LyX Workshop, Part 1

Taking it Easy

LyX provides comfortable word processing features for the LaTeX typesetting system allowing even beginners to create high-quality documents. **BY ANDREAS KNEIB**

LyX' roots reach back way down through the years of computer history. In March 1978 Donald E. Knuth [1] wrote the first lines of a typesetting program called TeX. This program was actually designed to improve the layout of his book "The Art of Programming", as the layout was a source of concern to the esthete, Knuth.

The name of the layout system itself indicates the author's desire for perfection and art within a program. TeX represents the Greek letters Tau Epsilon Chi, and is thus pronounced *tech* and not the expected *tecks* [2].

The ancient Greeks, and Aristotle in particular, understood "techne" as artistry and applied knowledge, and this

was exactly what Knuth was aiming for. The typesetting package provided the author with the potential to add commands to the text to produce an attractive appearance.

Unfortunately, the commands involved are complex, and can prove to be too much of a challenge to the average writer [3]. This motivated Leslie Lamport to create the TeX add-on LaTeX in 1985. Like HTML, LaTex instructions comprise a markup language – that is a descriptive language that shows the interpreter how to portray a document.

In contrast to HTML, the interpreter is not a browser in this case, but Donald Knuth's layout system, that formats the text on the guidelines of LaTeX macros,

and creates a **DVI** file as a result. If you have installed the LaTex package, you will normally find an introductory file on this subject, called *l2kurz.dvi* on your hard disk.

The macro command set developed by Leslie Lamport may have simplified working on the text itself but the user still needed to be familiar with LaTeX syntax. In 1995, ten years after Lamport created his add-on, Matthias Ettrich produced a frontend that enhanced the user-friendliness of the layout program, and LyX was born.

Matthias Ettrich originally designed this program within the context of a student project. At first sight, LyX looks like yet another editor with its menu bar,
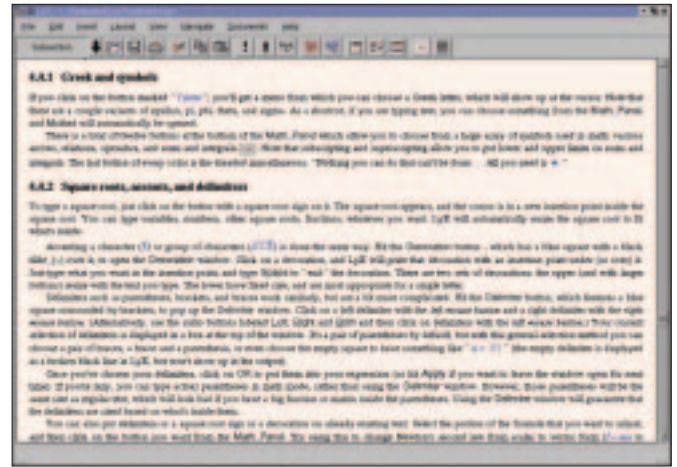
Figure 1: A document in the DVI preview

Figure 2: The document from Figure 1 in the WYSIWYM view of the editor

but on closer inspection you will see that Ettrich has managed to combine the ease of use of a modern word processor with the perfection of TeX layouts – and that is no mean feat. In 1997, working with Matthias Kalle Dalheimer [4], Ettrich ported his program to the KDE environment, and decided to name this branch, Klyx. Ever since then work on the program code for LyX has been the responsibility of Lars Gullik Bjønnes.

The primary difference between LyX and Klyx is the user interface. While LyX is based on the GUI toolkit Xforms, Klyx uses the QT library. Both versions are widely compatible to one another. If you are interested in downloading the latest version of LyX, try *http://www.lyx.org*.

LyX the Editor

You will discover all the options a traditional text editor offers you in LyX. For example, you can search and replace words, insert tables, perform spell checking or cut and paste with your mouse. But there are many features of programs, such as Microsoft Word & Co, that you will not need when working with the LaTeX frontend.

For example, the program does not use tabs or additional newlines to increase the whitespace between words and paragraphs respectively. The editor does not show line or page wrapping and will not try to influence you with regard to hyphenation.

LyX is a visual word processor, that uses LaTeX as a print system, and is thus restricted to the limitations of the macro package. This is one of the reasons why you should not expect the **WYSIWYG**

behavior of other editors. For example, if you want to know what your document will look like in the finished version, you will have to view the DVI.

These limitations are at the same time the program's greatest advantages: While you are writing you can concentrate entirely on the content of your document, leaving the typographic niceties of paragraphs, headlines or footnotes to your computer system. You only need to tell the editor what paragraphs to indent, or format as footnotes or lists. So there are no headaches as regards the layout.

If you tell the frontend what part of the text you would like to format as numbered headline, it will then choose the correct font, typeface, and number. Complicated manual text formating procedures, such as "bold, 16 point, centered", are a thing of the past.

And this is why Matthias Ettrich refers to his program as a WYSIWYM editor. WYSIWYM is the acronym for "What you see is what you mean". That is, you will not see an exact representation of your text as the printer will output it. What you will see is the logical structure of the document as you intended it, with highlighting, headings, or lists.

LyX also includes a whole range of additional features, allowing you not only to view the current document in DVI format, but also to convert it to either ASCII or HTML. The program also allows you to create tables of content as well as glossaries.

For authors who use mathematical expressions, LyX offers a WYSIWYM style formula editor that you will not

need a mouse to use. Additional features worthy of note include allowing you to incorporate and scale postscript graphics to and in your documents and provide the author with almost unlimited Undo/Redo functionality.

Documentation and Help

Before we take our first look at the user interface, let's first take a moment to investigate the Help button at the end of the menu bar. The *Help* option provides access to a wide range of LyX documents. The help texts start with an introduction, includes a tutorial with exercises, and culminate with a reference manual.

Life is made easier by the Content menu, which allows you to perform searches in the documentation. If you would prefer to start with an introduction, you might like to try the Introduction, Tutorial and FAQ section.

The Interface

When you launch the program for the first time, a menu with the items *File*, *Edit* and *Help* appears – not many items so far. But after creating a document by choosing *File/New*, additional menu items are added to the list, such as

---

GLOSSARY

DVI: *DVI: (Device Independent). The content of this file is composed in a device independent language. You will need a program like xdvi or kdvi to display the file.*

WYSIWYG: *WYSIWYG: What You See Is What You Get – i.e. the printer will output what you see in the program window.*

Insert, *Layout*, *Display*, *Navigate* and *Documents*.

The *File* menu provides exactly what you would expect: various items that allow you to create, open and save files. The *Version control* item is new, and allows you to identify and select several versions of the same document. The *Import* and *Export* items are used to convert ASCII, LaTeX, or PDF documents to and from LyX format. LyX documents are easily identified by the *.lyx* file suffix. However, the editor will not convert documents itself, preferring to delgate that task to external programs.

The *Edit* menu also provides most of the functionality you would expect from a normal text editor. One exception is the *Table* item that allows you to edit tables. The *Math Panel* popup contains the whole gamut of non-standard characters from Greek letters to root signs; just click on a symbol to easily insert it into your new document.

You can select *Spellchecker* to let the Ispell program loose on your document, and use *Floats & Insets* to open and close footnotes, margin notes, and tables. The last two items in this menu, *Preferences* and *Reconfigure* are used to define settings the editor's preferences file, which is normally stored in *~/.lyx/lyxrc*.

The *Inset* button provides access to a list of text markers that you can add to your document, allowing you to insert margin notes, images, and whole files.

The *Layout* menu is somewhat more advanced. You can use *Fonts* to specify the typeface and emphasis of the selected text. The *Paragraph Layout* popup is used to select the alignment of the text or specify page breaks. You can use the *Document* option to define the appearance of the whole docment. Five registers are available for use in this section, allowing you to specify the document class (various classes are available, ranging from letter to book), the language for automatic hyphenation or the paper size.

View opens a menu that allows you to view your text as a PDF document, in Postscript or HTML format. This menu also allows you to launch the DVI viewer, which will show you what the printed version of your document will look like. The *Update* function does what you would expect from a WWW

browser. If a document has been modified, it is reloaded by the viewer. The *Table of Contents* menu is also quite useful, and provides you with an overview of the images, content, algorithms, or tables in your document.

The next option in the menu bar allows you to *navigate* your document. You can navigate the body of your text, the notes it contains or the errors. As we have already paid a visit to the LyX help menu, our last port of call is the *Document* menu. This provides quick access to the documents that you currently have opened, allowing you to toggle the current document.

The toolbar underneath the menu bar allows you to call commonly used functions with just a single click. A small bubble help window shows you the title of the button when you move the mouse over it. Several key functions, such as *Print*, *Select* or the *Math Editor* can be found here.

The pull-down box at the left end of the toolbar allows you to select paragraph environment types. The environment list depends on the document class defined in *Layout/Document*. For example, if you choose the *article* class, you have access to paragraph formats for the title, headings, and author that are not available in the *letter* class. Instead the *letter* comprises entries for the address, telephone number, and references, that are not available for articles. We will taking an in-depth look at paragraph environments in the next part of our workshop.

Templates

The */usr/share/lyx/templates* directory contains a range of LyX files that you can use as templates. The quickest way to access a template is to choose *File/New from template*. This is your opportunity to test what you have learnt about word processing with LyX so far. Start by selecting the *dinletter.lyx* template from the *templates* directory.

A sample letter appears in the editing area of the program. Use data of your own to replace the default text, including the angled brackets. The arrows at the end of the first lines in the *Letterhead* and *Address* environments indicate two paragraphs without any vertical whitespace between them. Press
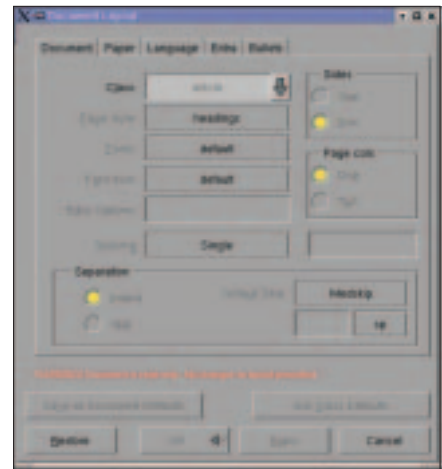

Figure 3: The Layout/Document Window

[Ctrl + Return] to use this format.

If your letterhead contains more than the three lines allotted in the template, you can adapt it to suit your needs. After completing the letter you can now preview the finished item. To do so, use the *View*, as previously described. If you are satisfied with the results, and would like to keep this document as a template for future letter writing, the right place to save templates of your own making is in the *~/.lyx/templates* directory. Make sure that you use a descriptive name that will allow you to find the template easily in the future.

Quo vadis?

In part two of this workshop we will be taking a closer look at the configuration file, *~/.lyx/lyxrc*, getting to grips with paragraph environments and text classes, and looking into command shortcuts. Additionally, we will be answering a few questions, such as "How do I create a table of contents?", and "What are margin notes, references, or footnotes?" ∎

INFO

[1] *http://www-cs-faculty.stanford.edu/↗ ~knuth/index.htm*

[2] Donald E. Knuth. Tau Epsilon Chi, a system for technical text

[3] *http://www.ibiblio.org/pub/packages/↗ TeX/info/german/texbuch/*

[4] *http://www.linux-magazin.de/ausgabe/↗ 1998/06/KLyx/klyx.html*

[5] *http://www.linux-user.de/ausgabe/↗ 2000/10/085-klyx/klyx.html*