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Typesetting Books with Special Needs

Yannis Haralambous

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What do we call a book with special needs? It is a book whose preparation demands special efforts by the author (or typist), whether because its structure is complex (dictionaries and critical editions are typical examples of books with complex structure), or because it contains information which must be presented in a special way (mathematics, phonetics, multiple languages and scripts) or simply because it has to obey to a certain number of constraints which go farther than the standard technical document (whose needs are almost entirely handled by standard \LaTeX).

We will cover a few cases, taken from real world challenges we had to face in our typesetting work. Our goal is to achieve the typographical quality of traditional typography, while using the most appropriate IT methods and standards.

1 Visual Quality

It may sound strange (or at least pessimistic) to start a list of “special needs” by “visual quality.” After all, every book should have visual quality, this is the least to ask. Actually this is not always true: in real life many publishers are rather inclined to produce books in the cheapest possible way, and this leaves little room for any esthetic consideration.

Nevertheless there are cases where the book needs to comply to a certain visual quality standard. But how do we transform a standard \LaTeX document into a typographical masterpiece? Maybe we could start with something more realistic: how do we obtain a decently typeset book? Here is a tentative checklist of things to consider:

1. choose the right font and page layout (according to book format and paper nature);

2. apply basic typesetting rules (for the specific language and country);

3. apply principles of good typography with a maximum of good taste;

4. print the result and show it to a specialist.

*Atelier Fluxus Virus, http://www.fluxus-virus.com
1.1 Making the Right Choices

Fortunately \LaTeX{} allows an easy change of typographical and page layout parameters. But still we need a starting point: we have to choose the font, its size and leading, the dimensions of the printed page, the vertical space between paragraphs, text blocks, headers, footers and main text, the presentation of titles and subtitles, footnotes, captions, etc. In \LaTeX{}ocentric terms: everything that makes a class file (and often much more).

The choice of the font is a typical example: it has to do with the contents of the book: is it a modern text? an old text? in that case the font should not be significantly more recent that the text: you don't typeset Montaigne in Helvetica, nor Cervantes in Palatino; is it literary or technical? in the latter case, you should choose a neutral font (see §1.1.1); in what extent should typographical choices be apparent? in a ”luxury edition” you have more freedom because people expect to find a ’nice’ font, while a critical edition concentrates on contents and again the global appearance must be neutral (just like in the case of technical documents).

To illustrate the right choice of font, we have chosen to innovate by not using the Roman script, but fraktur. On Fig. 1 the reader can see an example of font choices: three texts have been typeset in fraktur, the first one is from Carl Philipp Emanuel Bach’s “Versuch über die wahre Art das Clavier zu spielen” (1753), the second from E.T.A. Hoffmann’s “Der goldene Topf” (1822) and the third from H.K. Stein’s “Lehrbuch der Geschichte” a schoolbooks published in 1903. All three have been typeset in fraktur and for most readers—even German speaking ones—all fraktur looks the same. This idea is also reinforced by modern font foundries which often include only a single fraktur font in their catalogs (“Wittenberger Fraktur” for Linotype, “Walbaum Fraktur” for URW, etc. where both foundries also provide “Fette Fraktur,” which is purely decorative). This is certainly not true: just like there are many Roman typefaces, drawn in different times and places, so there also many fraktur typefaces. The ones we have chosen for these texts are “Wartburg” (a 18th century typeface), “Unger” (drawn in 1794), “Normale Fraktur” (“normal type,” the most common typeface of the 19th century).

We have chosen this example to show that often a little historical research is a better solution for choosing the right font (“what would choose a printer contemporary to the author?”) than just personal taste (“I like Garamond very much, let us use it for all books”).

1.1.1 “Neutral” typography

But what about technical documents or, more generally, documents needing a neutral appearance, where the reader’s attention must be concentrated on the contents and only? This is a very common problem in the \TeX{} world, since \TeX{} is generally more often used for technical and scientific documents than for literary ones.

By definition, a “neutral” typeface is a typeface that doesn’t attract attention, an “ordinary” typeface. But “ordinary” does not necessarily means “ugly.” The typefaces seen most often today in technical documents are Computer Modern for \TeX{} documents,\footnote{While \Omega{} provides Times-like fonts as default text fonts.} and Times for the rest of the world. Com-


Figure 1: Three texts typeset in different fraktur fonts, according to their history and contents.
puter Modern is a nice, a bit old-fashioned font. If it hasn’t been chosen by D.E. Knuth for \LaTeX, we probably would not call it “neutral” today (the closest commercial fonts are ITC Modern and Monotype Modern: these are certainly not “neutral” fonts, and give an old-fashioned look to a book), but so many documents have been typeset in Computer Modern that our eyes have become used to it.

If you want to use a Times-like font then Adobe Times (on the Mac) and Monotype New Times Roman (on Windows) are not your only choices: there are other, very nice “neutral” fonts, like Times Ten, Utopia, Le Monde, ITC Century or Linotype Centennial. On fig. 2 the reader can see a few lines taken from a technical document, typeset in the five typefaces we mentioned: Times Ten, Utopia, Le Monde, ITC Century and Linotype Centennial. These are only a few examples from the long list of typefaces suitable for technical documents.

1.2 Basic Typesetting Rules

These are the very fundamental rules for typesetting a given language, in a given country. You can find them described in books such as the Chicago Manual of Style [1] for US English or Hart’s Rules for Compositors and Readers [3] for UK English, the Lexique des règles typographiques en usage à l’Imprimerie Nationale [4] for French, the Duden-Taschenbuch Band 5 Satz- und Korrekturanweisungen, Richtlinien für die Texterfassung [2] for German, and so on.

Whether they deal with punctuation, the use of italics or small caps, abbreviations, the use of lower and upper case, etc., most of these rules are clear and unambiguous. Some of them can be applied directly by \LaTeX itself, others can be applied by pre-processor scripts and finally others need the typesetter’s attention.

1.3 Principles of Good Typography

Besides being a technique, typography is also an art. And an art is harder to learn than just a few rules. Of course there are very good books on typography around: books by Tschichold [10], Gill [7], Rogers [8], Wilson [11], Bringhurst [5], Solomon [9], Willberg/Forssman [12] (in German), Duplan/Jauneeau [6] (in French) and many others will give you some insight (see also our Web site [14] for an additional list of interesting books on various topics). But still you only really learn by doing it, by seeing how others have done it, and by discussing with specialists.

2 Characters to Draw: Letters, Symbols, Diacritics,…

It happens often that an author needs a special symbol, whether this is a mathematical symbol, a pictogram, a phonetic character, a special accent to place upon or beyond an ordinary letter, etc.

The best solution is to draw this character and to include it into a new or an already existing font. This is the best solution, for the following reasons:
But freshwater resources are limited and unevenly distributed. In the high-consumption countries with rich resources and a highly developed technical infrastructure, the many ways of conserving, recycling and re-using water may more or less suffice to curb further growth in supply. In many other regions, however, water availability is critical to any further development above the present unsatisfactorily low level, and even to the mere survival of existing communities.

Figure 2: A few lines from a technical document typeset in five different “neutral” fonts, suitable for technical documents: Times Ten, Utopia, Le Monde, ITC Century and Linotype Centennial.
1. by including the character into the same font, you can kern it with other characters;

2. by making a regular character out of it (and not some weird construction made out of boxes, \accents, \raise, rules, etc.) it can participate in hyphenation;

3. only by drawing a character you have complete control on his form and can make it fit with the surrounding characters;

4. (this applies only to accented letters) accents often change form when placed on different letters: for example accents placed on uppercase letters are lower than the ones placed on lowercase letters; in Greek, the circumflex accent is narrower when placed on the iota than when placed on the omega, etc. Inversely, sometimes the shape of a letter may change because an accent has been placed upon it: in the case of the Esperanto ‘h’ with circumflex accent, we can very well imagine the vertical stroke of the ‘h’ being lower so that the accent doesn’t get too high.

Drawing characters also allows us to apply rules of optical correction, that is the variation of shape according to the size of printed letters. This very important method has been successfully applied to the Computer Modern family: cmr5, cmr7, cmr10, cmr12, cmr17 (Computer Modern Roman at 5–
Figure 4: A mathematical construction made under Illustrator out of pieces made by XYPic.

17 points) are all the same font, but the shape of letters is (slightly) different. This method can also be applied to non-Metafont fonts, in a more manual and less precise manner: by redrawing characters for each important size. See fig. 3 for an example of optical correction of Greek letter alpha (at 10 and 7 points size).

2.1 How do I Draw Characters

All depends on the kind and use of the characters. If you need to draw a geometrical symbol, you will get better results using Metafont or Metapost and then converting the result to PostScript. Especially if it is a mathematical symbol which has to fit with other Metafont-generated mathematical symbols, like those in CMSY or in the AMS fonts.

If it is not geometrical, then you'll better draw it in a font drawing program like Fontographer or FontLab or Ikarus, and then save it in PostScript form. With these programs you can also open existing fonts and redraw, compose or re-arrange the glyphs (of course you can do this only for personal use, since copyright of the original font applies).

You can also ask a specialist to do it for you: fonts are complex objects and there is a long way from the first sketch of a character to the accomplished real-world usable font.

3 Mathematics

Typesetting of mathematics is a very interesting challenge. It is especially important for the \TeX{} community, since D.E. Knuth has developed \TeX{} in the first place to typeset the mathematics of his own books. One could expect that after D.E. Knuth’s work, and twenty years of collective efforts, all problems of mathematical typesetting should be resolved. Also it is a very pleasant fact that \TeX{} has slowly become a universal method for communicating and storing mathematical texts, so that mathematicians conform their style of writing to \TeX{}’s range of possible mathematical constructions.

But still, sometimes mathematics can be so complex that even the combined efforts of \TeX{}, AMS-\LaTeX{}, XYPic and YHMath cannot typeset them conveniently. These are rare cases, and for them one can always use graphical
tools like Metapost or Adobe Illustrator to create the desired construction out of existing pieces. For example, the commutative diagram on Fig. 4 has been made under Illustrator using pieces from constructions made by XYPic. The fact that some letters are shown under perspective is supposed to increase the legibility of this “2.5-dimensional” mathematical expression.

When a mathematical symbol is missing, it has to be drawn (see Fig. 2). Sometimes this involves using existing glyphs, and making precise measurements. For example, to draw the symbols on Fig. 5, the author had to first make precise measurements of the distance of integral glyphs in AMS-LATEX constructions \[ \iint \] and \[ \iiint \], then combine two (resp. three) integral glyphs with that precise distance into a single character, and finally draw the ellipses.

This has been done in a PostScript font editor, because these symbols are part of the SMF Baskerville family of math fonts (see Fig. 3.1). But when the surrounding math symbols are designed in Metafont, then it is easier to stay with that font design language. The YHMath package does exactly that: to produce larger delimiters and wider accents, it adds another 128 glyphs to the CMEX font. Here is an (hypothetical) example of the use of YHMath:

$$\det \begin{pmatrix} a & b & c & d & e \\ f & g & h & i & j \\ k & l & m & n & o \\ p & q & r & s & t \\ u & v & w & x & y \end{pmatrix} = \text{area}(A_{xy}B_{xy}C_{xy}) - \begin{pmatrix} y & x & w & v & u \\ t & s & r & q & p \\ o & n & m & l & k \\ j & i & h & g & f \\ e & d & c & b & a \end{pmatrix}.$$
Drawing a mathematical typeface using a text typeface as model is an interesting experience. Latin letters have to be redrawn (they have to be larger and their position in the character box often changes entirely). Geometrical symbols (that is: mathematical symbols made out of geometric forms, like $+, -, \times, \oplus, \bigtriangleup$ etc. contrarily to “alphabetical symbols” like $\nabla, \int, \sum, \prod$ etc.) have to be redrawn with a different width of stroke, different extremities and corners (sharp or round) and a different mathematical axis.

But the most interesting is the drawing of Greek letters: these must keep their very specific form (Greek letters used in mathematics have fixed forms and cannot adopt the design characteristics of their Latin counterparts like in the case of Greek text fonts) but at the same time must be homogenized with Latin letters. To achieve this, their heights and widths, and widths of thin and fat strokes must be modified so that they optically fit with Latin letters.

3.2 Mathematics and the Web

Sometimes we have an additional constraint: the mathematics of a given book must be coded in such a way that the book can be easily ported to the Web. In other words, one must choose a method of publishing mathematics on the Web (\LaTeX\,\!2HTML, \TeX\!4HT, IBM TechExplorer, \TeX\!Spider, WebEQ Java applets, MathML produced by \Omega\ or by WebEQ, Acrobat PDF, etc.) and write (or re-write) the code in such a way that it is compatible with the chosen method. This issue is out of the scope of this article.

4 Multilingual Documents

Various issues arise when we are dealing with multilingual documents. In some cases we want to make different languages look similar, in other cases we want them to look different. Independently of how we present them, languages have their own rules, grammatical, or typographical. In the latter case we may want to impose the typographical rules of one language (the "background language") to others, or keep the rules of each language (which often leads to weird problems when we have to decide to which language belong neutral elements such as digits or punctuation).

On fig. 7 the reader can see an illustration of the two methods: (a) making scripts look different, this can be useful when we have short insertions of text in a different script and we want the reader's eye to immediately notice the difference. To achieve this we take the most traditional form of each script: in the example, French is typeset in Didot, Greek in Monotype Greek 90, Russian in an old-fashioned Russian font, Armenian in traditional oblique (with uppercase letters straight) and Georgian in a nice traditional font. Method (b) is the exact opposite: we want all scripts to look as close as possible (for example, Latin 'o', Greek omicron, Cyrillic 'о' are all identified, also identified are Latin 'n' and Armenian 'ա', etc.). In the example we have used an ordinary Times font. This method is more efficient if we are typesetting well separated text blocks in different languages and want to keep a globally homogeneous presentation; a typical example are publications of the European Union, where everything is translated in all languages of the Union.
If a function \( \varphi \) belongs to \( L^1(\mu_k) \) then for the conditional expectation of \( \varphi \) with respect to the inverse image of the whole \( \sigma \)-field under \( f^k \), we have the formula:

\[
E_{\mu_k}(\varphi | f^{-k}(B)) (x) = \sum_{y \in f^{-k}(f^k(x))} \frac{\varphi(y)}{\psi(y)}
\]

Hence:

\[
(8.5) \quad \int \left( \frac{\psi}{\varphi} - 1 \right) d\mu_k = \int E_{\mu_k} \left( \frac{\psi}{\varphi} - 1 | f^{-k}(B) \right) d\mu_k = \int \sum_{y \in f^{-1}(f^k(x))} \left( \frac{1}{\varphi(y)} - \frac{1}{\psi(y)} \right) d\mu_k(x) = \int (1 - 1) d\mu_k = 0.
\]

Assume now that \( \mu_k \) is a measure with maximal entropy for \( f^k \mid_k \), and that \( x \in K \setminus B \). By (8.4) and (8.5), we have \( \varphi = \psi \, \mu_k \)-almost anywhere. The whole trajectory of \( x \) (under \( f^k \)) is disjoint from \( B \) and hence, in view of (8.1), (8.2) and Theorem (6.2) (c), \( \varphi \) and \( \psi \) are contiguous in some neighbourhood of the trajectory of \( x \). Thus, there are equal on the whole trajectory of \( x \). Therefore by (8.1) and (8.2) we obtain:

\[
| (f^k)'(x) | = \prod_{i=0}^{n-1} | (f^i)'(f^k(x)) | = \prod_{i=0}^{n-1} \psi(f^i(x)) = \prod_{i=0}^{n-1} \varphi(f^i(x)) = \beta^n.
\]

Figure 6: Mathematics typeset in SMF Baskerville, according to the tradition of the Publications mathématiques de l'I.H.E.S.

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**Making scripts look similar.** A little French: un peu de français dans la même police Times, and Greek: λίγα ελληνικά για να δούμε την διαφορά, Russian: Все шрифты классифицируют по группам, Armenian: Քանականում է այս խմբագրությունը and Georgian: ამ ჯგუფით განა არის.

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Figure 7: The two methods of mixing different scripts.
abimer
The French/Greek dictionary page we are showing on fig. 8 is also a typical example of method (a): since Greek and Latin scripts are very close\(^2\) and since in such a dictionary French and Greek words constantly alternate, the two scripts have to be presented in a clearly different way. The author has chosen the notorious French sans serif typeface Univers for the French text, and the equally notorious scholarly Greek typeface Porson (of English origin) for the Greek text. These two typefaces contrast in almost every extent: the first is sans serif, straight, thin or fat, of French origin; the second is serifed, slanted, of medium weight and of English origin.

For the phonetic description of French words we have taken a condensed version of Stone Phonetic. Not everyone is interested in the phonetic description, this is why we want to keep it as small as possible; on the other hand the choice of a sans serif font makes it more legible, although it is condensed and brings it closer to the French text. The font chosen for the entries and sub-entries is a bold Univers: this makes these subentries immediately identifiable inside the text. In this dictionary Greek is never typeset in bold.

Another problem that arises when we typeset multilingual documents is related to hyphenation. For most languages we have already hyphenation algorithms. Nevertheless one should always be ready to modify these algorithms. Here is what can happen:

1. New characters can get involved, needing special patterns (long and short ‘s’ for German, pre-Leninian Cyrillic letters for Russian, etc.)

2. In dictionaries and primers, additional signs are often used to simplify the learning of the given language; for example, in Russian, acute accents are used to show which vowel must be stressed. These signs should not interfere with hyphenation.

3. Sometimes we use transcriptions instead of the original alphabet, for example Greek is often transcribed in the Latin alphabet. In that case the hyphenation algorithms and the transcriptions must be compatible.

4. Hyphenation rules can vary according to the location where a book is published. For example, ancient Greek is not hyphenated in the same way in Greece and in the United States. This means that the language and dialect information is not always sufficient for choosing properly a document's hyphenation rules.

In some cases people even argue if hyphenation should be applied or not: this the case of Ivrit (modern Hebrew). Classical Hebrew is never hyphenated (just as Arabic and Syriac) and as a derivative of classical Hebrew, Ivrit should not be hyphenated as well; but Ivrit has often long words (of foreign origin) and these could very well be hyphenated. Wether an algorithm is able to recognize these words is another (open) question. We have the same problem with Yiddish: being a German dialect, there is no reason why Yiddish shouldn't be

\(^2\)In Greece the author has often seen graffiti accidentally mixing the two scripts, like in ‘NO IAPKING’, that is ‘NO PARKING’ where the first three letters of the second word are Greek, and while writing the next three (who are indeed common to the two scripts) the writer has forgotten he was writing in Greek—after all these are English words—and finished the inscription with a Latin ‘G’.
hyphenated, and indeed it is. The Yiddish Institute (YIVO) even provides hyphenation rules; but one of the rule is not to hyphenated Hebrew words. Can an algorithm distinguish these from German ones?

We see that often to do proper typesetting we need first to apply natural language processing methods.

5 Natural Language Processing Methods Needed for Typesetting

Many minor grammatical phenomena can be handled automatically by the typesetting software, for example the fact that in Greek or Dutch, when a broken diphthong is hyphenated, the dieresis disappears (for example the Dutch word "poëten" is hyphenated "po-eeten"), in German when 'ck' gets hyphenated, it becomes 'k-k' and another similar phenomena.

But in some cases a real morphological analysis is needed, which of course cannot be carried out by the software alone.

Our first example is an ongoing project of the author, dealing with the long and short 's' in German, as well as with the use or non-use of certain ligatures. In broken script, there are two kinds of 's' the "short s" ¸ and the "long s" ©. In German, the former is used at the end of the word, and at the end of word components inside a composite word; the latter is used in all other cases. So, for example, 'das' is written with a short s: ðaz, while 'dasein' is written with a long one: ðazein. The word 'aus' is also written with a short s: aus; when this word is used to make a composite, it retains the short s: 'aushmen' ausmafen; but a word can start with 'aus' without being a composite: 'ausser' außer. Furthermore any German word can be combined with others to produce composite ones; no word list, or dictionary can predict all possible combinations. And German words get declined: such a word list should also take into account all possible forms.

The long and short 's' are not the only cases where the morphology of words plays a rôle in typesetting: there is also a rule saying that there should be no ligatures formed by letters belonging to different components of a composite word. For example, in the word 'Auflage' there should be no f-l ligature: ãufl©age and not ãuflåge. These rules affect also the typesetting of German in Roman type, at least for the ligatures 'fi', 'ff', 'ffi', 'fl', 'fl' that are still in use in Roman type.

All of these problems can be solved automatically by using Natural Language Processing tools. Currently the author is working upon adapting Oliver Lorenz's DMM [13] (Morphological Analyzer of German, based on the programming language Malaga) to this task. By preprocessing texts (or by using this tool as an external Translation Process) one can detect and treat all cases of short and long 's' and broken ligatures.

A similar problem arises in Thai: in South East Asian languages (besides Vietnamese), words are not separated inside a sentence. Nevertheless typesetting software must be able to separate words because sentences can be very long. Unicode provides a word-separator character, but Thai people are not accustomed into using it. The Thai ÏêX package provides a pre-processor which analyzes text and inserts the necessary word-separator marks (in the
forthcoming Ω Thai package this pre-processor will be included internally as a Translation Process).

6 Parallel Texts and Critical Editions

A typical example of parallel texts is a literary text and its translation(s). In the Renaissance many polyglot Bibles have been printed, featuring sometimes up to six parallel versions of the same text (in different languages, scripts and writing directions). A more general case are critical editions: in this case, not only we have two or more parallel texts, but these also produce several bodies of footnotes, endnotes and critical apparatus.

The example on fig. 9 is such a critical edition: it has 5 major blocks of text (not counting headers): the original text (ancient Greek) on the upper even page, translation (French) on the upper odd page, and three blocks underneath: critical apparatus, linked to the Greek text by line number, footnotes and references linked to the translation by numbers or lowercase letters.

All five blocks grow simultaneously: the Greek text and French translation blocks always stay on a single page (even for the former, odd for the latter); the other three blocks spread to occupy the remaining space underneath (even if this space is not symmetric, or is only on the even side or only on the odd side). Any word of Greek text you add may produce entries in the critical apparatus or words in the translation, which again may require footnotes and references.

But of course the typesetting system is not a translation engine, and hence is not capable of knowing exactly what part of the translation corresponds to each word of Greek text. It is the authors responsibility to mark up the Greek text and the translation so that the typesetting engine can then interpolate between corresponding tags and typeset the two blocks of text as parallel as possible.

How can \TeX do that? There is certainly a way, but the author decided to do it otherwise. He developed a system, called PARALLEL, which extracts lines from DVI files and reassembles them according to a given setup. That way it is easy to control the growth of each one of the text blocks. As for the critical apparatus, which is special because it contains line numbers (and these may be initialized at each new even page), it is recompiled again at each new (double) page.

Footnote and reference numbers are also added automatically, since these also get initialized at every new double page. Hence, the system has to rearrange lines from five different DVI files, to complete them by adding some automatically generated material (line numbers, etc.) and to restart compilation and line extraction of the critical apparatus at every new double page. It is written in Perl, backed up by a MySQL database, the two communicating through the DBI module: the choice of Perl makes PARALLEL a bit slower, but much easier to debug and maintain.

How do you prepare the data for such a critical edition? Every author may find his/her own way; to be able to be compatible with any author’s method, and to store the data in a unique and efficient way we have adopted XML as

\footnote{Note that a good \TeXist never asks “can \TeX do that?” but “how can we do that with \TeX?” since, by definition, \TeX can do everything.}
Je vous exhorte donc à éviter leur folie, car c'est le comble de la folie que s'acharner à connaître Dieu dans son essence. Et pour que vous compreniez que c'est bien en effet le comble de la folie, je vous montrerai à l'évidence par le témoignage des écrivains sacrés1 : non seulement ceux-ci ignorent manifestement ce qu'il est dans son essence, mais encore ils ne savent que dire de l'évidence de sa sagesse2 ; or ce n'est pas l'essence qui dérive de la sagesse, mais la sagesse de l'essence. Quand donc les écrivains sacrés ne peuvent pas même délimiter celle-là avec exactitude, quelle est la folie de ceux qui croient pouvoir donner son essence elle-même à leurs propres raisonnements3 ? Écoutons donc ce que dit l'écrivain sacré à ce sujet : « La connaissance que tu as de moi m'a été un objet d'admiration4 ». Mais suivons plus loin son propos : « Je te bénirai, parce qu'on l'admire avec crainte5 ». Que signifient ces mots : « avec crainte » ? Nombreuses sont les choses que nous ne savons pas d'admirer6, mais non dans un sens positif, soit dans un sens négatif. Ici, la tourmente marque un nouveau point gagné sur l'adversaire, grâce au témoignage d'hommes inspirés. Loin de précéder connaître l'essence de Dieu, ils ont un moment de recul, de confusion, même lorsqu'il s'agit de parler des manifestations de la sagesse.

1. Jean oppose ici la saïe claire du mystère de Dieu, dont se prétendent les Animaux, au néant de l'époque, à la connaissance conjurale, fortement imparfaite lorsqu'elle ne s'appuie que sur des raisonnements humains. En fait, l'Homme affirme qu'il ne s'appuie pas uniquement sur ses propres raisonnements, mais grâce à une théorie du langage qu'il tire de l'Écriture (Gen. 1, 3). Il attribue à Dieu l'origine du non qui le détermine exactement. Voir Jeannin, chap. 7, IV, 30, 411.

2. Ici encore, le choix des textes permet à Jean de faire progresser son argumentation. L'usage du verbe θησαυρίζομαι dans le premier texte suggère l'admiration dans plus. Mais dans le second, l'adjonction de ἀρετή montre l'homme saisi d'une crainte événementielle en présence de Dieu, devant l'océan infini de sa sagesse : τῷ ἀριστοτέλειον... καθαρός τῆς ἀθανασίας σοφίας.
Figure 10: Sample of critical edition (Averroes, Comments of Aristoteles' Book of Categories).
the intermediate format between data preparation and typesetting. Hence
the system takes data from five XML files, converts it to \TeX code and runs \TeX (actually \Omega, since there is ancient Greek involved) upon it to produce the five
DVI files.

In this way, \TeX (\Omega) is entirely responsible for what happens on a single line,
and PARALLEL is responsible for making paragraphs and pages out of these
lines. This would be absurd in any other case (since \LaTeX for example knows
very well how to make paragraphs and pages, even if it sometimes swallows a
few floating figures) but in this case it has proven to work efficiently. The au-
thor is investigating another possibility where PARALLEL would ask \TeX (\Omega) to
recompile the different blocks of text many times until a perfect double page is
obtained, and then move to the next double page: one of the problems is that
once \TeX has made the DVI file, it is difficult to find out where you are exactly
in the source file, especially if the text is in Greek and has been transformed
several times by \Omega Translation Processes (from input encoding to Unicode and
then to the 16-bit font encoding).

Another interesting example is the one on fig. 10: it is a critical edition of
Averroes’ Comments on Aristoteles’ Book of Categories. There are four blocks
of text, on the same page: the text of Averroes (from right to left), the criti-
cal apparatus (entries from left to right), the original Arabic text of Aristote-
les (from right to left) and the critical apparatus on that text (also from left to
right).

7 Conclusion

The issues covered in this paper may seem somehow unrelated. The author
has tried to present some of the problems he had to solve in his daily type-
setting work of the last few years. Their common point is the effort to respect
by all possible means, and even re-invent in some cases, typographical tradi-
tion. At the same time the constraints of real life forced him to prefer practical
solutions that work, to more elegant solutions that may have taken longer to
realize. In any case, what counts is the result, and this is why this paper is full
of examples, which we hope the reader has enjoyed.

The reader can find more information on past and ongoing projects, on the

References


[2] Duden-Taschenbuch Band 5, Satz- und Korrekturanweisungen, Richtli-
nien für die Texterfassung, Bibliographisches Institut, Mannheim, 1986.

[3] Hart’s Rules for Composers and Readers at the University Press Oxford,

[4] Lexique des règles typographiques en usage à l’Imprimerie nationale, Im-


[13] [http://www.linguistik.uni-erlangen.de/~orlorenz/DMM/DMM.html](http://www.linguistik.uni-erlangen.de/~orlorenz/DMM/DMM.html)
