Essential Research Toolkit for the Humanities

Week 10: Typesetting linguistic documents with LaTeX

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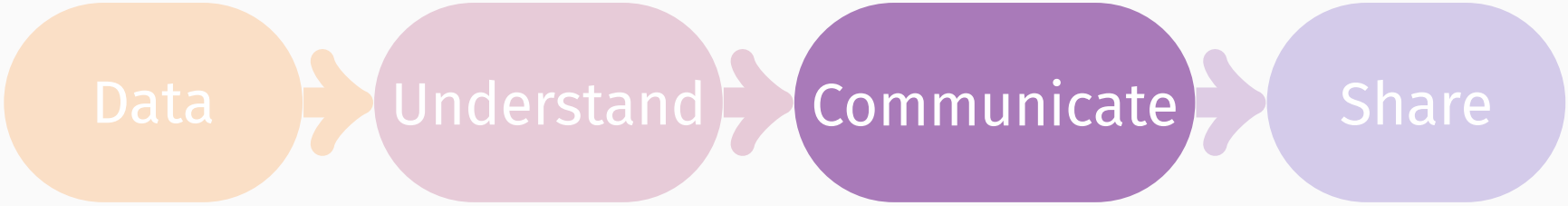
Psycholinguistics and Cognitive Modeling Lab

Homework

- read the whole assignment description and either complete all parts or explain why you didn't
- compile the PDF $\rightarrow$ renaming the `.tex` file is not enough
- some of you went WAY above and beyond of the assignment with images, tables, other packages, etc. (which is awesome but not how I wanted you to spend your Pfingstferien)

Questions?

Communicating



import, clean, transform, export, visualize, model

document, create clean and beautiful reports

connect, collaborate, backup

Table of contents

LaTeX recap

General information

Name: ˈlɑːtɛx or ˈleɪtɛx or whatever (e.g. ˈlatɛç) but NOT ˈleɪtɛks.

Aim: typeset and print at the highest typographical quality using a predefined, professional layout.

Installation: Base and packages (`https://ctan.org/`)

Version: XeTeX & XeLaTeX

Input: Text file **TEX** + commands

Output: **PDF** + **LOG** + **AUX** + ...

Compilation: XeLaTeX → XeLaTeX (→ biliography → XeLaTeX)

Document structure: (1) Document class. (2) Preamble. (3) Document.

First document

`\maketitle`	Creates title
`\section{…}`	Creates section
`\subsection{…}`	Creates subsection
`\subsection{…}`	Creates subsubsection

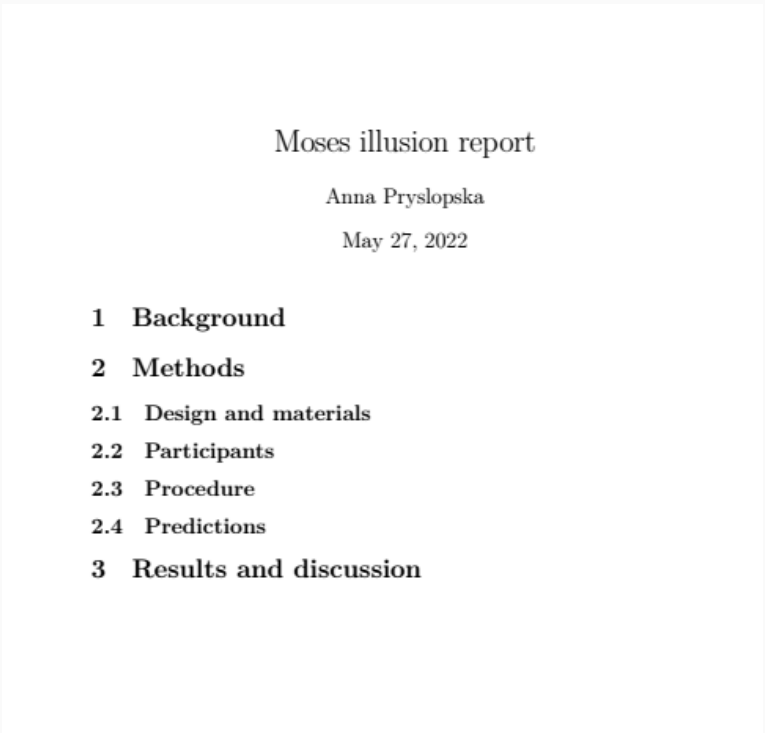
moses.tex

```
\documentclass[10pt,a4paper]{article}
\usepackage{fontspec}
\defaultfontfeatures{Mapping=tex-text}
\usepackage{xunicode}
\usepackage{xltxtra}
%\setmainfont{???}
\usepackage{polyglossia}
\setdefaultlanguage{english}
\author{Anna Pryslopska}
\title{Moses illusion report}
\begin{document}
\maketitle

\section{Background}
\section{Methods}

\subsection{Design and materials}
\subsection{Participants}
\subsection{Procedure}
\subsection{Predictions}

\section{Results and discussion}
\end{document}
```



Moses illusion report

Anna Pryslopska

May 27, 2022

1 Background

2 Methods

2.1 Design and materials

2.2 Participants

2.3 Procedure

2.4 Predictions

3 Results and discussion

Editing text

Text structure

Numering

```
\part{…}
\chapter{…}
\section{…}
\subsection{…}
\subsubsection{…}
\paragraph{…}
\subparagraph{…}
```

→ will be included in TOC

No numering

```
\part*{…}
\chapter*{…}
\section*{…}
\subsection*{…}
\subsubsection*{…}
\paragraph*{…}
\subparagraph*{…}
```

→ will NOT be included in TOC

`\tableofcontents` = TOC

`\addcontentsline{WHERE}{LEVEL}{WHAT}`

WHERE = toc (table of contens)

LEVEL = part, chapter, section, …

WHAT = the exact text, e.g. “Abstract”

Commands

LaTeX commands typeset text elements:
`\chapter{Introduction}` = Make “Introduction” a chapter

The commands are case sensitive:
✔ `\chapter{…}` ✖ `\Chapter{…}` ✖ `\CHAPTER{…}`

General format:

- start with a backslash `\`
- letters only (sometimes in “plain” and “stared” variants)
- some can take arguments and options:
  `\command[optional parameter]{argument}`
- if no arguments, then LaTeX ignores any whitespace after the command:

```
\section{Introduction}
\LaTeX is neat
\LaTeX{} is idiosyncratic
```

1. Introduction
LaTeXis neat
LaTeX is idiosyncratic

Make some space

Whitespace space, tab, ‘invisible’ characters (vertical and horizontal)

LaTeX assumes that **only one consecutive whitespace character** makes sense and will correct you if you add more.

Starting new lines with a space is a typographic sin and will be ignored.

A **single line break** is considered one whitespace. **Two line breaks** are considered a paragraph break. **Three+ line breaks** are considered a single paragraph break.

Gaps and breaks

`\hspace{…}`	Give me …px/cm/em/etc. horizontal space…
`\hspace*{…}`	…I MEAN IT
`\hfill`	Fill the page with whitespace horizontally
`\vspace{…}`	Give me …px/cm/em/etc. vertical space…
`\vspace*{…}`	…I MEAN IT
`\vfill`	Fill the page with whitespace vertically
`\newline` or `\linebreak`	Start a new line
`\\`	Start a new paragraph…
`\\*`	…but don't start a new page
`\newpage`	Start a new page, fill the last one with whitespace
`\pagebreak`	Start a new page, stretch the content on the last one
`\phantom{…}`	Pretend there is an invisible … here

Making text *feel* `very` special

Italics	`\textit{}` or `\emph{}`
Bold	`\textbf{}`
Underline	`\underline{}`
`Typewriter`	`\texttt{}`
SMALL CAPS	`\textsc{}`
Subscript	`$_{Subscript}$`
Superscript	`$^{\textrm{Superscript}}$`
Color	`\textcolor{red}{Color}`

Colors thanks to the package **`xcolor`**. You can define your own colors in the preamble or use preexisting ones:
`https://en.wikibooks.org/wiki/LaTeX/Colors`

Fonts and their sizes

Relative to option in `\documentclass[]{}`

Set globally `\large` or locally `{\large }`

`\tiny`	tiny
`\scriptsize`	scriptsize
`\footnotesize`	footnotesize
`\small`	small
`\normalsize`	normalsize
`\large`	large
`\Large`	Large
`\LARGE`	LARGE
`\huge`	huge
`\Huge`	Huge

Cross References: package hyperref

`\url{URL}`	clickable URL
`\href{URL}{TEXT}`	clickable URL hyperlink with custom text
`\label{KEY}`	given name
`\ref{KEY}`	reference
`\pageref{KEY}`	page number

Typical key structure (but you can use any **unique** name)[1]

- `ex:foo` example (sentence in (2a))
- `fig:foo` figure (Figure 1)
- `sec:foo` section (Section 4)
- `tab:foo` table (Table 1)

[1] This is a footnote. `\footnote{This is a footnote.}`

Environments: Lists

Format blocks of text (e.g. lists, text alignment, tables, figures, poetry).
Start with `\begin{…}` and end with `\end{…}`.
Must be contained and not empty.

```
\begin{itemize}
\item First
\item[+] Second
\item[--] Third
\end{itemize}
```

- First
+ Second
– Third

```
\begin{enumerate}
\item First
\item[ii.] Second
\item[(3)] Third
\end{enumerate}
```

1. First
ii. Second
(3) Third

Environments: Alignment

```
\begin{flushleft}
'Twas brillig, and the slithy toves
Did gyre and gimble in the wabe:
All mimsy were the borogoves,
And the mome raths outgrabe.
\end{flushleft}
```

'Twas brillig, and the slithy toves Did gyre and gimble in the wabe: All mimsy were the borogoves, And the mome raths outgrabe.

```
\begin{center}
“Beware the Jabberwock, my son!
The jaws that bite, the claws that catch!
Beware the Jubjub bird, and shun
The frumious Bandersnatch!”
\end{center}
```

“Beware the Jabberwock, my son! The jaws that bite, the claws that catch! Beware the Jubjub bird, and shun The frumious Bandersnatch!”

```
\begin{flushright}
He took his vorpal sword in hand;
Long time the manxome foe he sought---
So rested he by the Tumtum tree
And stood awhile in thought.
\end{flushright}
```

He took his vorpal sword in hand; Long time the manxome foe he sought— So rested he by the Tumtum tree And stood awhile in thought.

Tabular and tables

```
\begin{tabular}{|l|c|r|}
\hline
A table & With & No caption \\
\hline
A & a & i \\
B & b & ii \\
\hline
\end{tabular}
```

A table	With	No caption
A	a	i
B	b	ii

```
\begin{table}
\begin{tabular}{lcr}
A table & With & A caption \\
\hline
A & a & i \\
B & b & ii \\
\end{tabular}
\caption{Neat}\label{tab:neat}
\end{table}
```

A table	With	A caption
A	a	i
B	b	ii

Table 1: Neat

Generators in editor or e.g. `https://www.tablesgenerator.com/`.

Images and figures: package graphix

```
\includegraphics[scale=1]{cat.jpg}
```

Figure 1: Dog

```
\begin{figure}
\includegraphics
[width=1\textwidth]{dog.jpg}
\caption{Dog}\label{fig:dog}
\end{figure}
```

Language support

`\usepackage[utf8]{inputenc}`
input encoding
`\usepackage[english]{babel}`
document language
`\usepackage{csquotes}`
quotation marks

”Funny” joke	`"Funny" joke`
“Funny” joke	``` ``Funny'' joke ```
„Funny” joke	`,,Funny'' joke`
“Funny” joke	`\enquote{Funny} joke`
‘Funny’ joke	`\enquote*{Funny} joke`

Hyphenation is automatic, but can malfunction for technical terms. You can specify hyphenation of a word in the preamble

```
\hyphenation{keepittogether make-big-chunks
su-per-ca-li-fra-gi-lis-tic-ex-pi-a-li-do-cious}
```

Special characters

Some characters have special uses (e.g. & in tables, \ in commands, _ in footnotes, $ in math, % to leave comments). LaTeX will complain if you use them willy-nilly. They must be prefixed with \:

```
\# \$ \% \^{} \& \_ \{ \} \~{} \textbackslash
```

$ % ^ & _ { } ~ \

There are more special characters, e.g. “-” hyphen, “–” en-dash, “—” em-dash, “−”minus etc. You can copy & paste most in XeLaTeX or look them up:
`http://tug.ctan.org/info/symbols/comprehensive/symbols-a4.pdf`

Glosses

Numbered examples: gb4e

Make this the last package you load because it can conflict with other packages.

```
\begin{exe}
\ex
\gll Holla die Waldfee\\
     holla the wood.fairy\\
\glt Well, I never!
\end{exe}
```

(1) Holla die Waldfee
holla the wood.fairy
Well, I never!

```
\begin{exe}
\ex \begin{xlist}
\ex \gll Alter Schwede\\
         old Swede\\
\end{xlist}
\end{exe}
```

(2) a. Alter Schwede
old Swede

IPA symbols

Accents and IPA with `tipa`

XeLaTeX àcçêpts möst ðiñgs (as long as your font has them!) but you might want to typeset more complex linguistic stuff.

```
\textipa{f@"nEtIks}
```

fəˈnɛtɪks

Symbol name	*Macro name*	*Symbol*
Turned A	`\textturna`	ɐ
Glottal stop	`\textglotstop`	ʔ
Right-tail D	`\textrtaild`	ɖ
Small capital G	`\textscg`	ɢ
Hooktop B	`\texthtb`	ɓ
Curly-tail C	`\textctc`	ɕ
Crossed H	`\textcrh`	ħ
Old L-Yogh ligature	`\textOlyoghlig`	ɮ
Beta	`\textbeta`	β

Full documentation:

`http://www.l.u-tokyo.ac.jp/~fkr/tipa/tipaman.pdf`

Semantic formulae

Math, symbols, and semantics: amsmath, amssymb, stmaryrd

Math mode is an easy way of typesetting mathematic formulae. Switching from (default) text mode to math mode (and back) is done by using: `$ ... $`. Everything in between is parsed as math (cf. p. 10).

$$\frac{a^2 + b^2 \neq \delta}{\bigstar}$$

```
$\dfrac{a^2 + b^2 \neq \delta}{\bigstar}$
```

Semantic brackets require the package `stmaryrd`.

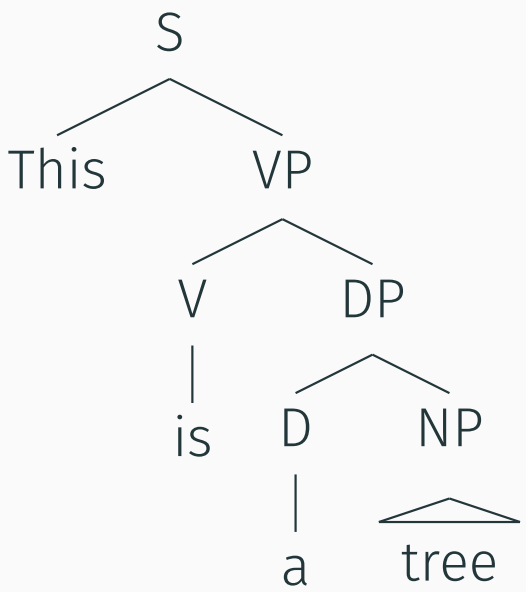
$$[\![be_3]\!] \equiv \lambda P^i \lambda x^s \exists x^k [\forall x^o [P^i(x^o) \Leftrightarrow R'(x^o, x^k)] \wedge R(x^s, x^k)]$$

```
$\llbracket be_3 \rrbracket \equiv
\lambda P^i \lambda x^s \exists x^k [\forall x^o
[P^i (x^o) \Leftrightarrow R'(x^o,x^k)]
\land R(x^s,x^k)]$
```

Syntactic trees

Growing trees with `qtree`

Many other packages out there (`xyling`, `xy`, `tikz-qtree`, `forest`).
You can add arrows with `tree-dvips`.




```
\Tree [.S This
    [.VP [.V is ]
    [.DP [.D a ]
        \qroof{tree}.NP ] ] ]
```

Questions?

Homework assignment

Homework assignment due June 20

Read “Bibliography management with biblatex”:
`https://www.overleaf.com/learn/latex/Bibliography_management_with_biblatex`

Upload a `.tex` and a `.pdf` file to ILIAS:

- Re-create the Moses illusion report in LaTeX (don’t worry about proper citations).
- Include at least one table and one figure of the data (with captions).
- Reference and hyperlink the table and figure in the text.
- Create one list (via itemize, enumerate, or exe).
- Preserve the scientific article structure (Background, methods, results, etc.).
- Include a table of contents.