ε-Ω: a step towards the future with a look on the past

Giuseppe Bilotta

Dipartimento di Matematica e Informatica
Università di Catania
viale A. Doria, 6
95125 Catania
Italy
gip.bilotta@iol.it

Abstract

In recent times, a topic of increasing relevance in discussions on the future of TEX has been the number of different extensions to Knuth's orginal work, and the possibility of bringing them all together in a single program. In particular, on the one hand we have the features introduced in ε-TEX which are almost essential to developers of modern formats (ConTEXt, LATEX3); on the other hand, the advanced typesetting features present in Ω are of vital importance, especially for TEX users using non-latin scripts.

This talk presents ε-Ω, a project whose aim is to provide a stable, fast variant of Ω supporting the ε-TEX extensions. We will present the short history of the project (focusing in particular on the reasons behind some debatable choices), its current status and the ideas for the project's future.

"A che serve vivere, se non c'è il coraggio di lottare?" (Giuseppe Fava)
"What purpose is living, if you don't have the courage to fight?"

Goals and history of the project

In pretty much the same way as ε-TEX is (was) intended to fill the gap between TEX3 and $\mathcal{N\!T\!S}$, the goal of ε-Ω is to fill the gap between the current Ω release(s) and the future ones that promise to have "every feature everyone wanted", by providing functional programs and tools that satisfy more modest requirements.

The need for a separate branch of Ω arised because the Ω development was not being responsive to important requests; ε-TEX extensions were not provided despite long-time requests, and long-standing bugs and deficiencies were not being addressed; as an outcome, neither of the two available versions of Ω (1.15 and 1.23) was fully feasible for use:

- 1.15 because of a major bug affecting day-to-day usage; this bug prevents Ω 1.15 from tripping correctly;
- 1.23 trips successfully, but is too slow and bloated (memory-wise and output-wise)[1] to be usable for heavy jobs;
- finally, both versions have buggy supporting utilities (the ones that deal with font-metric creations, ΩCPs and ΩTPs, etc).

The goal of the project is therefore to provide a program that:

- has ε-TEX extensions;
- is stable enough (trips correctly);
- is fast enough;
- produces non-bloated DVI code;
- has solid supporting utilities.

---

[1] This depends on the introduction of a very important and useful node (`info_node`), but the advancements provided by it cannot be effectively turned off when not needed.

Giuseppe Bilotta

My job has been at first to choose which Ω to use as a base, and to try to merge the ε-TEX changefile. Luckily, I discovered that the differences between the two series had very little influence on the resulting changefiles, which meant I could focus on working on only one of them and still easily adapt the final outcome to the other version. Speed and leanness being two of the main foci, I chose to concentrate on the 1.15 series.

Of course, support for ε-TEX multidirectional typesetting was dropped. A more important and arguable change was the removal of the SGML/XML code from Ω: since part of it conflicted with some ε-TEX code (the introduction of the \middle primitive) and (at the team's opinion) the XML feature had a lower priority than merging ε-TEX, a timeframe rationale dictated the (temporary) removal of the Ω SGML/XML code from ε-Ω.

An initial release of ε-Ω was thus officially released on December 21, 2002 (and yes, I must confess that the choice of the day was also dictated by aesthetical reasons . . .). This release still had the "tripping bug" that affected the 1.15 series of Ω, but did provide ε-TEX enhancements for those who needed them (which for now means essentially ConTEXt users).

Current status

On late April, having a little free time in my hands, I decided to give ε-Ω a second shot, trying to look for the code that caused the "tripping bug" that affected the Ω 1.15 series (and its variants): the bug, which revealed itself with a crash/core dump when running the TRIP test, affected production use of Ω in many contexts where over-/underfull boxes appeared, as well as in other cases (causing the disappearing of ligatures).

Since the bug did not affect any other version/variant of TEX in my possession (including the 1.23 series of Ω), spotting the problem was rather easy by three-way diff'ing TEX, Ω 1.15 and Ω 1.23. Once the culprit code was found, the solution was trivial. As a result, the latest official ε-Ω fully addresses three of the five target points, and is a good step forward towards a fourth one (stability).

There still are some known issues; of the known bugs in Ω itself, though, none prevents usage of the program. (In particular, ε-Ω does still not really trip successfully: if mem_bot is set to 1, glue/skips assignments fail.)

Future developments

The focus for the next release is to get closer to the promised aim, by fixing the remaining bugs in the chief executable. This includes finding and ironing out any Ω/ε-TEX incompatibilities.

The subsequent step will be working on the complementary tools, making them funcional again. This will settle the five main goals of the project. Once these are accomplished, and if deemed necessary by the Ω status at the time of the accomplishment, a forward-port to the latest Ω branch will be attempted.

Acknowledgements