A Few Comments on Thesis Writing.
Pat Wilber

Below are a few comments on style and typesetting to keep in mind when writing your thesis.

1. An important question you need to answer before you begin writing is “For whom am I writing my thesis”? The answer is NOT “my adviser”. A reasonable answer is “the person who sits next to me in my office”. I.e., you should write under the assumption that your reader is someone who has a level of mathematical training similar to yours but who knows nothing about your particular problem.

2. Use displayed equations and other displayed mathematics as natural elements within a sentence. I.e., sentences containing mathematics should “read” as clearly and grammatically as any sentence without mathematics.

**Not Good:**

We obtain the equilibrium equations for our problem by seeking pairs \((\theta, y_0)\) at which (2.3) is stationary. First we compute the following:

\[
\frac{\partial}{\partial \epsilon} E[\theta, y_0 + \epsilon y_1]_{\epsilon=0} = y_1 \int_0^L F' \left( y_0 + \int_0^s \sin \theta(\xi) \, d\xi \right) \, ds - \nu y_1. \tag{1}
\]

This must vanish for all \(y_1\), which yields the following:

\[
\nu = \int_0^L F' \left( y_0 + \int_0^s \sin \theta(\xi) \, d\xi \right) \, ds. \tag{2}
\]

We define \(N\) on \([0, L]\) as follows:

\[
N(s) = \int_0^s F' \left( y_0 + \int_0^\xi \sin \theta(\gamma) \, d\gamma \right) \, d\xi. \tag{3}
\]

Using this definition, (2) can be written as \(N(L) = \nu\).

**Good:**

We obtain the equilibrium equations for our problem by seeking pairs \((\theta, y_0)\) at which (2.3) is stationary. First we compute

\[
\frac{\partial}{\partial \epsilon} E[\theta, y_0 + \epsilon y_1]_{\epsilon=0} = y_1 \int_0^L F' \left( y_0 + \int_0^s \sin \theta(\xi) \, d\xi \right) \, ds - \nu y_1, \tag{1}
\]

which must vanish for all \(y_1\), so that

\[
\nu = \int_0^L F' \left( y_0 + \int_0^s \sin \theta(\xi) \, d\xi \right) \, ds. \tag{2}
\]
We define $N$ on $[0, L]$ by

$$N(s) = \int_0^s F'(y_0 + \int_0^\xi \sin \theta(\gamma) \, d\gamma) \, d\xi,$$

(3)

with which (2) can be written as $N(L) = \nu$.

3. When following the previous rule, do not introduce displayed mathematics with a colon.

**Not Good:** First we compute:

$$\frac{\partial}{\partial \epsilon} E[\theta, y_0 + \epsilon y_1]_{\epsilon=0} = y_1 \int_0^L F' \left( y_0 + \int_0^s \sin \theta(\xi) \, d\xi \right) \, ds - \nu y_1.$$

**Good:** First we compute

$$\frac{\partial}{\partial \epsilon} E[\theta, y_0 + \epsilon y_1]_{\epsilon=0} = y_1 \int_0^L F' \left( y_0 + \int_0^s \sin \theta(\xi) \, d\xi \right) \, ds - \nu y_1.$$

4. When cross-referencing equations, do not use the word ‘equation’ before the cross-reference.

**Not Good:** Recall from equation (2.13) that . . .

**Good:** Recall from (2.13) that . . .

5. Do not start a sentence with an equation number or a symbol. This suggestion provides an occasional exception to the previous rule.

**Not Good:** Next we consider the boundary conditions. $\bar{\nu}$ denotes the load applied to the end of the sheet.

**Good:** Next we consider the boundary conditions. The constant $\bar{\nu}$ denotes the load applied to the end of the sheet.

**Not Good:** (5) implies that . . .

**Good:** Equation (5) implies that . . .

6. When using a bar over a symbol with a subscript, do not extend the bar over the subscript. A similar comment applies to hats, checks, arrows, dots, tildes, etc.

**Not Good:** $\bar{D}_1$, $\hat{H}_{j,k}$,

**Good:** $D_1$, $\hat{H}_{j,k}$

\$\bar{\{D\}_1}\$, \$\hat{\{H\}_{j,k}}\$
7. For aligned equations, use the \texttt{amstex} package environment \texttt{‘align’} rather than the \LaTeX environment \texttt{‘eqnarray’}.

\textbf{Not Good:}

We see that the equilibrium equations are

\[ \theta'' = -\frac{N}{\beta} \cos \theta, \]
\[ \theta'(0) = \theta'(L) = 0. \]

\begin{verbatim}
\begin{eqnarray*}
\theta'' &=& -\frac{N}{\beta} \cos \theta, \\
\theta'(0) &=& \theta'(L) = 0. 
\end{eqnarray*}
\end{verbatim}

\textbf{Good:}

We see that the equilibrium equations are

\[ \theta'' = -\frac{N}{\beta} \cos \theta, \]
\[ \theta'(0) = \theta'(L) = 0. \]

\begin{verbatim}
\begin{align*}
\theta'' &= -\frac{N}{\beta} \cos \theta, \\
\theta'(0) &= \theta'(L) = 0. 
\end{align*}
\end{verbatim}

8. Do not use the ‘Nasser asterisk’. Since second grade, we have all understood that two symbols next to each other typically means multiply. For example, \(4x\) means 4 times \(x\). This convention still applies when writing your thesis.

\textbf{Not Good:} \( \kappa = \frac{4 \times \pi \times R}{\eta} \)

\textbf{Good:} \( \kappa = \frac{4\pi R}{\eta} \)