Glisterings: Hanging; Safety in numbers

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> A glisterin mornin aften draws tae rain.
>
> Anonymous

The aim of this column is to provide odd hints or small pieces of code that might help in solving a problem or two while hopefully not making things worse through any errors of mine.

> We must indeed all hang together, or most assuredly, we shall all hang separately.
>
> *Spoken at the signing of the Declaration of Independence*, Benjamin Franklin

1 Hanging

1.1 Overhangs

Rui Maciel asked about a notation for the closure of a set, saying that [8]:

When I need to refer to the closure of a set I tend to use the `\bar{}` *command, So, considering the set* Ω *then the closure of that set would be:*
`$\bar{\Omega}$ ->` $\bar{\Omega}$
However, I've noticed that when the symbol used to reference a given set also has a superscript then $\bar{\Omega}^s$ *doesn't look very good. I've also tried* `\overline{}` *instead but it appears even worse*
`$\overline{\Omega^{s}}$ ->` $\overline{\Omega^s}$.

Enrico Gregorio recommended [3]:

```
\newcommand*{\closureG}[2][3]{%
 {}\mkern#1mu\overline{\mkern-#1mu#2}}
```

while Bill Hammond said [5] that he found the following to work better, also noting that he used amsmath:

```
\newcommand*{\closureH}[2][3]{%
  \overline{{}\mkern#1mu#2\mkern-#1mu}}
```

In each case the optional argument is the value of an `\mkern` (in mu) applied to the overline to move it sideways; the default is 3.

Dan Luecking felt [7] that there should be two controls over the overline — one to shift the line (which is provided by the previous macros) and a second to adjust the length of the line — and suggested the `\closureL` macro.

```
%% \closureL{right shift}{trim}{symbol}
\newcommand*{\closureL}[3]{%
  \mkern#1mu\mkern#2mu
  \overline{\mkern-#1mu \mkern-#2mu #3%
            \mkern-#2mu \mkern#1mu}%
  \mkern#2mu\mkern-#1mu}
```

Table 1 shows the results of applying the three closure macros to a variety of variables with a range of kerns, along with the result of a vanilla `\overline`.

There is no one ideal value for the `\mkern`; a 'good' value depends on whether the set variable is upright (e.g., Ω) or slanted (e.g., B) and whether or not it has a super- or subscript. Basically it comes down to what you think is most appropriate. In my view I prefer the following:

Upright variable (e.g. Ω) `\closureG[0]{}`, `\closureH[0]{}`, `\closureL{0}{0}{}`, which are all equivalent to `\overline{}`

Slanted variable (e.g., B) `\closureG[3]{}`, `\closureH[-3]{}`.

I think that `\closureL{0}{3}{}` and `\closureL{3}{0}{}` are close but not quite as good. Something like `\closureL{1}{2}` would seem to give a better result.

As the old saying goes, 'Yer pays yer money and takes yer choice'.

1.2 Paragraphs in equations

'Cooch' wrote [2]:

In a number of the chapters for one of my books, I 'define' a series variables, generally embedded in the form

variable = text to define the variable

For example (the page I'm currently staring at)

```
$\phi^{rst}_{i-1,i}$= the probability that
a particle in state \emph{r} at time
\emph{i}-1 and state \emph{s} at time
\emph{i} is in state \emph{t} at time
\emph{i}+1.
```

. . . I want to force the RHS of the expression to 'wrap' and be indented after the first sentence, to the right of the equal sign. So, that the above looks like:

```
$\phi^{rst}_{i-1,i}$= the probability that
                      a particle in state ...
```

In other words, something analogous to a 'hanging indent' after the first line, but where the indentation is relative to where the equal sign falls.

There were several responses to this and for the following, in order to save space and make the examples easier to read, I have defined

```
\newcommand*{\mathdef}{\phi^{rst}_{i-1,i}=}
\newcommand*{\textdef}{the probability that
  a particle in state $r$ at time $i-1$
  and state $s$ at time $i$ is in state
  $t$ at time $i+1$.}
\newcommand*{\smath}{D_{n}=}
\newcommand*{\stext}{the definition of the
  variable as used herein.}
```

All the respondents disagreed with the use of `\emph` to indicate a math variable. As Enrico Gregorio said [4]:

Table 1: Various closures

‘closure’	Ω	Ω^*	Ω_s	B	B^*	B_s
`\overline{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureG[-3]{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureG[0]{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureG[3]{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureH[-3]{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureH[0]{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureH[3]{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{-3}{-3}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{-3}{0}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{-3}{3}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{0}{-3}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{0}{0}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{0}{3}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{3}{-3}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{3}{0}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$
`\closureL{3}{3}{...}`	$\overline{\Omega}$	$\overline{\Omega^*}$	$\overline{\Omega_s}$	$\overline{B}$	$\overline{B^*}$	$\overline{B_s}$

Don’t use `\emph{i}` for representing a variable: it’s simply `$i$`; notice also the difference between `$i-1$` ($i-1$) and `\emph{i}-1` (*i*-1); the second one is definitely wrong.

Lars Madsen said [9] that he normally used[1]

```
\begin{equation*}
\phi^{rst}_{i-1,i}=
\parbox[t]{<length>}{\raggedright the
probability that a particle in state $r$
at time $i-1$ and ...}
\end{equation*}
```

which, with ⟨*length*⟩ = `0.8\columnwidth` results in

$\phi^{rst}_{i-1,i}$ = the probability that a particle in state r at time $i-1$ and state s at time i is in state t at time $i+1$.

Enrico Gregorio provided [4] the following environment:

```
\newenvironment{qdesc}[1]%
  {\par\addvspace{\medskipamount}
   \sbox{0}{$#1$ }\dimen0=\textwidth
   \advance\dimen0 by -\wd0
   \noindent\usebox{0}
   \begin{minipage}[t]{\dimen0}}%
  {\end{minipage}
   \par\addvspace{\medskipamount}}
```

which applied to the example as

```
\begin{qdesc}{\mathdef}
\textdef
\end{qdesc}
```

and results in:

$\phi^{rst}_{i-1,i}$ = the probability that a particle in state r at time $i-1$ and state s at time i is in state t at time $i+1$.

Jean-François Burnol presented [1] the following macro:

```
\newcommand{\start}[1]{%
  \setbox0=\hbox{#1}%
  \hangindent\wd0%
  \noindent\box0}
```

```
\start{$\phi^{rst}_{i-1,i}$= }\textdef
```

$\phi^{rst}_{i-1,i}$= the probability that a particle in state r at time $i-1$ and state s at time i is in state t at time $i+1$.

Jean-François’ `\start` macro is a TeX version of the LaTeX kernel’s command `\@hangfrom`, which the memoir class provides as a user-level macro `\hangfrom{text}` by copying the original definition:

```
\newcommand{\hangfrom}[1]{%
  \setbox\@tempboxa\hbox{{#1}}%
  \hangindent \wd\@tempboxa%
              \noindent\box\@tempboxa}
```

`\hangfrom{<text>}` puts text in a box and makes a hanging paragraph of the following material (somewhat like a description item). Applying this:

```
\hangfrom{$\mathdef$ }\textdef \par
\hangfrom{$\smath$ }\stext
```

[1] `equation*` is from the amsmath package

$\phi^{rst}_{i-1,i}$ = the probability that a particle in state r at time $i-1$ and state s at time i is in state t at time $i+1$.
D_n = the definition of the variable as used herein.

As the last example shows, each 'definition' is treated individually. If it is required that, say, several definition texts should be aligned in a set of definitions then using one of the `tabular` environments could be an advantage. For example:

```
Using \texttt{tabular} \\
\begin{tabular}{lp{0.7\columnwidth}}
$\mathdef$ & \textdef \\
$\smath$ & \stext \\
\end{tabular}

Using \texttt{tabularx} \\
\begin{tabularx}{\linewidth}{lX}
$\mathdef$ & \textdef \\
$\smath$ & \stext \\
\end{tabularx}
```

Using `tabular`

$\phi^{rst}_{i-1,i} =$	the probability that a particle in state r at time $i-1$ and state s at time i is in state t at time $i+1$.
$D_n =$	the definition of the variable as used herein.

Using `tabularx`

$\phi^{rst}_{i-1,i} =$	the probability that a particle in state r at time $i-1$ and state s at time i is in state t at time $i+1$.
$D_n =$	the definition of the variable as used herein.

Some of the suggestions require a length to be specified for the definition text while others automatically use all the available space. It is really a matter of individual preference which is most suited for a particular desired outcome.

> It was a bright cold day in April, and the clocks were striking thirteen.
>
> *Nineteen Eighty-Four*, George Orwell

2 Safety in numbers

Gordon Haverland posted [6] to the `texhax` mailing list:

I don't suppose there is some easy way to deal with superstitions in LaTeX? I looked around CTAN a bit and nothing jumped out at me.

I suspect the company I am doing work for is superstitious, or customers are. But I ran across an enumerated list where there is no 13th element. What I've done is:

13. Purposely blank.

But is there something else that is more universal?

Heiko Oberdiek responded [10] with a universal solution by changing the definition of `\@arabic`, which is the underlying LaTeX macro for typesetting the value of a counter in arabic form:

```
\makeatletter
\newcommand*{\safe}{%
\renewcommand*{\@arabic}[1]{%
\ifnum##1=13\relax
  12a%
\else
  \ifnum##1=-13\relax
    -12a%
  \else
\expandafter\@firstofone\expandafter{\number##1}%
  \fi
\fi}}
\makeatother
```

Following the `\safe` declaration *every* setting '13' will be typeset as '12a'.

To save space in the following examples I have defined:

```
\makeatletter
\newcommand*{\setlistctr}[1]{%
  \setcounter{\@listctr}{#1}%
  \protected@edef\@currentlabel
    {\csname p@\@listctr\endcsname
     \csname the\@listctr\endcsname}}
\makeatother
```

which can be used to reset the `enumerate` list counter.

Applying Heiko's suggestion to an `enumerate` list as:

```
Standard enumeration:
\begin{enumerate}
\item One \par
\ldots \setlistctr{11}
\item Twelve
\item Thirteen
\item Fourteen
\end{enumerate}

'Safe' enumeration:
\begin{enumerate}\safe
\item One \par
\ldots \setlistctr{11}
\item Twelve
\item Thirteen
\item Fourteen
\end{enumerate}
```

the result is:

Standard enumeration:

1. One

   . . .

```
 12. Twelve
 13. Thirteen
 14. Fourteen
     ‘Safe’ enumeration:
  1. One
       . . .
 12. Twelve
12a. Thirteen
 14. Fourteen
```

However Gordon had explicitly mentioned the `enumerate` list and I thought that perhaps something specific for that would suit. To that end I defined the `\skipit` macro that ensures that the counter in an `enumerate` skips the value ‘13’, and the macro `\fixitem` to append it to the end of LaTeX‘s internal `\@item` macro.

```
\makeatletter
\newcommand*{\skipit}{%
  \if@nmbrlist
    \ifnum12=\csname c@\@listctr\endcsname
      \refstepcounter\@listctr
    \fi
  \fi}
\let\old@item\@item
\newcommand{\fixitem}{%
  \def\@item[##1]{\old@item[##1]\skipit}}
\makeatother
```

An example of this approach is:

```
‘skipit’ enumeration:
\begin{enumerate}\fixitem
\item One \par
\ldots \setlistctr{11}
\item Twelve
\item Thirteen
\item Fourteen
\end{enumerate}
```

```
    ‘skipit’ enumeration:
 1. One
      . . .
12. Twelve
14. Thirteen
15. Fourteen
```

With a second level list, though, you might not get what you expect:

```
Standard enumeration:
\begin{enumerate}
\item Including a ‘skipit’ enumeration:
\begin{enumerate}\fixitem
\item One \par
\ldots \setlistctr{11}
\item Twelve
\item Thirteen
\item Fourteen
\end{enumerate}
\item Two \par
\ldots \setlistctr{11}
\item Twelve
\item Thirteen
\item Fourteen
\end{enumerate}
```

```
    Standard enumeration:
 1. Including a ‘skipit’ enumeration:
      (a) One
            . . .
      (l) Twelve
      (n) Thirteen
      (o) Fourteen
 2. Two
      . . .
12. Twelve
13. Thirteen
14. Fourteen
```

References

[1] Jean-François Burnol. Re: Variable definitions / indenting on = sign. `comp.text.tex`, 25 March 2011.

[2] cooch17. Variable definitions / indenting on = sign. `comp.text.tex`, 25 March 2011.

[3] Enrico Gregorio. Re: Math notation for the closure of a set? `comp.text.tex`, 30 March 2011.

[4] Enrico Gregorio. Re: Variable definitions / indenting on = sign. `comp.text.tex`, 25 March 2011.

[5] William Hammond. Re: Math notation for the closure of a set? `comp.text.tex`, 16 April 2011.

[6] Gordon Haverland. [texhax] superstitions. `texhax` mailing list, 23 April 2011.

[7] Dan Luecking. Re: Math notation for the closure of a set? `comp.text.tex`, 19 April 2011.

[8] Rui Maciel. Math notation for the closure of a set? `comp.text.tex`, 30 March 2011.

[9] Lars Madsen. Re: Variable definitions / indenting on = sign. `comp.text.tex`, 25 March 2011.

[10] Heiko Oberdiek. Re: [texhax] superstitions. `texhax` mailing list, 23 April 2011.

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