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## Thoughts on TUG 2010

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Well, another annual meeting has come and gone. This one has been very special. For TUG’s 25<sup>th</sup> anniversary, almost all the original members of the Stanford T<sub>E</sub>X Project were located and came to the meeting for at least the final day, when they participated in a panel discussion (see the transcription of the panel discussion earlier in this issue) ranging over topics from recollections of the project itself to what they thought has been the lasting value of T<sub>E</sub>X. I was privileged to work with quite a few of these individuals, principally David Fuchs and Don Knuth himself, to learn T<sub>E</sub>X from the source. I doubt that such a group will gather again.

What was the environment in 1980?

- Most computers had limited memory, no more than 1 Mb. The most popular Unix platform (the DEC PDP-11) was too small to install T<sub>E</sub>X. Personal computers were still several years in the future.
- T<sub>E</sub>X78 was written in SAIL; this ran only on the DECSys<sub>tem</sub>-10 or 20.
- There were no desktop laser printers. The highest resolution of the existing raster printers (at least the ones available to ordinary mortals) was 200 dpi.
- Although the ARPAnet existed, this was available only at major research universities. (I was granted an account at Stanford, `bb@sail`, but could access it only through a long-distance telephone hookup and telnet.) T<sub>E</sub>X was distributed on reels of 1/2-inch magnetic tape, ordered from Maria Code (yes, there really was such a person).

Progress came relatively quickly in some areas, more slowly in others:

- The personal computer revolution arrived in the mid-1980s. Although the first ones had limited memory, requiring that any attempt to port T<sub>E</sub>X would have to use overlays and other tricks even to fit, Moore’s law rapidly took over. Now your cell phone has more memory than the supercomputers of 1980, and T<sub>E</sub>X can actually be installed on at least the iPhone, as demonstrated by Kaveh Bazargan at TUG 2009. And speed of compilation is no longer an issue; where it used to take 5 seconds to compile a page, now 500 pages or more can be compiled in less than a second.
- By 1980 it was already realized that, if T<sub>E</sub>X was to spread beyond the limited bounds of

the DEC-10/20 community, it would have to be recast in another language. Pascal was the base decided by Knuth for T<sub>E</sub>X82, followed by mostly-automatic translations to C, which is now the norm for most T<sub>E</sub>X implementations.

- In 1984, the Apple LaserWriter arrived, along with PostScript. The days of raster fonts were numbered. While commercial printers (the companies that print books and journals, not the hardware) have usually required Type 1 fonts, the standoff between Type 1 and TrueType fonts has been settled with the adoption of OpenType. As for resolution, personal printers at 1200 dpi or higher are no longer uncommon. METAFONT can still be used to develop glyphs and fonts, but the superiority of outline fonts in applications such as browsers means that the “final” image is best not limited to rasters, and METAFONT’s offspring, METAPOST, is now used for much T<sub>E</sub>X font development.
- The advent of the World Wide Web and powerful browsers brings convenience as well as the ability to share information — including downloading an entire T<sub>E</sub>X Live distribution — in real time. Universal connectivity via the Internet brings bad things (e.g., spam) as well as good, but it’s not likely to go away soon. New users of T<sub>E</sub>X and friends wouldn’t recognize the old world. In fact, T<sub>E</sub>X is now used “under the covers” in some places for producing ad hoc commercial documents like train schedules and phone bills, totally without the knowledge of the end user. But it is still the language of choice for most mathematicians and physicists, and likely to remain so until a user-friendly and semantically meaningful front end for XML/MathML appears.

My guess is that there will still be solid uses for T<sub>E</sub>X when its 26<sup>th</sup> birthday rolls around.

The other signal event at the conference was Don’s introduction to the next generation of T<sub>E</sub>X —  (see his paper, also in this issue). It was earthshaking indeed! Although it perhaps owes more to a date of April 1<sup>st</sup> than to its actual date of delivery, we shouldn’t reject its “design objectives” out of hand.

Even if you couldn’t come to San Francisco, you can enjoy much of the excitement via video: [river-valley.tv/conferences/tug-2010](http://river-valley.tv/conferences/tug-2010). Once again, thanks to Kaveh Bazargan for making this possible.

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<sup>1</sup> We’ve been fooled before: *TUGboat* 19(2):95–96 (1998), [tug.org/TUGboat/Articles/tb19-2/tb59hoax.pdf](http://tug.org/TUGboat/Articles/tb19-2/tb59hoax.pdf)