From the president

Boris Veytsman

In the beginning of this century the US Federal Aviation Administration decided to overhaul elements of the air traffic safety infrastructure, introducing mandatory Automatic Dependent Surveillance Broadcast (ADS-B).[1] The company I worked for at that time was chosen to implement this system. I remember the words by the program leader Glen Dyer at that time,

> You know, I always envied the civil engineers. Just imagine walking with your grand-kids, stopping by a beautiful bridge and telling them, "This bridge was designed by me." Now we have our chance to design our "bridge". We are doing something that will endure.

He was right: ADS-B is being used in all flights over the US, and is going to stay. It is planned that this technology will still be employed in the foreseeable future, so we definitely will be able to talk about it with our grandchildren.

I recalled this episode recently while reading a tweet from Nathan Lane (@straightedge):[2]

> Redoing my slides in LaTeX because I fear my MA students won't see me as a true scholar unless I demonstrate mastery of a 1980s typesetting markup language

This tweet can be interpreted in different ways. One may consider it a complaint about the strange allure of obsolete solutions—shouldn't we use something newer and shinier than an invention of the nineteen eighties? Do the grandchildren of the first users of TeX still need to learn it?

This complaint was transmitted to thousands of people on Twitter. Twitter itself started in 2006, so it is relatively new. However, it relies on the HTTP(S) protocol based on the work started by Sir Tim Berners-Lee at CERN in 1989. Moreover, HTTP messages are distributed by the TCP/IP network protocol, developed in 1974. Thus a more accurate version of the tweet might sound like this:

> Using protocols developed in 1970s and 1980s to complain about the requirement to show the mastery of a 1980s typesetting markup language for being considered a true scholar.

I would like to make an observation based on this (and many other) episodes. The pace of change for a technology strongly depends on how "deep" the technology is. A user interface for Twitter changes fast; the underlying software layers are much more stable, and the lower we go into them, the slower they change. In the same way the safety features of aviation are much more stable than aircraft cabin interiors. Thus the relatively slow pace of TeX's evolution might be a result of its place in the computer infrastructure: it provides the foundation for exchange of information.

This, of course, does not mean that TeX is not going to change: it *is* changing now and will continue to change in the future. To continue the analogy with network protocols, neither HTTP nor IP stayed still in recent years. Among the changes were the addition of security layers, transition to IPv6 with a huge number of new addresses, extensions for space-based communications, etc. This is definitely not your parents' Internet Protocol any more!

Similarly TeX today is definitely not the 7-bit TeX of 1980s. The new engines with native Unicode support transformed the way we deal with multiple languages. They provide new primitives allowing new possibilities for TeX programmers. New(er) macro systems like the (continuously developed) ConTeXt and LaTeX3 give much needed flexibility to document designers and package writers. Graphics packages like PSTricks and TikZ provide ways to flexibly incorporate non-textual information into TeX documents. The "bridge" from the beginning of this essay is being constantly overhauled and improved.

A living architectural or engineering structure like a historic bridge or building provides an interesting challenge to the community. Its beauty and design must be preserved, but it must also provide for the changed needs of the users. Thus it must be updated—but carefully and deliberately.

Similarly we at TUG—and the general TeX users community—have the dual duty to preserve the integrity of TeX—and to steer its development to the ever changing needs of the typesetting community. This issue of *TUGboat* can be viewed as a report of our continuing efforts to perform this duty. The upcoming 2019 edition of the TeX Collection, with TeX Live, MacTeX, MiKTeX, and CTAN, is another artifact of these efforts.

I feel that all of us: developers, programmers, users, are participating in the maintaining and improvement of a beautiful important edifice slated to endure. TeX, created by Don Knuth, is now a community-based project. Let us make it shine!

Happy TeXing!

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[1] www.faa.gov/nextgen/programs/adsb
[2] twitter.com/straightedge/status/1118834149165428736

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