

GELLMU

Introductory Survey

A Bridge for Authors from \LaTeX to XML

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Recent

- **Download**¹ (v. 0.8.4.1, 6 July 2007)
Since the version 0.8.0.5 release in October 2004, “regular” GELLMU has provided a reliable dual presentation route for math articles written in \LaTeX -like source language to (a) print output and (b) online display in XHTML extended by Mathematical Markup Language (MATHML)².
- (14 Oct 2009) Bleeding edge materials³ for making XHTML+MathML **slides** (rather than using PDF made with, say, “Beamer”), using W3C’s *slidy*, with an add-on to the didactic production system. (Sorry, no docs for this yet. See the example for TUG 2007, linked below.)
- (30 May 2009) For those who lack a local-platform HTML/XHTML validation set-up, the small package *gvalidhtml*⁴ should suffice. (Simply open the tarball in `/usr/local/share` and make a symbolic link from the name “`validhtml`” somewhere in your command path to the script named “`gvalidhtml`” in the untarred directory.)
- (22 Jul 2007) Video, slides, and pre-meeting notes from my talk *Dual Presentation with Math from one Source*⁵ on July 19 at TUG 2007⁶ in San Diego.
- Latest online version of the *Introductory User’s Guide to Regular GELLMU*:
 - XHTML+MathML⁷
 - classical HTML⁸
 - PDF: formatted for **8.5 x 11 in.**⁹
 - DVI: formatted for **8.5 x 11 in.**¹⁰
 - GELLMU source¹¹

¹URI: <http://www.albany.edu/~hammond/gellmu/tarball.html>

²URI: <http://www.w3.org/Math/>

³URI: <http://www.albany.edu/~hammond/gellmu/gslidy.tgz>

⁴URI: <http://www.albany.edu/~hammond/gellmu/gvalidhtml-0.9.tgz>

⁵URI: <http://math.albany.edu/math/pers/hammond/Presen/Tug2007/>

⁶URI: <http://www.tug.org/tug2007/>

⁷URI: <http://www.albany.edu/~hammond/gellmu/igl/userdoc.xhtml>

⁸URI: <http://www.albany.edu/~hammond/gellmu/igl/userdoc.html>

⁹URI: <http://www.albany.edu/~hammond/gellmu/igl/userdoc.pdf>

¹⁰URI: <http://www.albany.edu/~hammond/gellmu/igl/userdoc.dvi>

¹¹URI: <http://www.albany.edu/~hammond/gellmu/igl/userdoc.glm>

- Latest online version of the *GELLMU Manual*:
 - XHTML+MathML¹²
 - classical HTML¹³
 - PDF: formatted for 8.5 x 11 in.¹⁴
 - DVI: formatted for 8.5 x 11 in.¹⁵
 - Plain text¹⁶ (made from classical HTML using *lynx*)
 - GELLMU source¹⁷
- Author-level XML document type definition¹⁸ for the markup used in *Regular GELLMU*. It's the "side entrance" in the Regular GELLMU Flow Chart¹⁹.



- MATHML Demos of past articles from *The New York Journal of Mathematics*²⁰ made with GELLMU. (15 Oct. 2006: These have been rebuilt to be safe in Firefox 1.5.0.7.)
- Understand the system by **studying examples**²¹.
- The latest *fully tested* version of the **syntactic translator** `gellmu.el`²², which is all that is required for *basic* GELLMU.

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¹²URI: <http://www.albany.edu/~hammond/gellmu/glman/glman.xhtml>

¹³URI: <http://www.albany.edu/~hammond/gellmu/glman/glman.html>

¹⁴URI: <http://www.albany.edu/~hammond/gellmu/glman/glman.pdf>

¹⁵URI: <http://www.albany.edu/~hammond/gellmu/glman/glman.dvi>

¹⁶URI: <http://www.albany.edu/~hammond/gellmu/glman/glman.txt>

¹⁷URI: <http://www.albany.edu/~hammond/gellmu/glman/glman.glm>

¹⁸URI: <http://www.albany.edu/~hammond/gellmu/xml/axgellmu.dtd>

¹⁹URI: <http://www.albany.edu/~hammond/gellmu/glman/glman.html#flow>

²⁰URI: <http://math.albany.edu/math/demos/nyjm>

²¹URI: <http://www.albany.edu/~hammond/gellmu/examples/>

²²URI: <http://www.albany.edu/~hammond/gellmu/gellmu.el>

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1 Introduction

Generalized Extensible L^AT_EX-Like Markup (GELLMU) is my concept for using L^AT_EX-like markup to create documents in an easy plain text format that may be faithfully converted to high-powered documents marked up under SGML. T_EX is the classical typesetting markup language (with robust handling of mathematics) that was created by Donald E. Knuth of Stanford University around 1980. The *L^AT_EX document preparation system* was created shortly thereafter by Leslie Lamport of Digital Equipment Corporation. L^AT_EX is a simplified markup interface to T_EX designed to let “the user concentrate on the structure of the text” rather than on typesetting. SGML, an abbreviation for *Standard Generalized Markup Language* (ISO 8879:1986), is the name of a family of markup languages, unspecified in number, designed for efficient automatic text processing with shared tools of a certain type.

During the period 1993-1998 the most familiar example of a markup language in the SGML family was *Hypertext Markup Language* (HTML), the now familiar language of the World Wide Web²³. HTML is a rather low-powered member of the SGML family. The notion of “power” for a language under the umbrella of SGML has to do with the number of available translations to other document languages, both within and without SGML.

One of the ideas in my design for GELLMU is that with existing stable freely available SGML tools one may go to almost any presentation format. For the community of mathematicians and scientists, who have become accustomed to using T_EX to create finely typeset documents for printing, this design provides a way automatically to create other carefully crafted forms from a single source document without over-burdening Donald Knuth’s program T_EX.

For typeset printed presentation, SGML-based processing to the language T_EX should be optimal, while SGML-based processing to Lamport (v.2) L^AT_EX is used in didactic examples found below. (See also “*jadetex*” at The Comprehensive T_EX Archive Network (CTAN); brief comment on “*jade*” may be found below.) Most of the magic is due to Charles Goldfarb, the inventor of SGML, James Clark, the author of “*nsgmls*”, and David Megginson, the author of “*sgmlspl*”. The GELLMU to SGML transliterator that I am still writing could have been done in many languages, but ELISP, the language of GNU Emacs, probably the best-documented of all languages, and probably also the most easy-to-debug general purpose language, seemed to be just right for this. Beyond that I am grateful to Richard Stallman for encouragement and answers. Of course, when things do not work, the problems should in no way be attributed even in part to the antecedent work.

²³URI: <http://www.w3.org/>

2 First Demonstrations

For a quick look, intended for those who know \LaTeX , there is *A Silly Little GELLMU Article*²⁴ of about three printed pages. Alongside the HTML form of this article are other versions:

- the original GELLMU source markup²⁵.
- its syntactic translation to an SGML document²⁶, involving only minimal knowledge of the document type.
- its translation to an XML dialect²⁷, that is essentially equivalent to the source.
- \LaTeX source that was generated from the XML version²⁸
- DVI²⁹ made from the \LaTeX version.
- PDF³⁰ made with *pdflatex*.
- XHTML+MATHML³¹.

And yes, of course, both HTML versions were generated from the XML version.

3 Can Content-Level MathML be a Derived Format?

Mathematical Markup Language (MATHML) is a language under development by the World Wide Web Consortium (W3C)³² for (1) the display of mathematics in ordinary web pages and (2) automated interchange of mathematical segments among web-compatible software applications.

Corresponding to (1) and (2) above the W3C has provided presentation and content-level versions of MATHML.

While MATHML, which is an XML language (formally “application”), is verbose to a point that makes its writing by human authors almost impossible, the W3C project has not undertaken to provide a language suitable for authors. Moreover, one cannot robustly translate well-structured standard \LaTeX or \TeX math segments into MATHML without the discipline of rules that are difficult both to formulate and to enforce.

The concept of *generalized \LaTeX* in the GELLMU Project provides such discipline.

The version of “Regular” (see §4.3) GELLMU in the **tarball**³³, has, since August 2004, provided translation of generalized \LaTeX source markup under the *article* document type to HTML with presentation-level MATHML as well as translation to ordinary \LaTeX .

²⁴URI: <http://www.albany.edu/~hammond/gellmu/igl/silly.html>

²⁵URI: <http://www.albany.edu/~hammond/gellmu/igl/silly.glm>

²⁶URI: <http://www.albany.edu/~hammond/gellmu/igl/silly.sgml>

²⁷URI: <http://www.albany.edu/~hammond/gellmu/igl/silly.xml>

²⁸URI: <http://www.albany.edu/~hammond/gellmu/igl/silly.ltx>

²⁹URI: <http://www.albany.edu/~hammond/gellmu/igl/silly.dvi>

³⁰URI: <http://www.albany.edu/~hammond/gellmu/igl/silly.pdf>

³¹URI: <http://www.albany.edu/~hammond/gellmu/igl/silly.xhtml>

³²URI: <http://www.w3.org/>

³³URI: <http://www.albany.edu/~hammond/gellmu/tarball.html>

The key question in designing a system sufficient for generation of mathematics under an umbrella like content-level MATHML either using highly specialized L^AT_EX or using an SGML or XML language for authors is how far authors will be willing to diverge from past habits.

The Math Benchmark Document³⁴ offers an example of various mathematical segments that one might want to have automatically translated to a language with relative semantics such as content-level MATHML.

There is something of an explanation (now in early draft stage³⁵), familiar to many research mathematicians but perhaps not to so many computer scientists, of why most legacy T_EX/L^AT_EX markup of mathematics is **not** ambiguous for robots when augmented by adequate “type” information. Legacy practice has been to include “type” information in paper documents as part of an article’s descriptive text. In a few words, mathematicians are usually careful and fussy about notation. GELLMU will eventually provide for “declared symbols” and optional associated alpha-numeric “type” information. Ultimately there should emerge a public formal object, the “mathematical expression” (`mathexpr`) that is something like the “regular expression” (`regexp`) that is familiar to users of “ed”, ELISP, “Perl”, etc. One will want a separate, probably simpler syntax for the specification of the *type* of a `mathexpr`.

My philosophy, and I think the only realistic philosophy, is that such types for `mathexpr`s should involve *relative*, rather than *absolute*, semantics.

One of the most basic types is categorical “morphism”, which is a generalization of a calculus student’s notion of “function”; for much that is of interest to many, the notion of function will suffice, provided that each function symbol is understood to imply “domain” and “target” with “target” not always the same as “image” or “range”. Regardless, users may conceptualize “morphisms” as “functions”.

4 Brief Introductions

To summarize there are two concepts in this project.

4.1 Basic GELLMU

This may be useful for some authors familiar with L^AT_EX who wish to write directly for an SGML or XML document type. It provides rudimentary L^AT_EX-like commands with single argument syntax. SGML attribute strings may be entered using a single L^AT_EX-like option.

It also offers a L^AT_EX-like meta-command `\newcommand`, which provides for macros with arguments. See Using the GELLMU Syntactic Translator to Write HTML³⁶. For example, the previous anchor would be marked up in HTML as

```
<a href="/~hammond/gellmu/ghtml.html"
    >Using ... <kbd>HTML</kbd></a> ,
```

and this is marked up somewhat more succinctly in GELLMU source as

³⁴URI: <http://www.albany.edu/~hammond/gellmu/authordtd/>

³⁵URI: <http://www.albany.edu/~hammond/gellmu/notation>

³⁶URI: </~hammond/gellmu/ghtml.html>

```
\a[href="/~hammond/gellmu/ghtml.html"  
]{Using ... \kbd{HTML}} .
```

With the *newcommand* definition for `\href`

```
\newcommand{\href}[2]{\a[href="#1"]{#2}}
```

the even more succinct markup

```
\href{/~hammond/gellmu/ghtml.html}{Using ... \kbd{HTML}}
```

suffices.

4.2 Advanced GELLMU

This goes beyond basic L^AT_EX-like command / argument syntax to provide L^AT_EX-like multiple argument / option syntax and also what might be called L^AT_EX-like grammar including `\begin{...}\end` and, if desired, blank lines to initiate paragraphs.

When desired, advanced GELLMU has knowledge of a few command names, but the author must know the SGML or XML document type.

4.3 *Regular* GELLMU: The Didactic Production System

The didactic production system is a beginning at emulating L^AT_EX with an XML document type. In fact, L^AT_EX can be modeled more precisely with SGML than with XML.

The didactic production system consists of

The GELLMU Syntactic Translator.

An SGML document type.

An XML document type.

The following translators, coded in Perl under David Megginson's *sgmlspl* framework:

1. from the SGML document type (GELLMU Syntactic Translator output) to the XML document type.
2. from the XML document type to HTML. For this there are two routes:
 - (a) The up to date XML form of HTML extended by MATHML.
 - (b) Classical HTML with pseudo-T_EX ASCII for math, still useful with terminal window browsers.
3. from the XML document type to L^AT_EX

There is validation of each stage of output. Indeed, validation of the GELLMU Syntactic Translator's SGML output is very useful for catching author errors. To assist with this there is line number alignment between the source and GELLMU Syntactic Translator output. If

necessary³⁷ one may intervene at any stage of the processing since the output of each stage is quite readable by humans.

The two document types are parallel; the XML version is intended to be the nearest XML approximation of the SGML version. The SGML version should be regarded as “in-house”, while the XML version is suitable for export. (Usable, though not identical, source may be recovered from the XML document type.)

The document types have been designed for translation to many output formats. I have the intention ultimately to write or find others to write translators from the XML document type to other formats.

Finally the *article* document type may have value as a layout vehicle that is useful as an intermediate formatting stage for structure-rich document types such as *DocBook* and *TEI*, and I would encourage those who might be so inclined to think about writing translators from such document types to GELLMU *article*.

The *Brief Introduction to Regular GELLMU*³⁸ (in XHTML+MATHML) is itself a GELLMU document. It deals mainly with the language. Various other versions are also available here:

- the input source³⁹.
- the syntactic translation to SGML⁴⁰.
- the translation to XML⁴¹.
- translation to classical HTML⁴².
- the L^AT_EX version⁴³.
- DVI made from the L^AT_EX⁴⁴.
- portrait PDF made from the L^AT_EX⁴⁵

4.4 Other Production Systems

An author may use *advanced* GELLMU as a front end to many other SGML or XML production systems with appropriate setting of variables for the GELLMU Syntactic Translator.

5 Materials

All that one should need to get started is in the current tarball⁴⁶. One should look at the user guide, the manual, both listed as “Quick Anchors” above, and the examples⁴⁷. Note that the

³⁷But only in very exceptional situations

³⁸URI: <http://www.albany.edu/~hammond/gellmu/igl/iglm.xhtml>

³⁹URI: <http://www.albany.edu/~hammond/gellmu/igl/iglm.glm>

⁴⁰URI: <http://www.albany.edu/~hammond/gellmu/igl/iglm.sgml>

⁴¹URI: <http://www.albany.edu/~hammond/gellmu/igl/iglm.xml>

⁴²URI: <http://www.albany.edu/~hammond/gellmu/igl/iglm.html>

⁴³URI: <http://www.albany.edu/~hammond/gellmu/igl/iglm.ltx>

⁴⁴URI: <http://www.albany.edu/~hammond/gellmu/igl/iglm.dvi>

⁴⁵URI: <http://www.albany.edu/~hammond/gellmu/igl/iglm.pdf>

⁴⁶URI: <http://www.albany.edu/~hammond/gellmu/tarball.html>

⁴⁷URI: <http://www.albany.edu/~hammond/gellmu/examples/>

driver scripts found in the `bin` directory of the unpacked tarball may need editing for location names.

Note also that the tarball may be installed in a “Windows” system equipped with *Cygwin*, enhanced by a sufficient array of *Cygwin*-provided packages, using the Linux driver scripts.

In principle, it should also work on MacOS X, but I have no reports, and I have no idea what might be required to port it to earlier versions of MacOS.

Although the project was begun in June 1998, its alpha release was in July, 2001. It will not be considered to have reached beta stage until I have more knowledge about use experience of others.

Some older odds and ends may be found on the GELLMU veterans page⁴⁸, and the very old page for early preview of materials⁴⁹ is still available.

6 Relevant Public Discussion and Comment

My annotations allude, though not entirely precisely, to the article *The Cathedral and the Bazaar*⁵⁰ by Eric Raymond.

Electronic Math Journals ⁵¹ Use “subscribe EMJ” in the BODY of a message.

There is an archive at the host site⁵².

This is a bazaar. Sometimes technical, sometimes economic or legal, sometimes other.

L^AT_EX Development ⁵³ Use “subscribe LATEX-L” in the BODY of a message.

Archive location, if any, unknown.

Neither a bazaar, nor a cathedral. Very sophisticated and technical. User questions are not wanted.

MathML and the HTML Math WG ⁵⁴ Make your message SUBJECT “subscribe”. Message BODY should be blank.

An archive will be found behind the W3C Math⁵⁵ web site.

This is a small bazaar in the nave of a cathedral. The cathedral “chapter” has its own private list. Many chapter members, not all, who speak in the nave seem to feel constrained to representation of the chapter.

UseNet news on SGML (if you get “news”) ⁵⁶ A bazaar with many, many important people. Sophisticated and technical, questions about SGML (but not HTML, nor http, nor “the web”, ...) are usually answered well.

UseNet news on XML (if you get “news”) ⁵⁷ A recent spin-off from the SGML discussion. Eventually it should operate at much higher volume than the SGML discussion.

⁴⁸URI: <http://www.albany.edu/~hammond/gellmu/veterans.html>

⁴⁹URI: <http://www.albany.edu/~hammond/gellmu/igl/gellmum.html>

⁵⁰URI: http://www.redhat.com/knowledgebase/otherwhitepapers/whitepaper_cathedral.html

⁵¹URI: <mailto:listserv@listserv.albany.edu>

⁵²URI: <http://listserv.albany.edu:8080/archives/emj.html>

⁵³URI: <mailto:listserv@relay.urz.uni-heidelberg.de>

⁵⁴URI: <mailto:www-math-request@w3.org>

⁵⁵URI: <http://www.w3.org/Math/>

⁵⁶URI: <news:comp.text.sgml>

⁵⁷URI: <news:comp.text.xml>

7 Pointers to a Few Related Things

Slides from 2001⁵⁸ A presentation given at The University of Delaware during the 2001 annual meeting of TUG⁵⁹.

Blahtex⁶⁰ *Blahtex* converts L^AT_EX-like math markup to MATHML for use with *MediaWiki*⁶¹, which is wiki implementation software for *Wikipedia*⁶².

TBook⁶³ The *TBook* System for XML Authoring by Torsten Bronger.

Using XML in ConTeXt⁶⁴ An indication that ConTeXt is moving into the XML world.

MathML, Version 2.0, Second Edition⁶⁵ A W3C recommendation (October 21, 2003).

OMDoc: Open Mathematical Documents⁶⁶ A content based XML markup format by Michael Kohlhase of Universität Saarlandes and Carnegie Mellon University for mathematics on the Internet that extends OpenMath⁶⁷ to the document level. Released November 1, 2000.

Daniele Giacomini's Sgmltexi⁶⁸ SGMLTEXI is the new (August 25, 2000) SGML model of TEXINFO. It should be possible to have two way translation between the didactic GELLMU document type and SGMLTEXI although one should not expect the two translations to be exact inverses of each other. This should be useful in deciding how to

1. provide mathematics in TEXINFO.
2. eliminate the need for bifurcation between T_EX and INFO in future versions of TEXINFO.

Paul Gartside's MathZilla Site at Pittsburgh

MathZilla is a nickname for the version of Mozilla⁶⁹ with internal knowledge of MATHML. The site at

<http://pear.math.pitt.edu/mathzilla/>

has Mathzilla demonstration pages and many related items of interest. It is the successor to his former site at Oxford.

David Carlisle's xmltex⁷⁰ *xmltex* uses *TeX*, the program, to parse (without validation) an XML document and then set it in T_EX, according to user rules written in code for T_EX, that govern what is done for each of the tags in the corresponding XML document type definition. The same items are also available at CTAN in "`macros/xmltex`".

⁵⁸URI: <http://math.albany.edu/math/pers/hammond/Presen/tug2001/>

⁵⁹URI: <http://www.tug.org/tug2001/>

⁶⁰URI: <http://meta.wikimedia.org/wiki/Blahtex>

⁶¹URI: <http://en.wikipedia.org/wiki/MediaWiki>

⁶²URI: <http://en.wikipedia.org/>

⁶³URI: <http://tbookdtd.sourceforge.net/>

⁶⁴URI: <http://www.pragma-ade.com/xml.htm>

⁶⁵URI: <http://www.w3.org/TR/MathML/>

⁶⁶URI: <http://www.mathweb.org/omdoc/>

⁶⁷URI: <http://www.openmath.org/>

⁶⁸URI: <http://master.swlibero.org/~daniele/software/sgmltexi/>

⁶⁹URI: <http://www.mozilla.org/>

⁷⁰URI: <http://www.dcarlisle.demon.co.uk/xmltex/>

Sebastian Rahtz’s “PassiveTeX” at TEI. ⁷¹ Uses T_EX as a formatting back end for documents prepared under an XML language according to an XSL stylesheet.

TeX4ht, htlatex, ... : Work of Eitan Gurari at Ohio State University. ⁷²

A new way to make HTML and XML versions of T_EX and L^AT_EX documents. This is based on a C program *TeX4ht*⁷³, and on a related macro package for T_EX. The macro package causes “T_EX, the program”, to add specials to its DVI output. The program TeX4ht operates on a DVI that has been so prepared and makes HTML or XML. (The DVI format has the abstract structure of a classical assembly language. There are several “special” instructions that serve as wildcards. These “specials” are of use only to processors that know about them on a case-by-case basis. They *should*, in theory, be ignored by processors that do not recognize them.)

In recent editions of TUG’s TeXLive a convenient default interface for using *TeX4ht* to make classical HTML from L^AT_EX is the command *htlatex*, while the interface for making HTML with MATHML is the command *mzlatex*. Aside from the standard *TeX4ht* docs, those interested in this approach might want to consult <http://facweb.knowlton.ohio-state.edu/pviton/support/swphtpa4.html>.

HyperLaTeX

An early (mid 90’s) package (unfortunately not on CTAN) for the production of L^AT_EX and HTML from a single specialized L^AT_EX source document. Hyperlatex⁷⁴ is somewhat similar to GELLMU in its use of an Emacs Lisp program for generating HTML though it seems not to provide a method for conscious writing under other SGML or XML document types.

The L^AT_EX3 Project.

Information is available in the document section of the current L^AT_EX2E base distribution under the filename “*ltx3info.tex*” (with DVI and PostScript version nearby). On the web one may consult the PDF version⁷⁵. Plans for SGML are mentioned in this document. There is a mailing list on the topic of L^AT_EX3 development at the address LATEX-L@relay.urz.uni-heidelberg.de.

Doug Lovell’s TeXML at IBM. ⁷⁶ TeXML is an XML vocabulary for describing T_EX syntax. One writes an XSL style sheet to translate an XML into TeXML. A small, simple program then readily translates TeXML to T_EX. (A November, 1998 release.)

Smart Documents.

There are various forms of “smartness”. SGML will provide easily for all of them. See Richard Fateman’s material on *More Versatile Scientific Documents ...*⁷⁷.

Linux Documentation.

The “How To” documents for Linux systems are based on an SGML language with ancestry in the L^AT_EX-like language of the QWERTZ document formatting system from

⁷¹URI: <http://www.tei-c.org.uk/Software/passivetex/>

⁷²URI: <http://www.cse.ohio-state.edu/~gurari/>

⁷³URI: <http://www.cse.ohio-state.edu/~gurari/TeX4ht/mn.html>

⁷⁴URI: <http://www.cs.uu.nl/~otfried/Hyperlatex/>

⁷⁵URI: <http://ctan.tug.org/tex-archive/macros/latex/doc/ltx3info.pdf>

⁷⁶URI: <http://www.alphaworks.ibm.com/formula/texml>

⁷⁷URI: <http://http.cs.berkeley.edu/~fateman/MVSD.html>

the University of Exeter (U.K.) in the early 1990's. The SGMLtools-Lite Project⁷⁸ is a recent effort to bring Linux documents under the DocBook⁷⁹ language.

Luc Maranget's Hevea

*Hevea*⁸⁰ is a L^AT_EX to HTML translator, said to produce correct HTML 4.0.

Latex2html and Latex2html-with-MathML.

The familiar Perl package *latex2html*⁸¹ gained popularity in math departments during the early days of the web not only by translating the L^AT_EX commands that could be marked up into HTML but also by automatically putting out mathematics in graphic objects housed in "" tags; the graphics were created with subprocesses that used T_EX, *dvips*, and some *netpbm* utilities. Many features have been added.

A 1998 variant⁸² at The Geometry Center offers the option of replacing the graphic objects with MATHML⁸³ objects.

The philosophy of Kernighan and Pike. ⁸⁴ If you have never looked at their classic 1984 book, here are a few quoted paragraphs. Don't let their use of a trademark get in your way.

8 About this Document

This document, which is primarily a web page, is itself a *regular* GELLMU document (see §4.3). Versions of this document other than the HTML version include the original GELLMU source⁸⁵, its translation to XML⁸⁶ (from which the HTML version is derived), the derived translation to XHTML+MathML⁸⁷, and the derived L^AT_EX source⁸⁸ from which a device independent (DVI)⁸⁹ file and a file in Adobe's portable document format (PDF)⁹⁰ were compiled. The PDF copy, which was generated using the free program *pdflatex*, is tuned for printing on 8.5 x 11 inch paper by those who have yet to equip themselves (freely) for printing DVI.

⁷⁸URI: <http://sgmltools-lite.sourceforge.net/>

⁷⁹URI: <http://www.oasis-open.org/docbook/>

⁸⁰URI: <http://crystal.inria.fr/~maranget/hevea/>

⁸¹URI: <http://www.ctan.org/tex-archive/support/latex2html/>

⁸²URI: <http://www.geom.umn.edu/~ross/webtex/webtex/>

⁸³URI: <http://www.w3.org/Math/>

⁸⁴URI: <http://math.albany.edu/math/pers/hammond/unixphil.html>

⁸⁵URI: <http://www.albany.edu/~hammond/gellmu/igl/igl.glm>

⁸⁶URI: <http://www.albany.edu/~hammond/gellmu/igl/igl.xml>

⁸⁷URI: <http://www.albany.edu/~hammond/gellmu/igl/igl.xhtml>

⁸⁸URI: <http://www.albany.edu/~hammond/gellmu/igl/igl.ltx>

⁸⁹URI: <http://www.albany.edu/~hammond/gellmu/igl/igl.dvi>

⁹⁰URI: <http://www.albany.edu/~hammond/gellmu/igl/igl.pdf>