new precise meanings assigned old familar words. Such pairings are indispensable to those who must work in both languages — or those who must translate from one into the other!

The specification covers 90 pages, the introduction another 124. And this double issue has still more: a comparison between SGML and XML, an introduction to Document Object Models (interfaces for XML documents), generating MathML in Omega, a program to generate MathML-encoded mathematics, and finally, the issue closes with a translation of the XML FAQ (v.1.5, June 1999), maintained by Peter Flynn.

In all, over 300 pages devoted to XML.

Abstracts

Les Cahiers GUTenberg
Contents of Double Issue 33/34
(November 1999)

MICHEL GOOSSENS, Éditorial : XML ou la démocratisation du web [Editorial: XML or, the democratisation of the web]; pp. 1–2

The editor sets the scene for the arrival of XML: the realization towards the end of 1996 that there was a very real need to bring consistency and transparency to web page markup across all web browsers. Within two years (10 Feb. 1998) XML emerged, addressing three critical issues raised by Jon Bosak (Sun Microsystems), who also chaired the XML working group: extensibility of the markup, sufficient depth of structures being marked, and validation of the markup. Bosak's article (in English) can be found at `xml.com/pub/w3j/s3.bosak.html`.

The remainder of the editorial relates these points to the articles: the specification itself is reproduced in a very useful format (French on left-hand pages, the definitive English text on the right). To be read along with the specification is a very thorough introduction, written by Michel Goossens. Together, these provide a very useful tool to the French-speaking user, as so much terminology is being either invented from scratch or

MICHEL GOOSSENS, XML et XSL : un nouveau départ pour le web [XML and XSL: A new venture for the Web]; pp. 3–126

Late in 1996, the W3C and several major software vendors decided to define a markup language specifically optimized for the Web: XML (eXtensible Markup Language) was born. It is a simple dialect of SGML, which does not use many of SGML's seldom-used and complex functions, and does away with most limitations of HTML. After an introduction to the XML standard, we describe XSL (eXtensible Stylesheet Language) for presenting and transforming XML information. Finally we say a few words about other recent developments in the XML arena.
[Author's abstract]

As mentioned in the editorial, this article is intended to be read in conjunction with the actual specification, provided later in the same issue.

SARRA BEN LAGHA, WALID SADFI and MOHAMED BEN AHMED, Comparaison SGML-XML [An SGML-XML Comparison]; pp. 127–154

The media hype surrounding the eXtensible Markup Language (XML) Leads us to hope that future Web documents will be better structured and easier to re-use. The XML specification, which addresses the wish of the Web community to have a language more flexible than HTML without necessarily adopting the rigidity and complexity of SGML, is considered a step forward since it incorporates technical advances of both the HTML and SGML worlds. In the present article we explain the differences (improvements) between XML and SGML. Since each XML document is by construction a valid SGML document, we review the basic principles of both standards and present a detailed comparison of XML and SGML.   [Authors' abstract]

François Role and Philippe Verdret, Le Document Object Model (DOM) [The Document Object Model (DOM)]; pp. 155–171

The present article gives an overview of the Document Object Model (DOM), a hierarchy of standard interfaces proposed by the W3 Consortium. It allows application programs to access the structure of XML documents and manipulate their content. We start with a brief theoretical description of the DOM. Then we have a look at a few use cases expressed in three languages (Java, Perl and JScript). The parallel treatment in these three languages should allow you to get an idea of the functionality offered by the DOM, as well as emphasize its programming language–neutral character. At the end of the article we discuss the present limitations of the DOM and its foreseeable future evolution. [Authors' abstract]

Yannis Haralambous and John Plaice, Produire du MathML et autres *ML à partir d'Ω : Omega se généralise [Generating MathML and other *MLs from Ω: The Generalization of Omega]; pp. 173–182

Nowadays, the Omega typesetting system not only lets you generate typographically excellent documents in many scripts, but you can also use it to transform the input of your Omega files into SGML. In particular, mathematics expressions will be translated automatically into MathML while through a redefinition of the LaTeX macros any kind of SGML tags can be obtained, thus turning the editor into a powerful system. [Authors' abstract]

Benjamin Jennes and Raphaël Marée, Un compilateur d'expressions mathématiques générant du MathML [A compiler to generate MathML from mathematical expressions]; pp. 183–190

In this article we look at the problem of publishing mathematical expressions on the Web. We present a solution based upon the use of compiling techniques and the MathML language. After a general description of the approach, we describe the different stages of the compilation with the help of an example. We conclude with a discussion of the advantages and limitations of `maje`, the program we have implemented. [Author's abstract]

The W3 Consortium, La spécification XML [The XML specification]; pp. 191–280

This document contains the original English (odd-numbered pages) and French translation (even-numbered pages) of the eXtensible Markup Language (XML) "recommendation" v.1.0 (`www.w3.org/TR/1998/REC-xml-19980210`) by the W3 Consortium, dated 10 February 1998.

The French text may contain errors not present in the original, due to the translation effort. Thus, the English text is the definitive version.

The following people worked on the translation: Patrick Ion, Samira Cuny, Alain La Bonté, Nicolas Lesbats, and François Yergeau.

An HTML file of the translation (along with other material) can be found at `http://babel.alis.com/web_ml/xml/`.
[Translation of opening paragraphs]

Peter Flynn, Foire aux questions XML [An XML FAQ (v.1.5, June 1999)]; pp. 281–311

This document contains the most Frequently Asked Questions about XML — along with the answers. The FAQ attempts to provide users, developpers and others with an entry level of information but in no way is it part of the XML standard itself.
[Translation of French résumé]

This translation was provided by Morgane le Bihan and Dreves Ewen. The original English-language version can be obtained in various formats from `www.ucc.ie/xml`, as well as being "available in oil-based toner on flattened dead trees" — Peter's humour still in fine form!

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Articles from *Cahiers* issues can be found in Post-Script format at the following site:
`http://www.gutenberg.eu.org/pub/gut/`
   `publications/publis.html`

[Compiled by Christina Thiele]

EuroTeX '99 Proceedings
Paperless TeX

The EuroTeX '99 Conference took place in Heidelberg, Germany, 20–24 September 1999. It was organized by the University of Heidelberg, represented by the Institute of Psychology and the University Computing Center. Günter Partosch and Gerhard Wilhelms, Words from the Editors; pp. 1–2

Paper-less TeX

Jacques André and Hélène Richy, Paper-less editing and proofreading of electronic documents; pp. 3–16

This paper describes a system for editing and proofreading electronic documents with a pen-interface: with the help of a mouse, or, better, an

electronic stylus on a display tablet, an author may indicate how he wants to edit his text (e.g. cross-line words to delete them, underline to compose in italics, etc.). There is no learning step: however, there is a dictionary of simple and natural drawings which are easy to remember. [In] this way, some natural gestures allow a comfortable interface for correcting digital documents.

This prototype is based on studies on ergonomy of editing signs, localization into a structured document, sign recognition in an editing context, and modeling of correcting commands. The pen-interface is integrated within *Amaya*, the W3C interactive Web editor, for correcting Web pages. A version for correcting structured documents is experimented upon within a structured editor.

Hans Hagen, The NTG MAPS bibliography — from SGML to TeX to PDF; pp. 17–39

A few years ago the NTG decided to put their MAPS volumes on the internet in the PDF file format. At about the same time, it was decided to build the associated bibliography, in such a way that it could be used to produce both an HTML and PDF document.

Recently the MAPS bibliography has been converted to a proper XML document source. In the process the descriptions were made as consistent as possible. The XML source was used as input for a PDF document with extensive browse and search options. This PDF file, along with the MAPS articles, is provided to NTG members as an additional service.

In this article, the electronic NTG MAPS will be presented and the specific characteristics of the production process will be explained. Also, some of the complicating aspects will be discussed. I assume that the reader is familiar with SGML and TeX. The focus will be on the interfacing between SGML, TeX and PDF.

Hans Hagen, Which way are we heading? — In search for the holy grail; pp. 40–49

Is TeX really out-of-date? Are we making a fool out of ourselves when we stick to using TeX? Does TeX gain the attention it deserves? In this paper I will elaborate on these questions. The oral counterpart of this paper will be illustrated with some examples.

Heiko Oberdiek, PDF information and navigation elements with hyperref, pdfTeX and thumbpdf; pp. 50–68

The PDF format offers additional possibilities for information and navigation through paperless on-line documents. This paper shows how the navigation features bookmarks and thumbnails can be created automatically or manually by powerful packages like hyperref and thumbpdf. The problems and solutions are described that arise from converting TeX strings to the PDF ones used in the general document information or in the outlines.

Kristoffer Rose, Towards an XML DTD for LaTeX — Technical Workgroup initiative for reformulating LaTeX as an XML application; pp. 69–70

We propose the creation of a working group with the goal of making it possible to process LaTeX documents in XML.

Sergey A. Strelkov, Testbed for Preparation of a Russian Patent Document in XML Format; pp. 71–85

An experimental technology for Russian patent document preparation in XML is described. For this purpose the special draft XML PatDoc DTD is used. This technological DTD is the analog of the subset SGML DTD of the World Intellectual Property Organization (WIPO) Standard ST.32. This compound XML document may contain mathematical expressions and chemical formulae which are presented by reference to the appropriate files. The paper patent document image is stored in TIFF format. Chemical formulae are simultaneously stored in one of these formats: mol, cml, wmf, gif, eps. Images of mathematical expressions are stored in the formats gif or eps, and are placed at the end of the document in the codings: Plain TeX, MathType, MathML. The components of the patent documents are typed in MS-Word 97 (Windows NT 4.0 or Windows 95). MathType is used to type the mathematical expressions; ISIS/DRAW — for the chemical formulae. The compound rtf file is converted to an xml file with PatDoc DTD using these programs: rtf2xml, OmniMark LE 4.01, TeX4ht, MiKTeX, NSGMLS, SGMLpm, IE 4.01, msxsl.cab. The programs are glued using VBA macros for Word 97 and a set of Perl scripts.

Anselm Lingnau, TkDVI: DVI Previewing with Tcl and Tk; pp. 86–100

Application-level scripting is a powerful method for structuring software. This paper introduces TkDVI, a TeX DVI previewer based on the Tcl/Tk scripting language and graphics toolkit. After a brief introduction to Tcl/Tk, we present the design and major components of the previewer, pointing out the specific advantages gained by using Tcl/Tk. A number of extensions and future projects are also discussed.

MATTHEW BAKER, Visualization of
electrophoresis gels using TEX; pp. 101–108

This paper describes a TEX system for creating interactive PDF files to visualize electrophoresis data. A Perl program processes greyscale electrophoresis images, segmentations derived from these images and computed numerical data to create a hyperlinked document in TEX. This paper describes the steps involved.

Fonts

ALEXANDER BERDNIKOV, Fonts for paperless
TEX: How to make them?; pp. 109–116

'Paperless' TEX requires TEX fonts to be in Type 1 format rather than in METAFONT format. While METAFONT is still the most flexible tool for designing fonts, direct conversion of .mf files into Type 1 or TTF binary files is still not a routine procedure. We will discuss what can be done in this area to make it the standard procedure for any user.

These problems are discussed:

1. What 'standard' ways of MF to PFB conversion exist now and what are the limitations of these tools?
2. What are restrictions for the METAFONT source to be converted into PFB using the 'standard' converting routines?d
3. Is there some technology which enables to create METAFONT and Type 1 fonts in a parallel manner?
4. Is there some chance that someday a freeware universal tool like METAPOST or pdfTEX will appear to make such conversion easy and flexible, or to organize the parallel design of MF + PFB in a comfortable style?

BOGUSŁAW JACKOWSKI, JANUSZ M. NOWACKI
and PIOTR STRZELCZYK, Antykwa Półtawskiego: a parameterized outline font; pp. 117–141

There have been several attempts to generate outline fonts from a METAFONT or META-POST source. It looks as if such an approach has necessitated manual tuning. The aim of this paper is to share our experiences with preparing a replica of a traditional Polish type, Antykwa Półtawskiego (Półtawski's Antique) as a META-POST "metasource", i.e., in such a way that a variety of outline instances (Type 1) of the font can be generated on the fly.

KAREL PÍŠKA, Fonts for Neo-Assyrian
Cuneiform; pp. 142–154

This paper presents TEX and PostScript fonts for typesetting cuneiform (Akkadian, Hittite, Old Persian, and Ugaritic) in a form similar to script of the Neo-Assyrian period. The fonts have been developed in the Type 1 font format; fonts for *Syllabary A* were also created in METAFONT.

TACO HOEKWATER, An extended maths font set
for processing MathML; pp. 155–164

In the autumn of [1998], work started on a new set of mathematical fonts that are intended to cover the full range of characters included in MathML as well as those included in the proposals for maths extensions in the next version of Unicode.

This paper presents the first result of that work: A new Times-compatible maths fonts set consisting of about 1500 symbols and a few alphabets, along with a collection of TEX macros to use them.

These fonts are donated to the public domain by Kluwer Academic Publishers and are available in both METAFONT source and Adobe Type 1 formats.

ALEXANDER BERDNIKOV and OLGA LAPKO,
Old Slavonic and Church Slavonic in TEX and
Unicode; pp. 165–196

The characteristic features of Cyrillic (Old Slavonic and Church Slavonic) writing systems are analyzed and compared. The old numbering rules and the difference between the canonical orthodox Church Slavonic and 'old believer' Church Slavonic are considered as well. It is shown that Old Slavonic and Church Slavonic differ strongly, and should at the very least be considered as two well distinguished dialects of the same writing system. An analysis of the current state of the Unicode 04xx encoding page shows that it is not sufficient to represent the Old Slavonic and Orthodox Church Slavonic writings adequately. The project of T2D encoding which enables the representation in TEX of out-of-date Bulgarian texts (from the middle of the 19th century till 1945), Russian texts (1703–1918 and emigrant literature) and Church Slavonic/Old Slavonic texts, is described.

Maths

RICHARD W. D. NICKALLS, mathsPIC — A filter
program for use with PICTEX; pp. 197–210

This article presents an overview of the maths-PIC utility for the PICTEX drawing engine. MathsPIC facilitates the drawing of mathematical diagrams by allowing the manipulation of points by name rather than by coordinates. Some familiarity with the PIC-TEX package is assumed.

Valentin Zaitsev, Andrew Janischewsky and Alexander Berdnikov, Russian typographical traditions in mathematical literature; pp. 211–227

Although the general Russian typographical traditions are already reviewed in several publications, the specifics of mathematical publication and mathematical formula presentation in Russian books and journals is still not described in full detail. This paper describes the traditions of mathematical publications and, especially, the characteristic features of the style and the graphical forms of the mathematical symbols used in mathematical notation. The ways in which these specifics can be implemented in TeX are discussed briefly as well.

New Typesetting System ($\mathcal{N_TS}$)

Joachim Lammarsch, The history of $\mathcal{N_TS}$; pp. 228–232

Beginning in 1991, a project was initiated by DANTE e.V. to design and construct a successor to TeX. This overview discusses the historical and political framework in which the project has been taking place.

Hans Hagen, Some $\mathcal{N_TS}$ thoughts; pp. 233–240

There are already several extensions to TeX, including ε-TeX and pdfTeX, and the re-implementation of the Pascal source of TeX in Java is nearly complete. Some thoughts are presented concerning how the next steps should be coordinated to ensure consistency and continuity, and what features needed for contemporary document production are not now well supported and should be provided. Since the present TeX implementations do their job well and reliably, there is time for the $\mathcal{N_TS}$ team to approach their task carefully, since we are talking about life-ling tools.

Jiří Zlatuška, $\mathcal{N_TS}$: Programming languages and paradigms; pp. 241–245

Developments in computer software and hardware since TeX's creation have changed the ground rules and rendered many assumptions obsolete. This essay presents the considerations and discussion that informed the decision to use Java as the language in which the $\mathcal{N_TS}$ is being implemented.

Karel Skoupý and Philip Taylor, The implementation of $\mathcal{N_TS}$; pp. 246–260

This paper addresses the actual implemenation of $\mathcal{N_TS}$; it is intended to provide the reader as much detail as can reasonably be accommodated in a paper intended to appear in the Conference Proceedings. A considerably more detailed version will eventually be available as an accompaniment to (or possibly integrated in) the JavaDoc documentation which will accompany the released version of $\mathcal{N_TS}$.

Miscellaneous

Edrmuthe Meyer zu Bexten and Jens Hiltner, LaTeX: Das Satzsystem für sehgeschädigte Studierende [LaTeX: The text processing system for visually handicapped students]; pp. 261–280

There are many blind and visually handicapped people in the Federal Republic of Germany who would like to go to university. Especially in the natural and technical sciences, mathematics is very important. The question is, how can mathematics be made more understandable for these students? Computer assisted mathematical writing systems for the blind have been conceived for many years, but they have also shown a variety of problems. In the new center for blind and visually handicapped students of the Fachhochschule Gießen-Friedberg, a different direction is being taken, by using the globally recognized and accepted program LaTeX.

Michael Piotrowski, Jens Klöckner and Jörg Knappen, Is LaTeX 2_ε markup sufficient for scientific articles?; pp. 281–289

The markup of the standard article class is compared with the requirements of several standard SGML DTDs (majour, docbook, iso12083), concentrating on header information (author/address markup) and bibliographic information.

Włodek Bzyl, Detection and correction of spelling errors in marked-up documents; pp. 290–307

This paper discusses the problem of detecting and correcting spelling errors in marked up documents. We divide the problem into three separate tasks and propose solutions to all of them. Based on this division, a simple system that provides the ability to deal satisfactorily with any TeX markup is presented. It is the first system of which the author is aware that is able to deal with multilingual documents.

Appendix

Author index; pp. 308–312

[Compiled by Barbara Beeton]