

Practical Typesetting with BSD

Edd Barrett

EuroBSDCon 2008

October 12, 2008

What is Typesetting?

A Quick Introduction To T_EX

What Can T_EX do for *You*?

X_YT_EX Enhanced Functionality

Tools for Typesetting T_EX on BSD

Wrapping it up

The Art of Typesetting

Computer Typesetting

- 1** What is Typesetting?
- 2 A Quick Introduction To T_EX
- 3 What Can T_EX do for *You*?
- 4 X_YT_EX Enhanced Functionality
- 5 Tools for Typesetting T_EX on BSD
- 6 Wrapping it up

→ The Art of Typesetting

“Typesetting involves the presentation of textual material in graphic form on paper or some other medium.” - Wikipedia.

→ The Art of Typesetting

“Typesetting involves the presentation of textual material in graphic form on paper or some other medium.” - Wikipedia.

- Letterpress methods.
 - Each font consists of a set of metal *sorts*.
 - The sorts were pressed onto the page.

→ The Art of Typesetting

“Typesetting involves the presentation of textual material in graphic form on paper or some other medium.” - Wikipedia.

- Letterpress methods.
 - Each font consists of a set of metal *sorts*.
 - The sorts were pressed onto the page.
- Phototypesetting methods followed.
 - Light sensitive paper.
 - Expose font in light onto the page.

→ The Art of Typesetting

“Typesetting involves the presentation of textual material in graphic form on paper or some other medium.” - Wikipedia.

- Letterpress methods.
 - Each font consists of a set of metal *sorts*.
 - The sorts were pressed onto the page.
- Phototypesetting methods followed.
 - Light sensitive paper.
 - Expose font in light onto the page.
- Then came computer typesetting.

→ Computer Typesetting

- Troff and clones.
 - Manual pages.

→ Computer Typesetting

- Troff and clones.
 - Manual pages.
- T_EX based.
 - T_EX, L^AT_EX, PdfT_EX, PdfL^AT_EX, X_YT_EX, X_YL^AT_EX, ConT_EXt...

→ Computer Typesetting

- Troff and clones.
 - Manual pages.
- T_EX based.
 - T_EX, L^AT_EX, PdfT_EX, PdfL^AT_EX, X_ƎT_EX, X_ƎL^AT_EX, ConT_EXt...
- SGML.
 - Lead to XML.

- 1 What is Typesetting?
- 2 A Quick Introduction To T_EX**
- 3 What Can T_EX do for *You*?
- 4 X_YT_EX Enhanced Functionality
- 5 Tools for Typesetting T_EX on BSD
- 6 Wrapping it up

→ Mark-up

- T_EX macro language is a plain text mark-up language.

→ Mark-up

- T_EX macro language is a plain text mark-up language.

```
\LaTeX\ is a \emph{mark}-up \textbf{language}. 1
```

L^AT_EX is a *mark-^{up}* **language**.

→ Mark-up

- T_EX macro language is a plain text mark-up language.

```
\LaTeX\ is a \emph{mark}-up \textbf{language}. 1
```

L^AT_EX is a *mark-^{up}* **language**.

- Macros start with a backslash.

→ Mark-up

- T_EX macro language is a plain text mark-up language.

```
\LaTeX\ is a \emph{mark}-up \textbf{language}. 1
```

L^AT_EX is a *mark-^{up}* **language**.

- Macros start with a backslash.
- Mandatory parameters are enclosed in curly braces.

→ Mark-up

- T_EX macro language is a plain text mark-up language.

```
\LaTeX\ is a \emph{mark}-up \textbf{language}. 1
```

L^AT_EX is a *mark-^{up}* **language**.

- Macros start with a backslash.
- Mandatory parameters are enclosed in curly braces.
- Optional parameters are enclosed in square brackets.

→ Compiled

- Macro source is first expanded into primitives.

→ Compiled

- Macro source is first expanded into primitives.
- Resulting code is compiled into DVI or PDF.

→ Compiled

- Macro source is first expanded into primitives.
- Resulting code is compiled into DVI or PDF.
- Several different T_EX based compilers.
 - Some have the extended L^AT_EX2e support.
 - Some Make DVI, others make PDF.

→ The Different T_EX Typesetters

Typesetter	DVI	PDF	2e Macros
T _E X	•		
L ^A T _E X	•		•
PdfT _E X		•	
PdfL ^A T _E X		•	•
X _Ǝ T _E X		•	
X _Ǝ L ^A T _E X		•	•
ConT _E Xt		•	

- Note: ConT_EXt uses a completely different macro set.

→ Extensible

- Write your own macros.

```
\newcommand{\mynameis}[1]{My name is #1}  
\mynameis{Edd}
```

1

2

My name is Edd

→ Extensible

- Write your own macros.

```
\newcommand{\mynameis}[1]{My name is #1}  
\mynameis{Edd}
```

1

2

My name is Edd

- Write your own document types with *classes*.

→ Extensible

- Write your own macros.

```
\newcommand{\mynameis}[1]{My name is #1}  
\mynameis{Edd}
```

1

2

My name is Edd

- Write your own document types with *classes*.
- Write your own functionality using *styles*.

→ Extensible

- Write your own macros.

```
\newcommand{\mynameis}[1]{My name is #1}  
\mynameis{Edd}
```

1

2

My name is Edd

- Write your own document types with *classes*.
- Write your own functionality using *styles*.
- CTAN - Comprehensive T_EX Archive Network.

→ T_EX is Free

- Several T_EX distributions are free and open.

→ T_EX is Free

- Several T_EX distributions are free and open.
- Under mixed licenses.

→ T_EX is Free

- Several T_EX distributions are free and open.
- Under mixed licenses.
- Active open-source community.

→ T_EX is Free

- Several T_EX distributions are free and open.
- Under mixed licenses.
- Active open-source community.
- Great alternative to MS-Word for students?

- 1 What is Typesetting?
- 2 A Quick Introduction To T_EX
- 3 What Can T_EX do for You?**
- 4 X_YT_EX Enhanced Functionality
- 5 Tools for Typesetting T_EX on BSD
- 6 Wrapping it up

→ Math

- Math has always been a strong point for T_EX.

→ Math

- Math has always been a strong point for T_EX.
- Math support is built in.

→ Math

- Math has always been a strong point for T_EX.
- Math support is built in.

```
\begin{equation}
  \sum_{\gamma \in \Gamma_C}
  I_{\gamma} = 2^k - \binom{k}{1} 2^{k-1}
\end{equation}
```

1
2
3
4

$$\sum_{\gamma \in \Gamma_C} I_{\gamma} = 2^k - \binom{k}{1} 2^{k-1} \quad (1)$$

→ Graphics :: Bitmaps

- Bitmap graphics with the *graphicx* package.

```
\includegraphics[scale=.1]{img/puff.png}
```

1



→ Graphics :: Drawing Packages

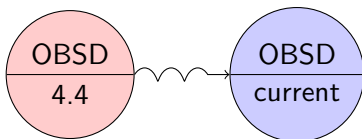
- Drawing packages, such as *tikz*.

→ Graphics :: Drawing Packages

- Drawing packages, such as *tikz*.

```
\begin{tikzpicture}
  \node[circle split,draw,fill=red!20](A) at
    (0,0) {OBSD\nodepart{lower}4.4};
  \node[circle split,draw,fill=blue!20](B) at
    (3,0) {OBSD\nodepart{lower}current};
  \draw[->,snake=coil](A) -- (B);
\end{tikzpicture}
```

1
2
3
4
5



→ Graphics :: Graphs

- *pgfplots* can draw graphs.

→ Graphics :: Graphs

- *pgfplots* can draw graphs.
- (Uses Gnuplot).

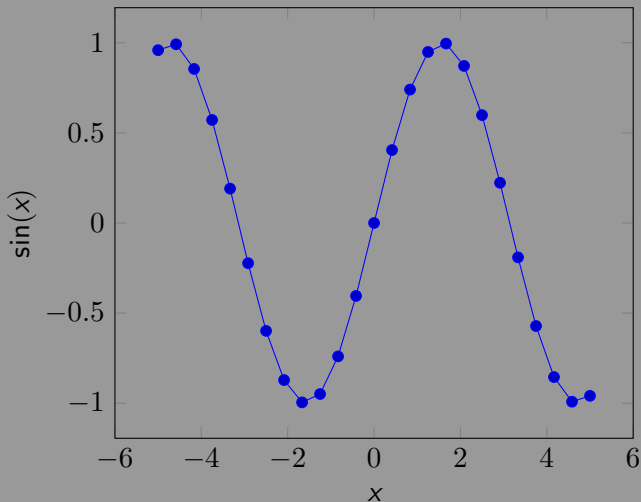
→ Graphics :: Graphs

- *pgfplots* can draw graphs.
- (Uses Gnuplot).

```
\begin{tikzpicture}
  \begin{axis}[
    xlabel=$x$,
    ylabel=$\sin(x)$,
    name=an axis]
    \addplot plot[id=sin] function{sin(x)};
  \end{axis}
\end{tikzpicture}
```

1
2
3
4
5
6
7
8

→ Graphics :: Graphs 2



→ Source Code

- Source examples in these slides use the *listings* package.

→ Source Code

- Source examples in these slides use the *listings* package.

```
\definecolor{cream}{HTML}{F7F8CC}
\lstset{%
  basicstyle=\ttfamily\small,
  language=[LaTeX]TeX,
  numbers=right,
  numberstyle=\footnotesize\color{blue},
  frame=single,
  backgroundcolor=\color{cream},
  tabsize=4,
  breaklines=true
}
\lstinputlisting{path/to/source.tex}
```

1
2
3
4
5
6
7
8
9
10
11
12

→ Invoices

- The *invoice* class can automatically calculate invoices.

→ Invoices

- The *invoice* class can automatically calculate invoices.
- (Easily auto-generated by your stock management system).

→ Invoices

- The *invoice* class can automatically calculate invoices.
- (Easily auto-generated by your stock management system).

```
\begin{invoice}{GBP}{17.5}
  \ProjectTitle{Invoice}
  \Fee{Some task}{3455.00}{1}
  \Fee{Overtime}{25.00}{8}
\end{invoice}
```

1
2
3
4
5

→ Invoices 2

Invoice

Activity	Rate/Unit	Count	Amount (GBP)
Some task	3455.00	1	3455.00
Overtime	25.00	8	200.00
Subtotal Fees			3655.00
VAT (17.5%)			639.62
Subtotal Invoice			4294.62
Sum Fees			3655.00
Sum VAT			639.62
Total			4294.62

→ Presentations

- This presentation was typeset with the *beamer* class.
- The source is available:
<http://students.dec.bmth.ac.uk/ebarrett/papers/eurobsdcon2008>

- 1 What is Typesetting?
- 2 A Quick Introduction To T_EX
- 3 What Can T_EX do for *You*?
- 4 X₃T_EX Enhanced Functionality**
- 5 Tools for Typesetting T_EX on BSD
- 6 Wrapping it up

→ Fontspec

- X_YT_EX with *fontspec* is capable of rendering TTF and OTF fonts.

→ Fontspec

- X_YT_EX with *fontspec* is capable of rendering TTF and OTF fonts.
-

The quick brown fox jumps over the lazy dog

Antagea (TrueType)

→ Fontspec

- X_YT_EX with *fontspec* is capable of rendering TTF and OTF fonts.
-

The quick brown fox jumps over the lazy dog

Antagea (TrueType)

The quick brown fox jumps over the lazy dog

GeoOblique (OpenType)

→ Fontspec

- X_YT_EX with *fontspec* is capable of rendering TTF and OTF fonts.
-

The quick brown fox jumps over the lazy dog

Antagea (TrueType)

The quick brown fox jumps over the lazy dog

GeoOblique (OpenType)

- See the *fontspec* package for more information.

→ Fontspec

- X_YT_EX with *fontspec* is capable of rendering TTF and OTF fonts.
-

The quick brown fox jumps over the lazy dog

Antagea (TrueType)

The quick brown fox jumps over the lazy dog

GeoOblique (OpenType)

- See the *fontspec* package for more information.
- Fonts from the *Open Font Library* under the OFL license.

→ Native Unicode Support

- X_YT_EX is capable typesetting Unicode characters natively.

→ Native Unicode Support

- X_YT_EX is capable typesetting Unicode characters natively.

U+00D6	U+00C8	U+0087	U+00A4
Ö	È	§	⌘

→ Native Unicode Support

- X_YT_EX is capable typesetting Unicode characters natively.

U+00D6	U+00C8	U+0087	U+00A4
Ö	È	§	⌘

- Unicode charts can be found at:
<http://www.unicode.org/charts/>.
- The above font is *Charis SIL*, freely available under the OFL license.

- 1 What is Typesetting?
- 2 A Quick Introduction To T_EX
- 3 What Can T_EX do for *You*?
- 4 X_YT_EX Enhanced Functionality
- 5 Tools for Typesetting T_EX on BSD**
- 6 Wrapping it up

→ T_EX Distribution

- There are two T_EX based typesetter suites for BSD:

→ T_EX Distribution

- There are two T_EX based typesetter suites for BSD:

teT_EX

and

T_EX Live

→ T_EX Distribution :: teT_EX

- Made by Thomas Esser.

→ T_EX Distribution :: teT_EX

- Made by Thomas Esser.
- First release 1994.

→ T_EX Distribution :: teT_EX

- Made by Thomas Esser.
- First release 1994.
- Deprecated May 2006.

→ T_EX Distribution :: teT_EX

- Made by Thomas Esser.
- First release 1994.
- Deprecated May 2006.
- *NIX only.

→ T_EX Distribution :: teT_EX

- Made by Thomas Esser.
- First release 1994.
- Deprecated May 2006.
- *NIX only.
- Still widely used.

→ T_EX Distribution :: T_EX Live

- Initiated by Sebastian Rahtz.

→ T_EX Distribution :: T_EX Live

- Initiated by Sebastian Rahtz.
- Used some of the teT_EX sources.

→ T_EX Distribution :: T_EX Live

- Initiated by Sebastian Rahtz.
- Used some of the teT_EX sources.
- First release May 1996.

→ T_EX Distribution :: T_EX Live

- Initiated by Sebastian Rahtz.
- Used some of the teT_EX sources.
- First release May 1996.
- Supports both *NIX and Windows.

→ T_EX Distribution :: T_EX Live

- Initiated by Sebastian Rahtz.
- Used some of the teT_EX sources.
- First release May 1996.
- Supports both *NIX and Windows.
- Very comprehensive (license permitting).

→ T_EX Distribution :: T_EX Live

- Initiated by Sebastian Rahtz.
- Used some of the teT_EX sources.
- First release May 1996.
- Supports both *NIX and Windows.
- Very comprehensive (license permitting).
- Starting to be adopted by OS packagers.

→ T_EX Distribution :: T_EX Live

- Initiated by Sebastian Rahtz.
- Used some of the teT_EX sources.
- First release May 1996.
- Supports both *NIX and Windows.
- Very comprehensive (license permitting).
- Starting to be adopted by OS packagers.
- Network installer included.

→ Text Editor

- General Purpose Editors

T_EX macro source is plain text, so a normal editor will suffice.

→ Text Editor

- General Purpose Editors

T_EX macro source is plain text, so a normal editor will suffice.

- Vi(m).

→ Text Editor

- General Purpose Editors

T_EX macro source is plain text, so a normal editor will suffice.

- Vi(m).
- Emacs.
 - AucT_EX.

→ Text Editor

- General Purpose Editors

T_EX macro source is plain text, so a normal editor will suffice.

- Vi(m).
- Emacs.
 - AucT_EX.
- All the rest. Kate, Gedit, Pico, Nano, Nedit, Ed? ...

→ Text Editor

- General Purpose Editors
 - T_EX macro source is plain text, so a normal editor will suffice.
 - Vi(m).
 - Emacs.
 - AucT_EX.
 - All the rest. Kate, Gedit, Pico, Nano, Nedit, Ed? ...
- Specialised T_EX Editors/Environments.
 - T_EXMaker.
 - Kyle.
 - T_EXWorks.
 - Lyx (WYSIWYMG).

→ Document Previewer

- With T_EX you work mostly with DVI or PDF.

¹Proprietary and under Linux compatibility.

→ Document Previewer

- With T_EX you work mostly with DVI or PDF.
- Lots of different viewers for BSD.

¹Proprietary and under Linux compatibility.

→ Document Previewer

- With T_EX you work mostly with DVI or PDF.
- Lots of different viewers for BSD.

Program	DVI	PDF	KDE	Gnome
Xpdf		•		
Kdvi	•		• 3	
Okular	•	•	• 4	
Evince	•	•		•
Epdfview		•		
Acroread ¹		•		

¹Proprietary and under Linux compatibility.

→ Spell Checker

- There are a number of T_EX aware spell checkers:
 - Ispell.
 - Aspell.
 - Hunspell.

→ Spell Checker

- There are a number of T_EX aware spell checkers:
 - Ispell.
 - Aspell.
 - Hunspell.
- Internal to your text editor?
 - Vim (Built in).
 - Emacs (Flyspell).

→ Graphics Editors/Viewers

- Gimp.

→ Graphics Editors/Viewers

- Gimp.
- Feh.

→ Graphics Editors/Viewers

- Gimp.
- Feh.
- Xv.

→ Graphics Editors/Viewers

- Gimp.
- Feh.
- Xv.
- Many, many, so many more...

→ Print Spooler

- Lpd.

→ Print Spooler

- Lpd.
- Lprng.

→ Print Spooler

- Lpd.
- Lprng.
- Cups.

→ Print Spooler

- Lpd.
- Lprng.
- Cups.
- Apsfilter.

→ Print Spooler

- Lpd.
- Lprng.
- Cups.
- Apsfilter.

- *dvips* and *pdf2ps* can help converting to postscript.

- 1 What is Typesetting?
- 2 A Quick Introduction To T_EX
- 3 What Can T_EX do for *You*?
- 4 X_YT_EX Enhanced Functionality
- 5 Tools for Typesetting T_EX on BSD
- 6** Wrapping it up

→ Try It!

- Try it out. See what you think!

→ Try It!

- Try it out. See what you think!
 - OpenBSD.
Packages available on FTP servers.

→ Try It!

- Try it out. See what you think!
 - OpenBSD.
Packages available on FTP servers.
 - MacOS X.
Via the MacPorts project (or MacT_EX).

→ Try It!

- Try it out. See what you think!
 - OpenBSD.
Packages available on FTP servers.
 - MacOS X.
Via the MacPorts project (or MacT_EX).
 - Other systems.
Via the net installer.
Anyone interested in porting?

→ Try It!

- Try it out. See what you think!
 - OpenBSD.
Packages available on FTP servers.
 - MacOS X.
Via the MacPorts project (or MacT_EX).
 - Other systems.
Via the net installer.
Anyone interested in porting?
- Source code of these slides available.

→ Resources / Getting Help

- texdoc (Local class + package docs).
- CTAN (Finding new classes and packages).
- Google!
- comp.text.tex (General T_EX).
- T_EX Live mailing list (TL specific).
- My T_EX resources page:
<http://students.dec.bmth.ac.uk/ebarrett/texlinks/>
- Myself (OpenBSD specific problems).

→ Conclusion

Thanks for Listening!

Any Questions?