

## The History of $\mathcal{N}\mathcal{T}\mathcal{S}$

Joachim Lammarsch

When in 1991 I was considering setting up a project to develop a successor of  $\text{T}\text{E}\text{X}$ —later to be called the New Typesetting Software ( $\mathcal{N}\mathcal{T}\mathcal{S}$ )—the question was:

$\mathcal{N}\mathcal{T}\mathcal{S}$ —Is it really necessary?

The answer for me was obvious: YES! There are two main reasons why  $\mathcal{N}\mathcal{T}\mathcal{S}$  was necessary; on the one hand there are a lot of technical reasons and on the other, political reasons. Concerning the technical aspects, there were many things to be taken into account. For example Frank Mittelbach and David Salomon proposed a lot of design changes to Donald Knuth, and there were an increasing number of  $\text{T}\text{E}\text{X}$  users who had similar ideas. I do not wish to discuss technical issues because Philip Taylor, as technical director of the  $\mathcal{N}\mathcal{T}\mathcal{S}$  project, is responsible for this aspect and he is far better qualified than I to do the job. My part is concerned with the political reasons for  $\mathcal{N}\mathcal{T}\mathcal{S}$ . I will try to show why the  $\mathcal{N}\mathcal{T}\mathcal{S}$  project was and is necessary.

To understand this need, we have to have a closer look at the  $\text{T}\text{E}\text{X}$  world in 1991 and the following years. First, we had the  $\text{T}\text{E}\text{X}$  Users Group, which was founded more than fourteen years ago; besides TUG, we had the following organizations in Europe (in alphabetical order): DANTE e.V., GUTenberg, the Nordic Group, NTG, UK-TUG, and several groups in eastern Europe. It was not known how many people currently used  $\text{T}\text{E}\text{X}$  worldwide, and it is impossible to estimate how many people would use  $\text{T}\text{E}\text{X}$  if it were more user friendly.

We, the  $\text{T}\text{E}\text{X}$  organizations, have tried to make  $\text{T}\text{E}\text{X}$  attractive to the  $\text{T}\text{E}\text{X}$  community and also to our members, and all have worked together. We had worldwide discussion lists such as `INFO-TEX` or in Europe `TEX-EURO`, and we had local groups: `TEX-D-L`, `GUT`, `TEX-NL`, . . . , we had lists for special items, and we had digests such as `TeXhax` and `UKTeX`. We have user groups and we have many possibilities for communication. We had a very good software distribution. The distribution is carried out by the  $\text{T}\text{E}\text{X}$  Users Group, by local groups and by the new Comprehensive  $\text{T}\text{E}\text{X}$  Archive Network (CTAN) with the three largest software servers in the world—the  $\text{T}\text{E}\text{X}$  network. But we had a big problem:

$\text{T}\text{E}\text{X}$  was getting out of date.

$\text{\TeX}$  was more than 15 years old. Ten years ago it was the best typesetting system worldwide. By 1991 it was the grandfather of typesetting systems: other typesetting systems had learned from  $\text{\TeX}$ . Other typesetting systems often incorporate many features of  $\text{\TeX}$ , such as the hyphenation algorithm, the page-breaking algorithm, kerning, ligatures, and many other things.  $\text{\TeX}$  was free, and commercial vendors have had the opportunity to use  $\text{\TeX}$  algorithms. There were other systems in use: Word, WinWord, WordPerfect, Framemaker, QuarkXpress, 3B2 and many others. They provided a better user interface—which is really important—and they did one thing which we will never be able to do: they advertised!

The result was that more and more users decided to leave the  $\text{\TeX}$  world and to start using other systems. There were many who did not consider the advantages of using  $\text{\TeX}$ . So, we, the  $\text{\TeX}$  organizations, lost users and that meant we lost members. Decreasing membership means a decreasing income, which leads to financial problems. If we have financial problems, the services we offer decrease; the members get angry and do not renew their membership. What is the result? Again, a decreasing number of members, decreasing income and even worse service due to financial problems. A vicious circle! And in the end we have no user groups and because of that, the support they offer to all  $\text{\TeX}$  users worldwide would stop. The result would be a decrease in  $\text{\TeX}$  users. At the end,  $\text{\TeX}$  would disappear like a lot of other systems. What can we do? The answer is very simple:

- Improve  $\text{\TeX}$ !
- Make  $\text{\TeX}$  more user-friendly!
- Make  $\text{\TeX}$  more attractive!

But this was not possible, because  $\text{\TeX}$  was frozen by Donald Knuth. That means that no improvements can be made: Don will continue to remove bugs which emerge (but at ever-increasing intervals), but will neither make any enhancements nor will he permit anyone else to make enhancements (or, for that matter, to fix bugs). We have to live with  $\text{\TeX}$  in its present state, and this was not the state we wanted. The consequences were obvious.

We need a new typesetting system. This is easy to say, but there was no Donald Knuth to do the work and so therefore we need all those who are able to perform such a task. Together we had a chance to create a new typesetting system. It is also very important that the development be carried out worldwide, because only a worldwide system is acceptable as a successor of  $\text{\TeX}$ .

$\text{T}\text{E}\text{X}$  is the same worldwide. People can be sure that if a text is processed anywhere in the world, it will produce the same output. The next issue is what we call the new system; its name cannot be  $\text{T}\text{E}\text{X}$ , because  $\text{T}\text{E}\text{X}$  was named by Donald Knuth and he has announced that he is not willing to give its name away. The American Mathematical Society is the holder of the  $\text{T}\text{E}\text{X}$  trademark. They feel obliged to respect the decision of Donald Knuth that any program which does not meet his requirements cannot be called  $\text{T}\text{E}\text{X}$ . The work has to be done without Donald Knuth because for him, as he said to me, the story of  $\text{T}\text{E}\text{X}$  is over.

How to start? What have we done? In 1990, after the Cork meeting, it was obvious that nothing would be done by the  $\text{T}\text{E}\text{X}$  Users Group because the TUG board was under political reconstruction. I was glad that I—as the president of DANTE e.V.—had the chance to initiate the development of such a typesetting system. I spent quite some time considering how to proceed, and decided to announce the idea worldwide using the different communication lists. Even though I was president of DANTE e.V., it was never planned as a project of DANTE e.V., nor as a project which would be under the control of any one user group. I felt no specific group has the ability to direct such a project. If we finally decided that we need a *board* to direct the project, it had to be one which represents all existing groups—all existing  $\text{T}\text{E}\text{X}$  users worldwide. The announcement was a huge success. I received lots of mail from all over the world containing many good ideas and announcements that people would like to help. At the 1992 general meeting in Hamburg, the members of DANTE e.V. voted to support the project. We established a discussion group and called it  $\text{NTS-L}$ . The aim of this list was to discuss all aspects of the new project. We reviewed these aspects in a group headed by Dr. Rainer Schöpf, a process which took nearly nine months. Rainer was engaged in another project and did not have enough time to fulfill his job as a technical leader. Searching for a solution, we found Philip Taylor and I was very glad that such an expert in  $\text{T}\text{E}\text{X}$  was willing to act as the new technical director.

One of the questions we had to address was “which company might be interested in our new typesetting system?” Before the 1992 meeting in Portland, I had spent some time in the United States, and had visited some companies. I spoke to Lance Carnes, president of Personal  $\text{T}\text{E}\text{X}$ , and with Doug Garnett from Blue Sky Research, and it became clear that they did not like the idea. They had developed their software, and a new typesetting system would force them to develop new software. On the other hand, it was clear to all of them (and I remember David Kellerman, the president of Northlake Software, said it very precisely) that for them there are two possibilities: either support  $\text{T}\text{E}\text{X}$  or to

leave the  $\text{T}_{\text{E}}\text{X}$  world. And that is true. Nevertheless, during my visit in 1997, I was able to convince the companies Personal  $\text{T}_{\text{E}}\text{X}$  and Blue Sky Research to use  $\varepsilon\text{-T}_{\text{E}}\text{X}$  for the new developments. Also Richard Kinch the developer of Turbo $\text{T}_{\text{E}}\text{X}$  agreed.

The next question was which publisher might support the project? Before I started the project, it was clear to me that we also would need support from publishers, and they all promised support and gave us their best wishes, because they saw that it would be necessary for something to be done in this direction. There was one publisher, which offered to finance the project, but only for all the rights to the project.

What would Donald Knuth say about this project? I visited Don in San Francisco before the meeting in Portland in 1993, and spent some hours talking with him about the project. I explained why we needed this project, and that we did not have any intention of setting out to destroy  $\text{T}_{\text{E}}\text{X}$ . He understood that the project was necessary, and he provided many hints on how to set up such a project. On the other hand, he said that for him,  $\text{T}_{\text{E}}\text{X}$  is good enough. For his use,  $\text{T}_{\text{E}}\text{X}$  does all that he needs. He had written a typesetting system for his books and the typesetting is done by  $\text{T}_{\text{E}}\text{X}$  in a wonderful way. He said very clearly that the typesetting project was finished for him. What was new for me was that he did not write  $\text{T}_{\text{E}}\text{X}$  alone: there had been a group of students supporting him. He wrote most of the code of the program himself, but he always had people to discuss difficulties. He thought it was a good idea that we were a group and said it was possible to have a group for such a project. He gave his best wishes. He did not say he was not interested, but he would not work for it. Two years later I was able to convince him to meet Phil and other members of the  $\mathcal{N}\mathcal{T}\mathcal{S}$  group to talk about the project. In 1996 I met him to discuss the next steps.

Who needs the new typesetting system? Who will use it? I think we will use the system, because for everyone who says  $\text{T}_{\text{E}}\text{X}$  is not enough today, it is the only chance we have in the future. We need this system for the 21st century. Or, you could say, we all need the system if we are interested in keeping our  $\text{T}_{\text{E}}\text{X}$  community alive.

## Address

Joachim Lammarsch  
Ruprecht-Karls-Universität  
Universitätsrechenzentrum

Im Neuenheimer Feld 293  
69120 Heidelberg  
Germany  
E-Mail: [Joachim.Lammarsch@urz.uni-heidelberg.de](mailto:Joachim.Lammarsch@urz.uni-heidelberg.de)