A Polished TEX story*

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Abstract

Years ago, the birth of TEX put us, Poles, on the horns of a dilemma: how do we reconcile TEX's beauty with our attachment to the peculiarities of the Polish language — its multifaceted inflection, a plethora of diacritics and last but not least the prevailing typographical rules?

Whatever the thinking was, enough of us became determined to make The Lion at home in Poland.

This paper presents the story and the people of the 25 adventurous years of the Polish TEX polishing to not only our but also — we hope — many of our European friends' benefit.

In the beginning

Once upon a time there was a lovely Princess. She lived in the highest room of the tallest tower in a castle guarded by a terrible fire breathing Dragon. Many a brave knight tried — oh no, this should be a different story!

Not so long ago there was Professor Janusz Bień who was the first to typeset a Polish text using TEX. The text looked more or less like this:[1]

Dlaczego sobie Pani ze mnie kpi,
Cierpieniom moim niech nadejdzie kres,
Siła mojej miłości równa się π
Pomnożone przez

$$\sqrt{\frac{2(P+Q)(L^2+a^2)+Gy^2}{g[2(P+Q)a+Cs]}}$$

which translates[2] to:

Oh, You do deride me, why
Let my sufferings go away
The power of my love is equal to π
Multiplied by

$$\sqrt{\frac{2(P+Q)(L^2+a^2)+Gy^2}{g[2(P+Q)a+Cs]}}$$

There is some charm in this poem. Did Julian Tuwim really express his love through this formula? Was his love bigger than the love of TEX many a Pole has devoted their professional life to? Many of

* Translated into English by Jerzy B. Ludwichowski, Nicolaus Copernicus University, ul. Gagarina 7, 87–100 Toruń, Poland, Jerzy.Ludwichowski@uni.torun.pl. Drawings by my son, Jędrzej Odyniec.

[1] Written by Julian Tuwim, a famous Polish poet. (Dzieła, Tom III, *Jarmark rymów*, Czytelnik 1958, s. 343: *Nowe a skuteczne rymy*; footnote on p. 643: First printed in a section edited by Tuwim *Cicer cum caule, czyli Groch z kapustą*, of "Problemy" 1949, nr 10.) Originally it was typeset in plain TEX and luckily contained only one eogonek — I don't know how Professor Bień went about it then. There is an interesting story the author gave with this poem: *It happened that we fell in love with a Polytechnic student, a beautiful albeit unfortunately a very serious girl. We started flooding her with poems. To no avail. She mocked our heart — card, vain — plain, tears — hers rhymes. We then came up with an idea which opened the heart of our physicist, mathematician and future engineer. Our poem was...*

[2] By Andrzej Odyniec and Jerzy B. Ludwichowski.

us still think that our encounter with TEX has a romantic note to it, or perhaps a sense of an adventure or a fairy tale.[3]

Pioneers' time When thinking of old, pioneering times, of our adventures with great computers, great programmes and great people I cannot forfeit the impression that similar things happened before.

When I close my eyes, I find myself in the times of great sailors and imagine a big brigantine with sails full of wind. When looking closer, I see a big Lion on a galleon under the bowsprit and the crew on the deck lovingly scrubbing it to shine as *polished*. When I look up, I see the Polish white-red flag flying on the main mast. That is why my story will again and again recall this picture.

The first expedition In the old times one had to use "square" monies[4] to pay for computing time. To get computing time officially one would need to obtain scientific approval and be allocated those — huge for a private pocket — square sums. Unfortunately, Janusz Bień was unable to spark sufficient interest in the Polish science community. And the times were difficult — martial law ruled. Therefore the knowledge of TEX could only be extracted from Stanford University Computer Science Department reports and the *TUGboat* bulletins.

Jan Madey was the pioneer of an overseas expedition and thus the first skipper of the ship with the Polish banner and The Lion at the galleon.

Recently Professor Madey made the headlines as the coach of the winning team of Warsaw University in the ACM International Collegiate Programming Contest 2003. The picture shows him and his team receiving laurels during the Beverly Hills, California, finals (photo by David Hill).

It was he who invested his own money and in 1983 brought to Poland the first tape with TEX version 0.8.[5]

Back home This of course was not the end of the story but rather its beginning. Heavy fights on almost all fronts had to be won: porting of the Pascal compiler written at the Institute of Computer Science Foundations of the Polish Academy of Sciences to the VM operating system of the IBM 370/148 mainframe, and extending the compiler to the state where it could compile TEX (done by Piotr Carlson). The IBM 3287 graphic printer output was done by Hanna Kołodziejska. It was she who inherited further adaptation work from Piotr Carlson.

All this was only possible thanks to the then Head of the Computing Center of the Informatics Institute, Dr. Sc. Stanisław Waligórski, a kind[6] and far-sighted man who got interested in TEX. It was he who allocated machine time in the Computing Centre under his command. It was he who made it possible for Hanna Kołodziejska — on the suggestion of Professor Bień — to work for many months on the Polish language hyphenation patterns.

[3] My eldest son is almost the same age as TEX. Perhaps some day he will become an architect but even now he remembers the day when I took him to the computing center to show a computer doing calculations on a separate story of a huge building guarded by a fire breathing Dragon, oops, no, not again. A few years ago he recognized the same computer in the Museum of Technology. He still can talk as endlessly about this day as he can about old sailing ships.

[4] The relation of "square" monies to normal, "round" money was such that "square" money did not exist in a material or visible form. It was only transferred between state companies and the right to manage it was issued to individuals as a kind of recognition or favor from the Communist rule. To be suspected of "improper management" of such monies usually meant an end to one's career or sometimes even freedom.

[5] It should be noted that 20 US dollars was worth an average monthly salary in Poland.

[6] I personally had the pleasure to experience his kindness when he later was my dean.

Professor Bień also proposed the first, quick and dirty, method of adding Polish ogoneks to 'a' and 'e', a thing Donald Knuth somehow omitted in the fever of the battle. And so in April 1985 the four-liner by Julian Tuwim was typeset with TEX 0.8 and several months later version 1.1 arrived from Stockholm.

The next planned step was to install TEX at the then biggest civil computing center in Poland: the Computing Center of Warsaw University, where the RIAD 60 (an IBM 370/165 Russian made clone) ruled, later replaced by a BASF machine (again an IBM copy). I worked there at the time and observed from a distance the TEX JOBs. It all ended with a series of publications,[7] as we were all taken by surprise by the microcomputer era.[8]

LEX and MEX

Before the world was taken by wordmania TEX had been used in Poland since 1987 to typeset many publications and books in various areas, even in Braille.

Many a bright man decided to join the crazy crew *polishing* the deck of the ship named TEX to get it to the Polish language harbour with any amount of spit and polish required. We Poles have something in our veins that drives us always towards Poland,[9] therefore it would be futile to try to enumerate all those who have been polishing TEX's deck. In 1987 Bogusław Jackowski and Marek Ryćko, both looking for a decent typesetting tool, took the steering wheel of the TEX craft. They were taking turns at the watch of TEX and METAFONT even before the "eight bit era". And thus in 1989 we had the first fitting of a Polish TEX with a set of plain macros under the name LEX[10] and the CM family of fonts augmented with the Polish ogonek under the shy name of p1 (not yet even pl).

It is worth mentioning that until then no typographically correct ogonek existed in TEX for the 'ą' and 'ę' glyphs. There were various attempts to solve this, even by using the French cedilla.

The result was that either the shape was not right, or the direction of the ogonek was wrong or one could not bear looking at it or one could not bear reading it. To keep it short — a surgery on TEX's ogonek was required.[11] The first operation on the ogonek by Jacko and Marek turned it right, which is... right.[12] The slash notation was also introduced on this occasion (/a, /c, /e, /l, /n, /o, /s, /x, /z) to cater to at least some portability of texts. It is still used by some.

During the polishing Jacko got hurt by some splinters in the deck. As the Admiralty used to compensate for splinters, he received an "acknowledgment" in writing for TEX, in 1989, at $327.68 and another one, in 1994, for METAFONT. The Admiral-

[7] E.g., Janusz Bień, Hanna Kołodziejska, *TEX for RIAD computers.* In: Dario Lucarella, editor, Proceedings of the first European Conference on TEX for Scientific Documentation, Como, Italy, pages 133–140. Addison-Wesley, Reading, Mass., 16–17 May 1985. Thus we were represented at the first European TEX Conference.

[8] Based on Janusz S. Bień, Co to jest TEX?, Instytut Informatyki Uniwersytetu Warszawskiego, Warszawa 1988, `http://www.mimuw.edu.pl/~sbien/publikacje/cttex90.pdf`

[9] Already in the early 16th century, Mikołaj Rej, the first outstanding Polish writer, advocated the use of the Polish language — as opposed to Latin — for writing by saying that other nations should know that Poles are not geese, that they have their own language: "A niechaj narodowie wżdy postronni znają, iż Polacy nie gęsi, iż swój język mają."

[10] The legend has it that there were three brothers, fathers of the Slavic tribes: Lech, Czech and Rus. The name of our forebear — Lech — is pronounced almost as Donald Knuth wants TEX to be pronounced except of course that 'L' replaces 'T'.

[11] Let it be known that "ogonek" is a "small tail" in Polish.

[12] "Let them have an outstanding left, I have an outstanding right, I jump from the right.", Włodzimierz Wysocki, A high jumper's song, from the Polish translation by Wojciech Młynarski.

ty — except for these formal written "acknowledgments" — was not overly talkative.

In the beginning not only the ogonek posed problems. It also was not clear what codes should be assigned to our Polish glyphs. And even when the third version of TEX gave us eight bits of input, we had by then a dozen or so ways of placing the Polish glyphs in the upper half of code pages. The most popular was Mazovia, a standard created by Poles themselves to reconcile our needs with the need to use western European glyphs.

When I met Marek and Jacko a little bit later, they were scrubbing the TEX deck day and night. They wanted it to become available even under the proverbial thatched roof,[13] but the situation was such that all modern Poles were using the Mazovia encoding. It became apparent that it would be immensely difficult to popularize TEX without adapting it in such a way that it would accept eight bit Polish language texts. Thus MEX[14] and LAMEX came into being.

With them, the shape of ogonek got its final polish. A world renowned typographer, Roman Tomaszewski, helped to achieve this.

There are still some who use the Mazovia encoding, although Microsoft has buried it under the 852 and 1250 code pages, and the Internet added another layer with ISO 8859-2. What would the world look like without TCX? Luckily, at the EuroTEX conference in Cork, the Polish diacriticals have been given the best available places — provided they did not interfere with other nationalities' diacriticals...

The need for good taste aka GUST

Oh, if we had GUST[15] before the "cork expedition!" But we finally understood with the help of Malcolm Clark, who had been talking Marek and Jacko into it, that without our own user group, i.e., our own Admiralty, we will always be perceived as pirates on the TEX ocean.

The birth of GUST integrated Polish TEX users — all able crew began scrubbing the deck in concert now. Apart from that, the regular communication enabled by Internet made our voices heard where necessary, sometimes against the will of some neighbouring nations.[16] And when the capital of Poland was moved by GUST to Toruń — the town of Copernicus — neither Warsaw nor Gdańsk resented it.

Polish fonts

Polish fonts is the activity where such passionates as Janusz "Uhlan" Nowacki from Grudziądz and our unwavering captain Bogusław "Jacko" Jackowski found their destiny. GUST was also able to subsidize to some extent the public domain work, to which undoubtedly the fonts belong. The first thing to do was supplement the CM fonts in Adobe Type 1 format with Polish diacriticals — DC fonts later inherited those outlines as the source of Polish characters.

But this was not all, by far. We began yearning for a font which our fairy tales and legends had been typeset in: the Antykwa Toruńska. Our beloved Uhlan miraculously persuaded the then still living author, Zygfryd Gardzielewski, to make available his original drawings and meticulously turned them into Type 1 outlines.

Jacko and Uhlan, supported by Piotr Strzelczyk, all united into the JNS team with the aim to overcome the Cork problem by looking for a way to place the 18 Polish diacriticals where we needed them. It was the beginning of the QX font layout.

An attempt at the digitization of yet another font we are attached to because the obituaries of our grandfathers and fathers were typeset with it — Antykwa Półtawskiego — had to be even more systematic as it required reconstructing the font because no original design drawings were preserved. It is now publically available.[17]

The TCX battle

Some of our neighbours were convinced (and possibly still are) that Poles are a messy nation and that they should be taught order because "order must be." As they themselves in a democratic way

[13] "To get something under the thatched roofs" — make it available to everybody.

[14] Standing (a little) for Mazovia–TEX but some would say Macrosoft–TEX (Macrosoft, a company which harboured the then most active crew). Besides, it means moss when pronounced similarly to how Don Knuth wants to pronounce TEX. The MEX package was awarded the President of the Upper Silesian branch of the Polish Computer Society prize at the Softarg fair in 1992.

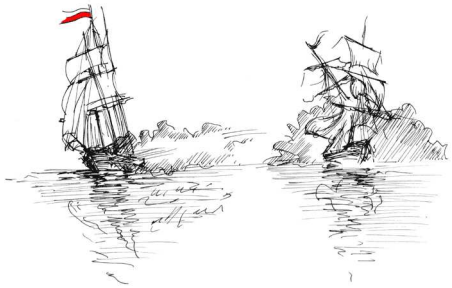
[15] Not incidentally, "gust" is Polish for good taste.

[16] Recalls Marek Ryćko: In Cork there was a moment when representatives of poor countries (those without the Internet) were invited to a place where various TEX bits and pieces were copied onto diskettes. It was a nice thing that we were catered for, but the joy quickly turned into rage when we found out, that at the same time the other boys had a meeting during which there was the final voting on the encoding for the extended CM family of fonts, now known as the "Cork encoding". The encoding was arrived at with the use of email communication then unavailable to us. It is unsuitable for Polish but, e.g., catered for the German needs.

[17] Jackowski, B. "Antykwa Półtawskiego: a parameterized outline font", Proceedings of the EuroTEX'99 Conference "Paperless TEX", Heidelberg, Germany, September, 1999.

finally got rid of diacriticals from their own languages, they could not understand that we Poles have $9 \times 2 = 18$ of them and that because of the order imposed on us by various foreign authors we are forced to place them in various places. The most difficult part was to convince them that we are attached to our ogonek, and on top of it all we like plain TEX, which makes it difficult to reconcile both things with the 852, 1250, ISO 8859-2, as well as Mazovia, code pages. We were being pointed to *inputenc* in LATEX 2_ε without taking into account the difficulties of this method.

And then, in 1995, the animators of the GUST Bulletin, Włodek Bzyl and Staszek Wawrykiewicz found in the code of Web2c a novelty: a piece of code by Karl Berry — an encoding handler called TCX. This was something we liked. Perhaps too much. It looked like we were asking for the moon and at the same time created a storm in which TCX took the role of the Flying Dutchman by alternately showing up and disappearing. TCX needed polishing and at the same time those who likened this approach to dirty hacking tricks had to be nagged and nagged and nagged again.



The TCX battle ensued with salvos exchanged now and then. Masts and ports were broken. The fierce email war was eventually won by Włodek Bzyl, Staszek Wawrykiewicz and Marcin Woliński. Thanks to them even very old Polish texts now compile easily.

TEX Live

No battle and no expedition would succeed without a boatswain. And it's no mean boatswain we have on board. It is StaW[18] who knew from the very beginning where what is and what fits what — i.e., what and where should be installed for TEX et al. to function properly, and whom to shout at if things are not as they should be.

He was the master of distributions and servers. He was also one of those who initiated the good GUST. And last but not least it was he who has been issuing orders more understandable then those by the Admiralty.[19]

After the victorious battle which made TCX famous far and wide,[20] his keeping clean of our deck made him famous among others hence today you will not find a teTEX, fpTEX nor MikTEX without Staszek's fingerprints.

Captains visit ships' decks but boatswains are there always, thus it is plainly impossible to list everything for which StaW deserves credit. We are happy that the TEX world appreciates what he does and wants to work with him. In Poland TEX is aLive mainly thanks to his efforts. His arduous work makes every new deckhand feel at home aboard TEX. And as Staszek has now become the ambassador to CTAN, I rest assured about the future of TEX archives.

PLATEX

LAMEX disappeared with LATEX 2.09. There was no good reason for fixing the base code to adapt it to the Polish language. This could now be done in the form of a package. Then again our good GUST did bear fruit. Mariusz Olko started with the PoPolsku package in 1994. In 1997 the package began morphing into PLATEX and its author into Marcin Woliński.

Thanks to their work publications made with LATEX have the desired polished look and feel with all 18 Polish diacriticals. And letters written in the Polish language really look Polish and not English or German.

Today this package gives TEX the position it deserves. Many young people reach for it especially when tired of the schizophrenia induced by wordmania. Moreover, the package lives and is constantly being updated. The GUST discussion list attracts many novice users who enter their adventurous path with PLATEX.

A new generation is being born to live on the clean, scrubbed and polished TEX deck. Using the GUST discussion list it seeks the old sea dogs' advice which they patiently give over and over again along with the tips and tricks of the sailors' world whose waters were first charted by Professor Madey.

[18] Staszek Wawrykiewicz.

[19] Starting from the translation of Michael Doob's "Gentle Introduction to TEX" through translating WinShell up to polishing Eitan Gurari's TEX4ht into sync with ISO 8859-2.

[20] External TCX translation tables have been introduced into all distributions based on Web2c and later into the MikTEX distribution. Now TCX is handled by pdfTEX, ε-TEX, METAFONT and MetaPost which ensures the presence of national glyphs on the screens, in the log files, contents tables, indexes and the like. Thanks to TCX, TEX handles national characters in the same way in formats like `plain`, ConTEXt, LATEX, `eplain`, or $\mathcal{AMS}$-TEX. This approach has been accepted by many users, not only in Poland.