

A discussion with Claudio Beccari, T_EXie and book lover

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Claudio Beccari is a well-known T_EXie. He has contributed enormously in the expansion of T_EX outside the English-speaking world, particularly in the creation of tools for typesetting Latin-based languages with T_EX. But most likely, Claudio is known for his fonts for typesetting Greek text. His `cb` font bundle has become the de facto standard for typesetting Greek text. Recently, the `cb` fonts were released in Type1 format, as described in Claudio’s own paper in this issue of *Eutypou*.

In summer 2008, Claudio announced that he was retiring from the position he held at Politecnico di Torino. On that occasion, we asked him for a web interview. Claudio gladly accepted to answer our questions.

Eutypou (Dimitrios Filippou): *Dear Claudio, you are one of the most faithful T_EXnicians and one of the most prolific METAFONT users. Your work on Greek fonts is well known and extremely appreciated by the T_EX community. However, few know you as a professor at Politecnico di Torino. Could you please tell us a bit about yourself outside T_EX, about your life, your career and your achievements?*

Claudio Beccari: I got my Master’s Degree in Electronics Engineering in 1963. I immediately entered as a researcher in Network Theory at Politecnico di Torino and I got the *Libera Docenza* degree in 1971 (this degree is a sort of professorship degree; it does not exist anymore today). After the usual Italian selective procedure through national competitions, I ended up as a full professor in 1980. Since then, I have taught courses in Electric Network Theory, Electric Network Synthesis, Design of Active Microwave Systems, Theory of Electronic Circuits, Electronic Circuits and Advanced Electric Circuits.

My research fields strongly reflects the contents of the courses I have taught. My best achievements are in the domain of Filter Theory and Synthesis, where I described the new class of Jacobian filters, and a related research on optimal weighed approximation of general-attenuation-peaks bandpass-filters-transfer-functions; in the domain of Microwave Active Systems, with a colleague, we

were successful enough to be the first Europeans to design, build and operate the first European all-solid-state S-Band down-link satellite transmitter (it is still flying on our heads on a geostationary satellite). As university professors, we did not limit our study to the specific realization task, but we developed new procedures and optimization programs capable of dealing with a wide variety of active and passive system design problems, characterized by transcendental transmission functions where it was pretty difficult to forecast the existence and uniqueness of a solution.



When I became vice dean of the Faculty of Engineering, I was overrun by the administrative tasks related to this position. I have been appointed the Rector’s delegate for the Erasmus Student Mobility and I am still coordinating the only Erasmus Mundus Program that involves an engineering faculty in Italy. Eventually I became the Students’ Ombudsman. I will retire at the end of this month [September 2008]. I am just 68 years old, but I have already 45 years of activity as a researcher and a professor. I think time has come to let the young take my place.

I got married in 1969. My wife and I had two children and we fostered a third one, with whom we developed such strong ties that I usually say we have three children. They are all above 30 years of age, they are all married, and they made my wife and I the happy grand parents of four grand children. Since my son and one of the daughters live abroad, my retirement will come very handy to let my wife and I to travel through Europe so that our grand children have the possibility to know well their grandparents.

I had the opportunity to travel in many foreign countries—the only continent where I did not set foot is Australia/Oceania. I have visited northern Greece and the most unusual souvenir I got from my vacation was a couple of strip-designed comedies by Aristophanes in *demotike*: *Lysistrata* [Ανοιστοράτη (*Lysistrata*), adapted to Modern Greek for comics by Tasos Apostolidēs and Giōrgos Akokolidēs; first published *circa* 1981], and *Hoi Batrachoi* [Οι βάτραχοι (*Frogs*), adapted to Modern Greek for comics by Tasos Apostolidēs and Giōrgos Akokolidēs; first published *circa* 1981]. I thought I would not have any difficulties reading them after my five years of classical Greek in high school. I discovered though that *demotike* and *katharevousa* are almost two different languages. Nonetheless, with the help of a modern pocket English–Greek Oxford dictionary, I went through the task and enjoyed it very much.

I love languages; I made all possible efforts to become capable at least of reading all the modern official Latin-based languages. The last one I got acquainted with is Rheto-Romance or Rhetic, one of the official Swiss languages,

but widely spoken also in Italy (it is not a dialect). I still have some difficulty with Rumanian, but things are getting better as time passes by. I can fluently speak English and French. I get along pretty well with Spanish and Portuguese, but I am not that fluent. I read well Catalan and Galician. Rhetian and Romanian are more difficult, for Rhetian because of the lack of material; for Romanian because of the large amount of Slavic and Turkish roots. Technical Romanian is almost transparent in its meaning, while, for example, newspaper Romanian sometimes is impenetrable for me unless I use a dictionary. I have a rudimentary knowledge of German, Dutch, and Swedish so that I can be a tourist in those countries. Languages are really fascinating!

E: *If I'm not wrong, your involvement with T_EX goes back in 1992, when you presented hyphenation patterns for Italian and Latin. What brought you into T_EX?*

CB: My involvement with T_EX officially started at the Cork TUG Conference in 1991. I was already pretty well involved within Politecnico [di Torino]. I had already developed the hyphenation patterns for Italian and, since at that time at Politecnico version 2.x of the T_EX interpreter was used, I was in charge of maintaining the special single language version with the Italian patterns preloaded in the format.

At that time, I became an expert on hyphenation patterns. I actually worked on the hyphenation patterns for Italian and Latin, and I wrote a paper on them in 1992, but when version 3 of the T_EX interpreter became available on our mainframe, I prepared the patterns for French, Spanish, Portuguese, and Catalan. The first public document that we typeset in a multilingual environment, was a bilateral agreement between the Technical University of Catalunya and our Politecnico. Of course, the Catalan text was hyphenated with my new patterns and our partners were so excited to find a properly typeset document, that they asked us the style and the pattern files. Luckily enough, another real Catalan made real pattern and style files, that now there are no problems in using L^AT_EX in Catalunya. Later on, I made hyphenation patterns also for Romanian, Greek and Coptic. Even for Romanian and Greek, real Romanians and Greeks (Dimitrios Filippou) made real patterns, so that my errors got eliminated. Nevertheless I was pretty proud when a comparison between different Greek hyphenation patterns were made and it turned out that in spite of the fact that my patterns missed the largest number of possible hyphen points compared to the other ones, they got the least number of wrong hyphen points. Pretty good for a non-Greek speaking person. But the point is not this: the CTAN hyphenation patterns, now regularly distributed, have different patterns for modern Greek with *monotoniko* spelling, modern Greek with *polytoniko* spelling and classical Greek (with *polytoniko* spelling). Depending on the preferred or required spelling, real Greeks can now use the proper patterns.

By 1991, I had already written a book in Italian: *L^AT_EX — A System of Electronic Publishing* [original title: *L^AT_EX — Guida a un sistema di editoria*

elettronica, Casa Editrice Libreria U. Hoepli, Milano 1991; ISBN 88-203-1931-4]. Probably, it was the first book on L^AT_EX in Italian; in any case it was published by an important publishing house, which facilitated its diffusion. Now, I occasionally consult that book and I feel ashamed of the many errors it contained. Nevertheless, the book continued to be sold in spite of the fact that after three years it became obsolete because of L^AT_EX 2_ε—there are people that buy it even nowadays. . . . When somebody writes me on my mail, I try to discourage them from buying it, and to address them to the site of the Italian T_EX Users’ Group (GuIT: <http://www.guit.sssup.it/>) where there is newer material on L^AT_EX.

I am now a member of the Directive Council of the GuIT. I decided to write a newer (Italian) book on L^AT_EX, *Introduction to the Art of Typesetting with L^AT_EX*, but as a member of the association I decided to accept contributions (papers, ideas, corrections, not money!) from other members, so that I am now just the editor. The document may be freely downloaded from the association site and apparently is being appreciated by a lot of people. At the same time other members decided to publish their L^AT_EX notes, tricks, instructions, so that now the association site has several links to other documents. Now the Italian users have plenty of documentation, while up to a year ago they had just the Italian translation of the *Not So Short Introduction to L^AT_EX* by Ötlicher.

In the 28 years that I have been involved with L^AT_EX, besides the above book and some fonts, I designed several classes for publication of technical books, from the *Engineer’s Handbook* to *A Quick Reference Guide for the Engineer*; the *Land Surveyor’s Handbook*; several books in geotechnics, electronics and other similar scientific or technical books where a lot of mathematics is involved. I am the permanent “L^AT_EX consultant” of the tiny University Press of Politecnico di Torino, where at least 100 engineering and architecture textbooks were typeset. Here, I also published the half dozen books I wrote for my students—of course with L^AT_EX. I had to make myself also a large set of macros for plotting electrical and electronics circuit schematics; I can certainly say that except for some photos, those books do not contain a single pixel that is not set with L^AT_EX.

I wrote a master thesis bundle (now also on CTAN) and convinced scores of students to learn L^AT_EX to write their theses with L^AT_EX and my bundle. Recently some of my students told me they are using L^AT_EX, because they learned it from their father or mother who, in turn, started using L^AT_EX when he or she was a student of mine. This makes me feel a little proud, but also very old!

E: *In a 1998 TUGboat issue, you and Apostolos [Syropoulos] presented the cb Greek set of fonts. What made you decide to create new METAFONT fonts for Greek?*

CB: One day, I was talking with a friend of mine, teacher of Latin and classical Greek in our classical high school. Myself, I frequented that type of high school, so that we often would speak about the decline of interest in studying classical

humanistic subjects, especially Greek. My friend was not so pessimistic; in fact she was complaining because she could not assign exercises in Greek, typeset in a proper way, and was forced to use only handwritten sources and a photocopier. I said: No problem; use \LaTeX ! Actually when I got home and had some time to explore the archives I found out that in mid-nineties there was only the Didot styled Greek font made by Sylvio Levy. Better than nothing, but it was impossible to use the bells and whistles of \LaTeX : families, series and shapes, for example; Greek fonts for slides, another example. I started studying the problem and working on it. I decided another layout for the Greek glyphs and other means of using the medial and final sigma in a way more suitable for users of this language who did not have a Greek keyboard (as my friend, professor of Greek). I decided these fonts had to be managed the same way as the emerging EC fonts. But I needed some Greek help, some help from a real Greek, not from a past non-Greek student of classical Greek as I was.

This is why I explored the web and discovered Apostolos Syropoulos. We became friends very quickly and our [e]mail correspondence became very frequent. Apostolos was the first one to really use my fonts; he actually used them to prepare slides for a presentation he had to do at that time. The work was far from finished, but the fonts were already usable to a certain extent. Without Apostolos help, I could not have terminated the job. (Thanks, Apostolos, for your help and your support!)

The matter became more complicated by the end of the nineties, because my Greek rasterized fonts did not show well on Adobe Reader and similar PDF viewers. The new `pdlatex` was emerging and becoming very popular. [PostScript] Type1 fonts were a necessity. Apostolos offered to do the whole conversion from METAFONT to PostScript using the program `autotrace` that had then become available. He eventually produced all Type1 fonts from the METAFONT sources in the same font sizes as the EC fonts and uploaded them on CTAN.

These actions started to produce a diffused use of my fonts also in Greece and suggestions and bug fix requests started to flow in. With the help of Dimitrios Filippou (thanks a lot, *Dimitrie!*), I redesigned the Lipsiakos shape and the sans serif lower case letters. Meanwhile, the number of users of these fonts grew up very quickly, so that errors were corrected almost daily. I started to learn myself to do the conversion from METAFONT to PostScript Type1 in order to upgrade the bundle on CTAN. Then the situation settled down and errors and bug fixes apparently disappeared.

In 2005, the bundle was so rich with the various sizes, families, series and shapes that it could not be completely stored in the TeXlive distribution. Apostolos suggested to maintain only the 10 pt size and so was done. By the end of 2007, after some discussions with our international TUG president Karl Berry, we decided that the whole collection could be distributed again. I decided to redo the whole tracing work, this time with the programs `mfttrace` and `potrace`, and the whole new collection of the `CBgreek` font collection has now both the METAFONT sources and the Type1 versions in sync. Apostolos, meanwhile is

working on an expert font that contains both the Latin and the Greek alphabets and special symbols, so that it can be used with X_YTeX (and X_YLaTeX).

E: *You are one of the few people I know to have used METAFONT extensively. What is your opinion about this program? Now with the advent of OpenType fonts and X_YTeX, can we say that METAFONT is dead? Could we say that PostScript Type1 fonts are also dead?*

CB: I still use METAFONT and I keep producing fonts through this program. I am not too excited about OpenType fonts and X_YTeX. Both are excellent, but I don't have any occasion to use them. I typeset mostly in Italian and in English; both languages are dealt with very well by “plain” pdfLaTeX. I perfectly understand that people who have to use various alphabets at the same time in the same document, need them [i.e., OpenType fonts and X_YTeX] in an absolute way. If and when I learn Japanese—thanks to my daughter and my family in law—I may start using them.

E: *There are many efforts for a new TeX: X_YTeX, luaTeX, etc. Are you involved in these projects in any way? If not, what would you suggest as main changes in the design of the new TeX?*

CB: I am not involved in the production of these new tools; nevertheless I already wrote at least one paper in *TUGboat* asking for the introduction of the possibility of using also floating point numbers within TeX in a native way (and why not X_YTeX, etc.). At the TUG conference in Marrakesh (2006), Hans Hagen showed me that with luaTeX it is already possible to use floating point numbers. I believe that modern computers, even the small laptops, can deal with floating point numbers and can use the computer processor capabilities in a better way. Recently, I read a paper by Nelson Beebe who was supporting my proposal to use floating point numbers in a native way. I am very glad that a renown mathematician and TeX-guru like Nelson Beebe supports my point of view, but on one side I am a little upset when I read profound analyses of the best accuracy reachable with floating point numbers, and, on the other side, the urgent application of these computations to electronic typography. If we, engineers, made all these discussions about numerical accuracy in our computations, we would still be cutting stones with chisel and hammer. Applied sciences would not benefit from these discussions; after all, engineering is the art of approximation, not that of precision, as novelists like to depict us. We (engineers) can make pretty precise apparatus, but through tortuous paths with fuzzy boundaries; we know how to control accuracy, even if we cannot reach precision. After all, the telecommunications satellite, whose down-link amplifier was designed by my team, has been working and is still working well for more than 20 years, in spite of the fact that we invented optimization algorithms that had never been tested before.

I am still hoping that ϵ TeX, or pdf ϵ TeX, or X_YTeX, or what else in the future, will be capable of computing also with floating point numbers, in addition to integer and fixed radix computations, as they do today.

E: *You have really impressed us with all that effort you have put into L^AT_EX. Now, let me ask you a few more critical questions. With almost 20 years of (La)T_EXing, what have you learned through (La)T_EX beyond typesetting books?*

CB: Well, L^AT_EX for me was the actual implementation with which I could realize (to the extent I was capable of) beautiful books, according to Knuth’s auspices.

But I learnt a lot of things from electronic typography. I started looking at books with a different eye; I started noticing their graphic design, the choice of fonts, the delicate harmonies of page balance, in size, color, and readability and legibility. Now, I can hardly pick up any book and refrain from examining all these details. By knowing the underlying artistic elements, I can now enjoy what before I completely neglected. A book in my hands, now, gives me a particular pleasure even before I start reading it.

My father was an ancient-book collector. I did never appreciate his hobby when I was typographically ignorant. When he passed away, I had to struggle with my (typographically ignorant) brother in order to keep for myself some of the oldest specimens, and now I can keep them as religious items to venerate—well, ehm, let’s not exaggerate!

This past summer, I was visiting for the n -th time the Ducal Palace in Urbino, the birth town of the painter Raphael Santius, and capital of the dukedom of Federico da Montefeltro. He [Duke Federico da Montefeltro] died in 1482, just ten years before the (re)discovery of America by Christopher Columbus, but about 30 years after the invention and practical application of typography by Gutenberg. The Duke wanted a new precious Bible prepared on purpose for him (of course in a single copy) by the most renown copyists and illuminators of his time. Pope Clemens XI, also born in Urbino, when he was elected Pope, moved all the belongings of the Duke’s extinct family, including this Bible, to the Vatican Museums. The Ducal Palace was completely emptied. Now it is a renown Pinakothek (paintings gallery), but it used to lack everything made by, or for, the illustrious people of Urbino. Eventually some copies of the Codex Urbinas (the above Bible) have been reproduced in a perfect way from the originals that remain in the Vatican Museums, and I could finally see and “touch” these marvels of hand made books, from which the typographical

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layout and the book design originated. It was an unbelievable emotion that I could experience also thank to my recently acquired acquaintance with the art of typography.

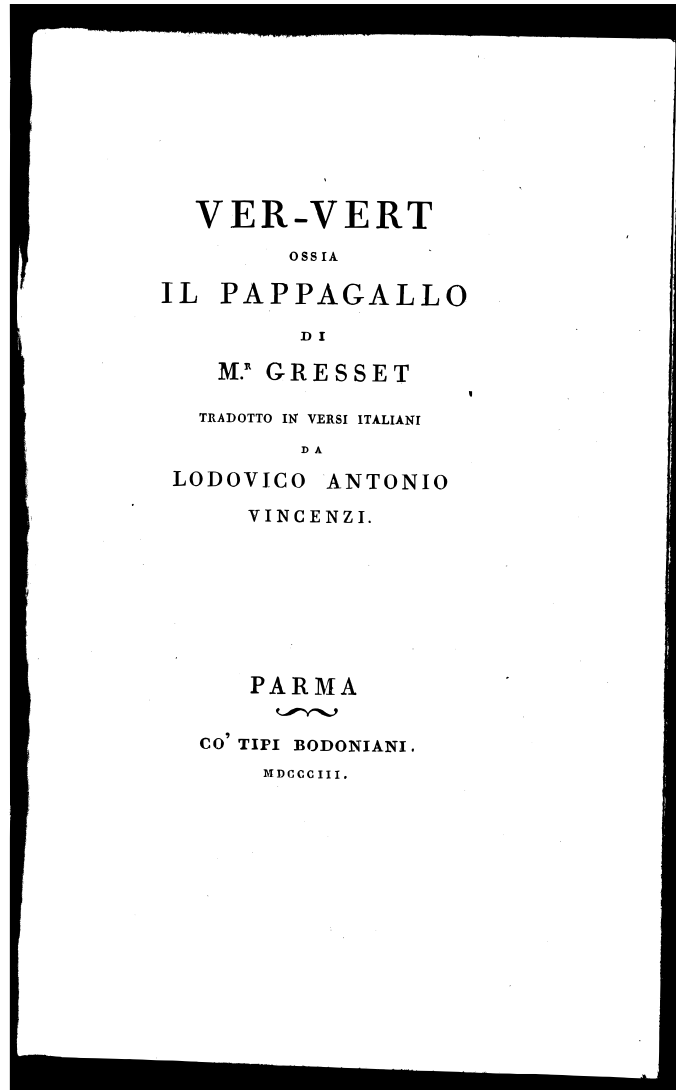
For this same reason, this past summer I opened my house for hosting an exhibit of the production of some artistic handcrafters, among which an ancient-book restaurateur and book binder. I spent most of the time of the exhibit chatting with this enthusiast restaurateur and I filled up a small part of my huge ignorance in that field.

E: *Italy has a long tradition in typography and some of the nicest books ever made were printed in your country. But if I ask you to comment on the current state of typography in your country, what would you say? (I ask this question, because in Greece, the introduction of desk top publishing really wiped out all typographic tradition. Every kid with a computer has turned himself into a typesetter, publishers and printers don't give a damn about aesthetics and quality and the result is a disaster.)*

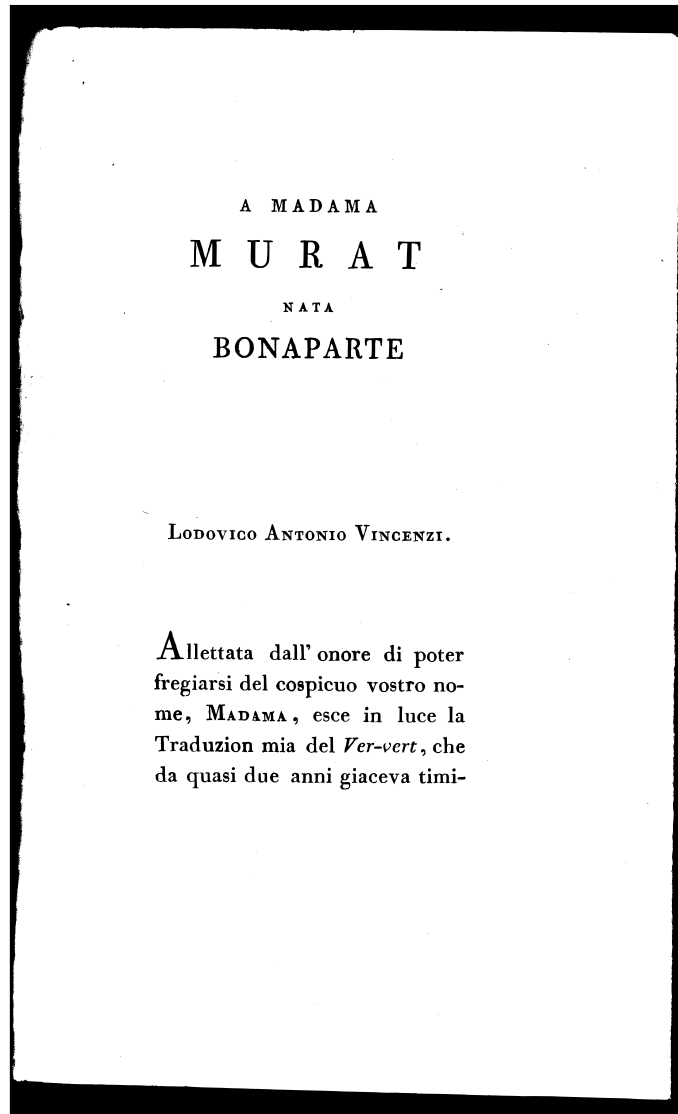
CB: Yes, Italy contributed a lot to culture and typography, but I think it passed through dark times especially in the XIX century, when the influence of French typography was so strong, that the “Italian style”—if such a thing ever existed—almost vanished. I own a half dozen books printed in the XVI century; most of them were printed in Italy and they were wonderful. At the same time, for the farewell party in occasion of my retirement, I have been offered a book printed in Parma in MDCCCIII (1803); it does not name the typography, but the title page mentions the Bodonian typefaces. If it was not produced in the typography owned and operated directly by Bodoni himself, it was printed in a print shop of one of his apprentices, who evidently was using his master's typefaces (beautiful) and was putting into practice what he had previously learned as an apprentice. Even if the small book is not one of those you'd see in a museum, it's beautifully designed, the typefaces, beautiful by themselves, are set in an elegant grid with ample margins; I would say the page design was drawn with unusual ratios: the trimmed page is 115 mm × 186 mm; the main text grid is 57 mm × 102 mm; the horizontal margins 38 mm and 26 mm; the vertical margins 56 mm and 34 mm. Even if these measurements are approximate and perhaps don't sum up to the page dimensions, I don't see any known ratio of these quantities. So in the hands of real artists the rules may be broken and the result may be fascinating.

In the XX century, industrialization has diminished the quality all over the world. Nevertheless there still are some artisans that maintain the quality of the trade. Type designers (of the recent ones, I remember Aldo Novarese), master typographers, master book binders still exist and are not so rare. Many of them practice the restoration of ancient books and can make miracles, not only because the technical means are much better than, say, 20 years ago, but because they integrate their artistic qualities into their work.

But it's true; nowadays everybody who owns a computer believes to be a master typesetter. Of course it is not so, but luckily enough they earn their



The title page of the book that Claudio got as present for his retirement: Jean-Baptiste-Louis Gresset, *Ver-Vert ossia Il Pappagallo*, translated from French to Italian by Lodovico Antonio Vincenzi. It was printed in Parma by Giovanni Battista Bodoni in 1803 and it was rather small: pages xii + 67; cover size 127 mm × 198 mm, page size 123 mm × 193 mm; front matter set in 11/14.5 pt (10/13.5 dd); main matter set in 8/12.3 pt (7.5/11.5 dd).



The first page of the dedication from the book that Claudio got as present for his retirement. The book was dedicated by the translator to Carolina Bonaparte, sister of Napoleone Bonaparte and wife of Gioacchino Murat, King of Naples by appointment of his brother-in-law, the Emperor Napoleon.

Carattere "Alfabeta" Reber (dis. A. Novarese).

Esempio raro di scrittura greca nello stile corsivo "inglese" nero.
Questo scritto si adatta nelle composizioni di estrema fluidità, tipica dei veri scritti.

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“Alfabeta” Reber, a Greek script font designed by Aldo Novarese (1920–1995) for the metal typesetter Nebiolo of Turin, which ceased production in 1978. The image is from a Nebiolo font catalogue, which was reproduced in a book on type design written by Novarese himself (Aldo Novarese, *Il segno alfabetico*, 2nd ed. Progresso Grafico, Torino 1990). Novarese is better known for the Microgramma or Eurostile (sic) square-like sans serifs.

money with commercial publications, catalogues, and the like, while real books in general maintain a certain level of quality, and some of them may become collectors' items as typographical masterpieces.

E: *One last question more relevant to T_EX: There is no doubt that Knuth taught us not only T_EX, but typography in general as well. However, some people (Stephen Wolfram, the creator of Mathematica, is one of them, if I remember well) have criticised Knuth that by leaving T_EX as free software, he created a mess (i.e., the various T_EX derivatives) without a leader to untangle it. What's your opinion about free software? Do you agree with Knuth's approach or not?*

CB: I am totally favourable to free software and I don't agree with those who want to control the development of a certain type of applications. Knuth was admirable with his work and thanks to his free software he has given an enormous push to the development of better software. Let's admit it: Knuth's line breaking algorithm and pattern based hyphenation has reached the best software, even the commercial one. The typesetting of mathematics has become the nucleus of most equation editors, even if most of the time the developers are unable to integrate the result within the text in the proper way.

I have a small fame as class designer; I do not pretend my classes are exceptional; they simply aided some people to do what they could not do with commercial software. The employee at my bank one day said to me: “Oh, you are Prof. Beccari. I know you; you created the style file for writing theses. My brother used it while he was writing his master thesis in Environment engineering. I wish I knew it when I prepared my thesis in Economics. He did a marvellous work in a relatively short time, while I worked almost one year for writing a document that could not stand a comparison with my brother's one.”

This is what comes out; more and more people are now capable of noticing the difference and are starting to appreciate good quality typesetting. If all this software was commercial, I doubt it had such a popularity and such a large number of users. Let's not speak of the many valuable contribution produced by volunteers that sometimes gave the community very good pieces of software and real steps forward in the quality of the final product.

E: *Dear Claudio, I want to thank you once more for the extremely interesting conversation we had, and for your endless efforts in the development of the Greek part of T_EX. The Greek T_EX Friends wish you a happy retirement with lots of T_EXing!*