

Philology

T_EX in Russia: ab ovo

or

About the T_EXnical evolution in Russia

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In the beginning was the word. And the word was “T_EX”.

The story goes that Donald Knuth studied Russian specifically for the purpose of reading the papers and monographs of Soviet mathematicians in their native language. When creating his famous program, the Grand Wizard must have been thinking about the poor Russian scientists who didn't have opportunities to publish their works in foreign journals. Perhaps this was one of the reasons for the name T_EX: it's the first syllable of the Russian word ТЕХНОЛОГИЯ ('technologia', or the Greek word, to be more precise). Knuth considered the proper pronunciation of the word so important that he alloted the first chapter of his book [27] to explain the right sound of his “child's” name. Fortunately, it is not a problem for Russian readers to do this.

The first non-Latin font in the Computer Modern family was the Cyrillic font `mcyr` [3, 4], created in 1985 as a 7-bit encoding font. The American Mathematical Society often translated the works of Soviet mathematicians into English in their journal, *Mathematical Reviews*, and included Soviet publications in its bibliography; `mcyr` made it possible to reproduce the actual titles and Soviet authors' names.

In 1989 D. Vulis [67] offered Russian T_EX in an 8-bit encoding scheme; it combined T. Ridgeway's (University of Washington, Seattle) Cyrillic fonts and D. Vulis' hyphenation algorithm (based on the F. Liang algorithm).

So, it seemed preordained by the Grand Wizard and his successors that T_EX should become part of Russian reality and a necessary software tool for our scientists.

And what about the situation in the Soviet Union at that time?

T_EX made its appearance in the mid-1980s. At first, it was only known to the scientists who travelled to large scientific institutes in Western Europe and the USA. They were, as a rule, the physicists, including scientists from the Institute of High Energy

Physics (IHEP, in Protvino). The first Cyrillic version of \TeX appeared at that very institute. It became known as “Protvinskaya” (‘Protvinskaja’); the authors were S. Klimenko, B. Malyshev, A. Samarin, et al. [2, 5, 11, 12, 13, 14, 15, 21, 22, 23, 26, 43, 56, 57]. The first Cyrillic font in this version was `tt` [11, 12, 15]: according to the rules of thesis preparation at the time it was necessary to type them on a typewriter (not a computer!). Since the young scientists were lazy, they devised a way to deceive the bureaucrats and so did not retype materials that were prepared on computers.

By the end of the '80s and the beginning of the '90s, \TeX had lost its exotic character. There were some specialists and the groups of scientists who began to use \TeX with some Cyrillic fonts and to implement their own Cyrillic versions of \TeX .

In an agreement between the American Mathematical Society and the Soviet publishing houses of Mir Publishers, Nauka Publishers and Leningrad State University, three Russian specialists were sent to the AMS for \mathcal{AMS} - \TeX training. During this visit, they called on the TUG office [55] and the idea to create *CyrTUG* in the USSR was born.

In the spring of 1991 (May 23–24), there was a “constituent assembly” of *CyrTUG* at Mir Publishers [46]. There were 23 \TeX users from Moscow, Protvino, Saint-Petersburg and Novosibirsk at the meeting. The participants reported on their work on Cyrillic versions of \TeX and the President, Executive Director, and Board were elected. The Cyrillic \TeX Users Group (or, in Russian: Associaciia Polzovatelei Kirillicheskogo \TeX 'a) was born.

We all consider Dmitrii Vulis the main “culprit” behind this. He was in correspondence with most of us: V. Andrushchenko (Institute of Russian, Moscow), J. Romanovskii (Saint Petersburg State University), A. Samarin (IHEP, Protvino), I. Makhovaya (Mir Publishers, Moscow), A. Urvantsev (Novosibirsk State University), et al. He acquainted us all with each other.

CyrTUG held its next annual meeting in Moscow at the Central Economics & Mathematics Institute (CEMI) October 20–22, 1992 [47]. The meeting was attended by 53 members of the group. There were (besides the above) the inhabitants of Irkutsk, Vladivostok, Syktyvkar, Sochi and Rostov-on-Don. Unfortunately, for financial reasons, we were not able to issue the proceedings of these conferences.

Since then, *CyrTUG* meetings have taken place every year; since 1993 (October 4–7 Pereslavl-Zalesskii) our foreign colleagues have taken part in our conferences. J. Roseman (USA) and

K. van der Laan (the Netherlands) were the first. K. van der Laan gave some talks and this promoted an extension of our users' horizon. He wrote about his impressions in a paper [31]. In 1994 (September 7–10, Dubna) M. Goossens (Switzerland) joined us [16, 32]; in 1995 (October 3–7, Protvino) there were four more—J. Roseman, M. Goossens, K. Pishka (Czech Republic) and B. Jackowski (Poland). We all can see the transformation of the process now in July 1996!

The pilgrimage originated in 1991 when T. Juriens (the Netherlands) [24] gave a course to people from Novosibirsk State University \TeX and D. Guenther (Washington State University) instructed \TeX users from Moscow and Kazan at Mir Publishers.

The number of Russian \TeX users who have gone abroad to work or take part in conferences has snowballed [1, 7, 8, 17, 18, 19, 25, 29, 30, 33, 34, 35, 39, 40, 41, 42, 44, 58, 61, 66]. $\text{\TeX}90$ (Cork, Ireland, 1990) was the first meeting with a Russian representative, followed by two more Paris in 1991; Prague, 1992, six; Aston, 1993, two; Gdansk, 1994, two; Santa Barbara, 1995, one; and last year in Arnhem, 15 Russians! Not only the quantity but also the quality of Russian \TeX users' work has increased. The main fields of interest remain Cyrillisation, fonts, encoding schemes and pictures.

For the five years *CyrTUG* has been in existence some 700 \TeX users have been members, with about 50 scientific institutes, universities and publishing houses as institutional members. There have also been citizens of the USA, Slovak Republic, Czech Republic, Switzerland, and the Netherlands; institutional members include CERN (Geneva), JINR (Dubna), Mir Publishers (Moscow), MekhMath faculty of Moscow State University, UrbanSoft (St. Petersburg), Institute of Mathematics (Kazan), Electrotechnical Institute (Novosibirsk), Institute of Mathematics and Mechanics (Ekaterinburg), and others. The Grand Wizard, Donald Knuth, is an honorary member of *CyrTUG*: during his visit to St. Petersburg he was presented with card No. 0314 [48, 49].

We can see the increase of \TeX popularity in Russia. The reason is not only active *CyrTUG* work but also the many monographs and textbooks in Russian which have been published [9, 27, 37, 38, 53, 63, 64], and a number of articles [20, 28, 65]. During this time there have also been a lot of preprints and brochures [2, 5, 6, 11, 12, 13, 14, 15, 21, 22, 23, 26, 36, 43, 50, 52, 56, 57, 59, 60, 62, 69, 70].

Some Cyrillic versions of \TeX and some Cyrillic extensions of the CM font family have been created, including:

1. Protvino package (authors: S. Klimenko, B. Malyshev, A. Samarin, et al., [2, 5, 11, 12, 13, 14, 15, 21, 22, 23, 26, 43, 56, 57]);
2. *CyrTUG* package 1992 (authors: O. Lapko, A. Khodulev, I. Makhovaya [25]);
3. *CyrTUG-emTeX* package 1994 (authors: O. Lapko, A. Khodulev, I. Makhovaya, S. Strelkov [33, 51]);
4. A. Shen package [59];
5. NCC- \LaTeX package (author A. Rozhenko [53, 62]);
6. Vi \TeX package (authors: M. Bronstein, M. Vinogradov) [10, 66];
7. V \TeX package (authors: N. Kornev, M. Vulis [68]);
8. w \TeX /w \LaTeX (authors: Yu. Ivanov, V. Kornev, A. Raportirenko et al.).

Certainly there have also been quite a number of Cyrillic versions which have not made it into the mainstream or enjoyed popular usage. This is to be expected, since \TeX is a public domain package. Almost all of the Cyrillic versions are based on the *emTeX* package as it is one of the most available high-quality programs.

A similar situation has occurred in the development of Cyrillic fonts. Among the best known creators of Cyrillic fonts, we can cite:

1. B. Beeton;
2. T. Ridgeway;
3. N. Glonty;
4. O. Lapko, A. Khodulev (“LH”);
5. M. Bronstein, M. Vinogradov;
6. A. Shen;
7. N. Kornev, M. Vulis;

Most of the fonts are Cyrillic extensions of the Computer Modern family. Having several versions and quite a number of fonts that differ from each other on ϵ underlined the need for a common version that combined the best features of each.

There have been numerous attempts along this line. The Cyrillic \TeX Users Group gave the problem of standardization top priority. The *CyrTUG-emTeX* package was widely used and was included in the NTG’s CD-ROM, 4All \TeX , as well as being made available via CTAN.

At a seminar entitled “Nauchno- \TeX nicheskie sredy” (held at the MechMath faculty, MSU, 1995–1996), led by E. Pankratiev, *CyrTUG* President,

the main issue is the question of standardization. A. Rozhenko has taken the lead in e-mail discussion about the topic; and the Russian Foundation for Basic Research has also taken steps in that direction. Some of the results of this activity are presented at our meeting now.

Because of differing tastes, reaching an agreement on this matter will be difficult. But because we wish to resolve this matter, we meet and join not only in languages groups but in one big family of different nationalities. There is safety in numbers.

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