as polar coordinates. The use of \texttt{Polar} is not recommended because it does not allow one to mix Cartesian and polar coordinates the way \SpecialCoor does, and because it is not as apparent when examining an input file whether, e.g., \((3,2)\) is a Cartesian or polar coordinate. The command for undoing \texttt{Polar} is \texttt{Cartesian}. It has an optional argument for setting the default units. I.e.,
\begin{verbatim}
\Cartesian(<x>,<y>)
\end{verbatim}
has the effect of
\begin{verbatim}
\psset{xunit=<x>,yunit=<y>}
\end{verbatim}
\texttt{Cartesian} can be used for this purpose without using \texttt{Polar}.
(coor) A coordinate, indicating where the angle points to. Be sure to include the (), in addition to whatever other delimiters the angle argument uses. For example, the following are two ways to draw an arc of .8 inch radius from 0 to 135 degrees:

\SpecialCoor
\psarc(0,0){.8in}{0}{135}
\psarc(0,0){.8in}{0}{(-1,1)}

!ps Raw PostScript code. ps should expand to a number. The same units are used as with num.

The command

\NormalCoor

disables the \SpecialCoor features.

35 Overlays

Overlays are mainly of interest for making slides, and the overlay macros described in this section are mainly of interest to \TeX macro writers who want to implement overlays in a slide macro package. For example, the seminar.sty package, a \LaTeX style for notes and slides, uses PSTricks to implement overlays.

Overlays are made by creating an \hbox and then outputting the box several times, printing different material in the box each time. The box is created by the commands

\overlaybox stuff \endoverlaybox

\LaTeX users can instead write:

\begin{overlaybox} <stuff> \end{overlaybox}

The material for overlay string should go within the scope of the command

\psoverlay{string}
string can be any string, after expansion. Anything not in the scope of any \psoverlay command goes on overlay main, and material within the scope of \psoverlay{all} goes on all the overlays. \psoverlay commands can be nested and can be used in math mode.

The command

\putoverlaybox{string}

then prints overlay string.

Here is an example:

\overlaybox
\psoverlay{all}
\psframebox[framearc=.15,linewidth=1.5pt]{%\psoverlay{main}
parbox[3.5cm]{\raggedright
Foam Cups Damage Environment (\psoverlay{one} Less than Paper Cups,) Study Says.}}\endoverlaybox
\putoverlaybox{main} \hspace{.5in} \putoverlaybox{one}

Foam Cups Damage Environment
Study Says.

Less than Paper Cups,

Driver notes: Overlays use \pstVerb and \pстverbscale.

36 The gradient fill style

The file gradient.tex/gradient.sty, along with the PostScript header file gradient.pro, defines the gradient fillstyle, for gradiated shading. This fillstyle uses the following parameters:

\begin{itemize}
\item \textbf{gradbegin=\textit{color}} \hspace{1cm} \textbf{Default: gradbegin}
\item The starting and ending color.
\item \textbf{gradend=\textit{color}} \hspace{1cm} \textbf{Default: gradend}
\item The color at the midpoint.
\end{itemize}
Gradlines=int  Default: 500

The number of lines. More lines means finer gradation, but slower printing.

Gradmidpoint=num  Default: .9

The position of the midpoint, as a fraction of the distance from top to bottom. num should be between 0 and 1.

Gradangle=angle  Default: 0

The image is rotated by angle.

Gradbegin and gradend should preferably be rgb colors, but grays and cmyk colors should also work. The definitions of the colors gradbegin and gradend are:

\newrgbcolor{gradbegin}{0 .1 .95}
\newrgbcolor{gradend}{0 1 1}

Here are two ways to change the gradient colors:

\newrgbcolor{gradbegin}{1 .4 0}

and

\psset{gradbegin=blue}

Try this example:

\psframe[fillstyle=gradient,gradangle=45](10,-20)

37 Adding color to tables

The file colortab.tex/colortab.sty contains macros that, when used with color commands such as those in PSTricks, let you color the cells and lines in tables. See colortab.doc for more information.
38 Typesetting text along a path

The file `textpath.tex/textpath.sty` defines the command `\pstextpath`, for typesetting text along a path. It is a remarkable trick, but there are some caveats:

- `textpath.tex` only works with certain DVI-to-PS drivers. Here is what is currently known:
  - It works with Rokicki’s `dvips`, version 5.487 or later (at least up to v5.495).
  - It does not work with earlier versions of `dvips`.
  - It does not work with TeXview (to preview files with NeXT-TeX 3.0, convert the `.dvi` file to a PostScript file with `dvips -o` and use Preview).
  - “Does not work” means that it has no effect, for better or for worse.
  - This may work with other drivers. The requirement is that the driver only use PostScript’s `show` operator, unbound and unloaded, to show characters.

- You must also have installed the PostScript header file `textpath.ps`, and `\pstheader` must be properly defined in `pstricks.con` for your driver.

- Like other PSTricks that involve rotating text, this works best with PostScript (outline) fonts.

- PostScript rendering with `textpath.tex` is slow.

Because of all this, no samples are shown here. However, there is a test file `tp-test.tex` and PostScript output `tp-test.ps` that are distributed with PSTricks.

Here is the command:

```
\pstextpath[\pos(x,y)]\{graphics object\}\{text\}
```

text is placed along the path, from beginning to end, defined by the PSTricks graphics object. (This object otherwise behaves normally. Set `linestyle=none` if you don’t want it to appear.)

text can only contain characters. No TeX rules, no PSTricks, and no other `\special`s. (These things don’t cause errors; they just don’t work...
right.) Math mode is OK, but math operators that are built from several characters (e.g., large integral signs) may break. Entire boxes (e.g., \parbox) are OK too, but this is mainly for amusement.

\texttt{pos} is either

\begin{itemize}
\item l justify on beginning of path
\item c center on path
\item r justify on end of path.
\end{itemize}

The default is l.

\((x,y)\) is an offset. Characters are shifted distance \(x\) along path, and are shifted up by \(y\). “Up” means with respect to the path, at whatever point on the path corresponding to the middle of the character. \((x,y)\) must be Cartesian coordinates. Both coordinates use \texttt{\psunit} as the default. The default coordinate is \((0,\TPoffset)\), where \texttt{\TPoffset} a command whose default value is \(-.7\text{ex}\). This value leads to good spacing of the characters. Remember that ex units are for the font in effect when \texttt{\pstextpath} occurs, not inside the \texttt{text} argument.

More things you might want to know:

\begin{itemize}
\item Like with \texttt{\rput} and the graphics objects, it is up to you to leave space for \texttt{\pstextpath}.
\item Results are unpredictable if \texttt{text} is wider than length of path.
\item \texttt{\pstextpath} leaves the typesetting to \TeX. It just intercepts the \texttt{show} operator to remap the coordinate system.
\end{itemize}

\section*{39 Stroking and filling character paths}

The file charpath.tex/charpath.sty defines the command:

\begin{verbatim}
\pscharpath*[par]{text}
\end{verbatim}

It strokes and fills the \texttt{text} character paths using the PSTricks \texttt{linestyle} and \texttt{fillstyle}.

The restrictions on DVI-to-PS drivers listed on page 76 for \texttt{\pstextpath} apply to \texttt{\pscharpath}. Furthermore, only outline (PostScript) fonts are affected.
Sample input and output files chartest.tex and chartest.ps are distributed with PSTricks. With the optional *, the character path is not removed from the PostScript environment at the end. This is mainly for special hacks. For example, you can use \pscharpath* in the first argument of \pstextpath, and thus typeset text along the character path of some other text. See the sample file denis1.tex. (However, you cannot combine \pscharpath and \pstextpath in any other way. E.g., you cannot typeset character outlines along a path, and then fill and stroke the outlines with \pscharpath.)

The command

\pscharclip*[par]{text} ... \endpscharclip

works just like \pscharpath, but it also sets the clipping path to the character path. You may want to position this clipping path using \put inside \pscharclip’s argument. Like \psclip and \endpsclip, \pscharclip and \endpscharclip should come on the same page and should be properly nested with respect to \TeX groups (unless \AltClipMode is in effect). The file denis2.tex contains a sample of \pscharclip.

40 Importing EPS files

PSTricks does not come with any facility for including Encapsulated PostScript files, because there are other very good and well-tested macros for exactly that. If using Rokicki’s dvips, then try epsf.tex/epsf.sty, by the man himself!

What PSTricks is good for is embellishing your EPS picture. You can include an EPS file in in the argument of \put, as in

\put(3.3){\epsfbox{myfile.eps}}

and hence you can include an EPS file in the \pspicture environment. Turn on \psgrid, and you can find the coordinates for whatever graphics or text you want to add. This works even when the picture has a weird bounding box, because with the arguments to \pspicture you control the bounding box from \TeX’s point of view.

This isn’t always the best way to work with an EPS file, however. If the PostScript file’s bounding box is the size you want the resulting picture to be, after your additions, then try
\hbox{<picture objects> \epsfbox{<file.eps>}}

This will put all your picture objects at the lower left corner of the EPS file. \epsfbox takes care of leaving the right amount of space.

If you need to determine the bounding box of an EPS file, then you can try the automatic bounding box calculating programs, such as bbfg (distributed with Rokicki’s \texttt{dvips}). However, all such programs are easily fooled; the only sure way to determine the bounding box is visually. \texttt{psgrid} is a good tool for this.

\section*{41 Exporting EPS files}

You must load \texttt{pst2eps.tex} or \texttt{pst2eps.sty} to use the PSTricks macros described in this section.

If you want to export an EPS file that contains both graphics and text, then you need to be using a DVI-to-PS driver that suports such a feature. If you just want to export pure graphics, then you can use the \texttt{PSTricksEPS} command. Both of these options are described in this section.

Newer versions of Rokicki’s \texttt{dvips} support an \texttt{-E} option for creating EPS files from \TeX\ dvi files. E.g.,

\begin{verbatim}
dvipsfoo:dvi –E – ofoo:eps
\end{verbatim}

Your document should be a single page. \texttt{dvips} will find a tight bounding box that just encloses the printed characters on the page. This works best with outline (PostScript) fonts, so that the EPS file is scalable and resolution independent.

There are two inconvenient aspects of this method. You may want a different bounding box than the one calculated by \texttt{dvips} (in particular, \texttt{dvips} ignores all the PostScript generated by PSTricks when calculating the bounding box), and you may have to go out of your way to turn off any headers and footers that would be added by output routines.

PSTricks contains an environment that tries to get around these two problems:

\begin{verbatim}
\TeXtoEPS
  stuff
\endTeXtoEPS
\end{verbatim}
This is all that should appear in your document, but headers and whatever that would normally be added by output routines are ignored. \texttt{dvips} will again try to find a tight bounding box, but it will treat \texttt{stuff} as if there was a frame around it. Thus, the bounding box will be sure to include \texttt{stuff}, but might be larger if there is output outside the boundaries of this box. If the bounding box still isn’t right, then you will have to edit the

\begin{verbatim}
%%BoundingBox <llx lly urx ury>
\end{verbatim}

specification in the EPS file by hand.

If your goal is to make an EPS file for inclusion in other documents, then \texttt{dvips -E} is the way to go. However, it can also be useful to generate an EPS file from PSTricks graphics objects and include it in the same document,\footnote{See the preceding section on importing EPS files.} rather than just including the PSTricks graphics directly, because \TeX gets involved with processing the PSTricks graphics only when the EPS file is initially created or updated. Hence, you can edit your file and preview the graphics, without having to process all the PSTricks graphics each time you correct a typo. This speed-up can be significant with complex graphics such as \texttt{\pslistplot}'s with a lot of data.

To create an EPS file from PSTricks graphics objects, use

\begin{verbatim}
\PSTtoEPS[par]{file}{graphics objects}
\end{verbatim}

The file is created immediately, and hence you can include it in the same document (after the \texttt{\PSTtoEPS} command) and as many times as you want. Unlike with \texttt{dvips -E}, only pure graphics objects are processed (e.g., \texttt{\rput} commands have no effect).

\texttt{\PSTtoEPS} cannot calculate the bounding box of the EPS file. You have to specify it yourself, by setting the following parameters:

\begin{verbatim}
bbllx=dim   Default: -1pt
bblly=dim   Default: -1pt
bburx=dim   Default:  1pt
bbury=dim   Default:  1pt
\end{verbatim}

Note that if the EPS file is only to be included in a PSTricks picture with \texttt{\rput} you might as well leave the default bounding box.

\texttt{\PSTricksEPS} also uses the following parameters:
headerfile=\textit{file} \hspace{1cm} \textbf{Default: s}

()This parameter is for specifying PostScript header files that are to be included in the EPS file. The argument should contain one or more file names, separated by commas. If you have more than one file, however, the entire list must be enclosed in braces \{\}. 

headers=\textit{none/all/user} \hspace{1cm} \textbf{Default: none}

When \textit{none}, no header files are included. When \textit{all}, the header files used by PSTricks plus the header files specified by the \texttt{headerfile} parameter are included. When \textit{user}, only the header files specified by the \texttt{headerfile} parameter are included. If the EPS file is to be included in a \TeX document that uses the same PSTricks macros and hence loads the relevant PSTricks header files anyway (in particular, if the EPS file is to be included in the same document), then \texttt{headers} should be \textit{none} or \textit{user}. 

Exporting EPS files

81
A Boxes

Many of the PSTricks macros have an argument for text that is processed in restricted horizontal mode (in \texttt{\LaTeX} parlance, LR-mode) and then transformed in some way. This is always the macro’s last argument, and it is written \texttt{\{stuff\}} in this User’s Guide. Examples are the framing, rotating, scaling, positioning and node macros. I will call these “LR-box” macros, and use framing as the leading example in the discussion below.

In restricted horizontal mode, the input, consisting of regular characters and boxes, is made into one (long or short) line. There is no line-breaking, nor can there be vertical mode material such as an entire displayed equation. However, the fact that you can include another box means that this isn’t really a restriction.

For one thing, alignment environments such as \texttt{\halign} or \texttt{\LaTeX}’s \texttt{tabular} are just boxes, and thus present no problem. Picture environments and the box macros themselves are also just boxes. Actually, there isn’t a single PSTricks command that cannot be put directly in the argument of an LR-box macro. However, entire paragraphs or other vertical mode material such as displayed equations need to be nested in a \texttt{\verb|\vbox|} or \texttt{\LaTeX\parbox} or \texttt{\verb|minipage|}. \texttt{\LaTeX} users should see \texttt{fancybox.sty} and its documentation, \texttt{fancybox.doc}, for extensive tips and trick for using LR-box commands.

The PSTricks LR-box macros have some features that are not found in most other LR-box macros, such as the standard \texttt{\LaTeX} LR-box commands.

With \texttt{\LaTeX} LR-box commands, the contents is always processed in text mode, even when the box occurs in math mode. PSTricks, on the other hand, preserves math mode, and attempts to preserve the math style as well. \texttt{\LaTeX} has four math styles: text, display, script and scriptscript. Generally, if the box macro occurs in displayed math (but not in sub- or superscript math), the contents are processed in display style, and otherwise the contents are processed in text style (even here the PSTricks macros can make mistakes, but through no fault of their own). If you don’t get the right style, explicitly include a \verb|\textstyle|, \verb|\displaystyle|, \verb|\scriptstyle| or \verb|\scriptscriptstyle| command at the beginning of
the box macro’s argument.

In case you want your PSTricks LR-box commands to treat math in the same as your other LR-box commands, you can switch this feature on and off with the commands

\psmathboxtrue
\psmathboxfalse

You can have commands (such as, but not restricted to, the math style commands) automatically inserted at the beginning of each LR-box using the

\everypsbox{commands}

command.\(^{18}\)

If you would like to define an LR-box environment \textit{name} from an LR-box command \textit{cmd}, use

\pslongbox{name}{cmd}

For example, after

\pslongbox{MyFrame}{\psframebox}

you can write

\MyFrame <stuff>\endMyFrame

instead of

\psframebox{<stuff>}

Also, \LaTeX{} users can write

\begin{MyFrame} <stuff>\end{MyFrame}

It is up to you to be sure that \textit{cmd} is a PSTricks LR-box command; if it isn’t, nasty errors can arise.

Environments like have nice properties:

\(^{18}\)This is a token register.
• The syntax is clearer when stuff is long.

• It is easier to build composite LR-box commands. For example, here is a framed minipage environment for \LaTeX:

\begin{pslongbox}{MyFrame}{\psframebox}
\newenvironment{fminipage}{}
\begin{fminipage}{MyFrame}{\begin{minipage}}{}\end{minipage}\end{fminipage}

• You include verbatim text and other \catcode tricks in stuff.

The rest of this section elaborates on the inclusion of verbatim text in LR-box environments and commands, for those who are interested. fancybox.sty also contains some nice verbatim macros and tricks, some of which are useful for LR-box commands.

The reason that you cannot normally include verbatim text in an LR-box commands argument is that \TeX reads the whole argument before processing the \catcode changes, at which point it is too late to change the category codes. If this is all Greek to you, then just try this \LaTeX example to see the problem:

\begin{psframebox}{\verb+\foo{bar}+}

The LR-box environments defined with \pslongbox do not have this problem because stuff is not processed as an argument. Thus, this works:

\begin{pslongbox}{MyFrame}{\psframebox}
\MyFrame \verb+\foo{bar}+\endMyFrame

The commands

\verbboxtrue
\verbboxfalse

switch into and out of, respectively, a special PSTricks mode that lets you include verbatim text in any LR-box command. For example:

\footnote{Incidentally, many foreign language macros, such as greek.tex, use \catcode tricks which can cause problems in LR-box macros.}
However, this is not as robust. You must explicitly group color commands in \textit{stuff}, and LR-box commands that usually ignore spaces that follow \{\textit{stuff}\} might not do so when \texttt{\textbackslash psverbboxtrue} is in effect.

\section*{B Tips and More Tricks}

1. \textbf{How do I rotate/frame this or that with \LaTeX?}

See \texttt{fancybox.sty} and its documentation.

2. \textbf{How can I suppress the PostScript so that I can use my document with a non-PostScript dvi driver?}

Put the command

\texttt{\textbackslash PSTricksOff}

at the beginning of your document. You should then be able to print or preview drafts of your document (minus the PostScript, and perhaps pretty strange looking) with any dvi driver.

3. \textbf{How can I improve the rendering of halftones?}

This can be an important consideration when you have a halftone in the background and text on top. You can try putting

\texttt{\textbackslash pstverb{106 45 \{dup mul exch dup mul add 1.0 exch sub\} setscreen}}

before the halftone, or in a header (as in headers and footers, not as in PostScript header files), if you want it to have an effect on every page. \texttt{setscreen} is a device-dependent operator.
C Including PostScript code

To learn about the PostScript language, consult Adobe’s PostScript Language Tutorial and Cookbook (the “Blue Book”), or Henry McGilton and Mary Campione’s PostScript by Example (1992). Both are published by Addison-Wesley. You may find that the Appendix of the Blue Book, plus an understanding of how the stack works, is all you need to write simple code for computing numbers (e.g., to specify coordinates or plots using PostScript).

You may want to define \TeX macros for including PostScript fragments in various places. All \TeX macros are expanded before being passed on to PostScript. It is not always clear what this means. For example, suppose you write

\begin{verbatim}
\SpecialCoor
\def\mydata{23 43}
\psline(!47 \mydata add)
\psline(!47 \mydata\ add)
\psline(!47 \mydata^add)
\psline(!47 \mydata{} add)
\end{verbatim}

You will get a PostScript error in each of the $\texttt{psline}$ commands. To see what the argument is expanding to, try use $\TeX$’s $\texttt{edef}$ and $\texttt{show}$. E.g.,

\begin{verbatim}
\def\mydata{23 43}
\edef\temp{47 \mydata add}
\show\temp
\edef\temp{47 \mydata\ add}
\show\temp
\edef\temp{47 \mydata^add}
\show\temp
\edef\temp{47 \mydata{} add}
\show\temp
\end{verbatim}

\TeX expands the code, assigns its value to $\texttt{temp}$, and then displays the value of $\texttt{temp}$ on your console. Hit \texttt{return} to proceed. You will find that the four samples expand, respectively, to:

\begin{verbatim}
47 23 43add
47 23 43\ add
47 23 43\penalty@M \ add
47 23 43{} add
\end{verbatim}
All you really wanted was a space between the 43 and add. The command \space will do the trick:

```latex
\psline(!47 \mydata\space add)
```

You can include balance braces \{\}; these will be passed on verbatim to PostScript. However, to include an unbalanced left or right brace, you have to use, respectively,

\begin{verbatim}
\pslbrace
\psrbrace
\end{verbatim}

Don’t bother trying } or \{.

Whenever you insert PostScript code in a PSTricks argument, the dictionary on the top of the dictionary stack is tx@Dict, which is PSTrick’s main dictionary. If you want to define your own variables, you have two options:

**Simplest** Always include a @ in the variable names, because PSTricks never uses @ in its variables names. You are at a risk of overflowing the tx@Dict dictionary, depending on your PostScript interpreter. You are also more likely to collide with someone else’s definitions, if there are multiple authors contributing to the document.

**Safest** Create a dictionary named TDict for your scratch computations. Be sure to remove it from the dictionary stack at the end of any code you insert in an argument. E.g.,

```latex
TDict 10 dict def TDict begin <your code> end
```

### D Troubleshooting

1. Why does the document bomb in the printer when the first item in a \LaTeX\ file is a float?

When the first item in a \LaTeX\ file is a float, \special’s in the preamble are discarded. In particular, the \special for including PSTricks’s header file is lost. The workaround is to put something before the float, or to include the header file by a command-line option with your dvi-to-ps driver.
2. I converted a .dvi file to PostScript, and then mailed it to a colleague. It prints fine for me but bombs on her printer.

Here is the most likely (but not the only) cause of this problem. The PostScript files you get when using PSTricks can contain long lines. This should be acceptable to any proper PostScript interpreter, but the lines can get chopped when mailing the file. There is no way to fix this in PSTricks, but you can make a point of wrapping the lines of your PostScript files when mailing them. E.g., on UNIX you can use uuencode and uudecode, or you can use the following AWK script to wrap the lines:

```
#!/bin/sh
# This script wraps all lines
# Usage (if script is named wrap):
#   wrap < infile > outfile
awk 'BEGIN {
    N = 78    # Max line length
}
{ if (length($0)<=N)
    print
  else {
    currlength = 0
    for (i = 1; i <=NF; i++) {
      if (((currlength = currlength + length($i) + 1) > N) {
        printf printf currlength = length($i)
        }
      else
        printf \ %s
      }
    printf }
} '
```

3. The color commands cause extraneous vertical space to be inserted.

For example, this can happen if you start a \texttt{L a T E X \parbox} or a p{} column with a color command. The solution usually is to precede the color command with \texttt{\leavevmode}.

4. The color commands interfere with other color macros I use.

Try putting the command \texttt{\altcolormode} at the beginning of your document. This may or may not help. Be extra careful that the scope of
color commands does not extend across pages. This is generally a less robust color scheme.

5 How do I stop floats from being the same color as surrounding material?

That’s easy: Just put an explicit color command at the beginning of the float, e.g., `\black`.

6 When I use some color command in box macros or with `\setbox`, the colors get all screwed up.

If `\mybox` is a box register, and you write

```
\green Ho Hum.
\setbox\mybox=\hbox{Foo bar \blue fee fum}
Hi Ho. \red Diddley-dee
\box\mybox hum dee do
```

then when `\mybox` is inserted, the current color is red and so `Foo bar` comes out red (rather than green, which was the color in effect when the box was set). The command that returns from `\blue` to the current color `green`, when the box is set, is executed after the `\hbox` is closed, which means that `Hi Ho` is green, but `hum dee do` is still blue.

This odd behavior is due to the fact that \TeX does not support color internally, the way it supports font commands. The first thing to do is to explicitly bracket any color commands inside the box. Second, be sure that the current color is black when setting the box. Third, make other explicit color changes where necessary if you still have problems. The color scheme invoked by `\altcolormode` is slightly better behaved if you follow the first two rules.

Note that various box macros use `\setbox` and so these anomalies can arise unexpectedly.
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