Editorial Comments

Barbara Beeton

A historical perspective

Owing to circumstances beyond anyone's control, the planned topical issue on "TEX in the humanities" has not materialized. Instead, we bring you the transcripts of two question and answer sessions with Don Knuth — one in Prague following the awarding of (yet another) honorary doctorate by the Faculty of Informatics of Masaryk University in Brno, Czech Republic, and the second following a talk in celebration of the 50th anniversary of CWI (the Centrum voor Wiskunde en Informatica) in Amsterdam.

Every time I attend a DEK Q&A, or read the transcript after the fact, I learn more about what made this system on which my livelihood depends the special thing it is. Sometimes the message is that, in hindsight, another approach might have been preferable, but more often, it seems that the path taken was prescient, and the techniques have — so far — withstood the test of time. There are also some delightful sidelights, such as the identity of the model for the TEX lion, or why a lion represents TEX (for the latter, you'll have to go all the way back to the "coming out party" for Knuth's *Computers & Typesetting* series in 1986, but maybe I'll be kind and give the answer before signing off).

The Kyoto Prize for Knuth

As announced last June by Dr. Kazuo Inamori, founder and president of the Inamori Foundation, Donald Knuth was one of three scientists awarded the 1996 Kyoto Prize, Japan's equivalent of the Nobel Prize and the country's highest award for lifetime achievement. The award comprises a diploma, a gold medal, and a cash gift of 50 million yen; it was reported that the Knuths had decided to donate the money to charity.

The Kyoto prize is awarded each year in three categories: advanced technology, basic sciences, and creative arts. Knuth won in advanced technology.

In addition to *The Art of Computer Programming*, "the Bible and Encyclopedia for Computer Science", Knuth is widely known for TEX and METAFONT. According to *Stanford Today*, "These programs have been called the single most important achievement in publishing since the invention of the printing press. Rather than copyrighting and licensing the programs, Knuth put them in the public domain."

The formal presentation of the prize took place November 9–12 in Kyoto, Japan.

Recommended reading

Anticipating that this issue was to be a topical one, compiled by guest editors, I spent some spare time reading. One book that I found very interesting (although a bit hard going in places, as it does not "tell a story") is *Why Things Bite Back* by Edward Tenner. This is a compendium of connections between cause and (often unanticipated) effect, in many areas of technology. The computer is not spared, nor is the "do-it-yourself" approach that has displaced many skilled clerical and technical workers.

Let the author speak for himself.[1]

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We have all seen the sign "The Difficult We Do Immediately; the Impossible Takes Time." Computerization turns this manifesto on its ancient head. Software can devour highly complex tasks with ease if they fit well into its existing categories. But even a simple change illustrates the revenge effect of recomplicating. The scientific typesetting program TeX, developed by the computer scientist Donald S. [*sic*] Knuth and now the standard in many branches of physics and mathematics, makes short work of the most fearsomely complex equations that once cost publishers up to $60 per page to typeset. An author proficient in TeX — and I have had the good fortune to work with several of them — can prepare camera-ready copy that stands up to most commercially available systems. But making small changes, alterations that might require dropping in a metal slug or pasting in a new line in traditional systems, can sometimes take costly programmers' time. A hairline rule can take more time and money than pages of author-formatted proofs brimming with integration signs, sigmas, deltas, and epsilons.

Minor incompatibilities between authors' TeX programs and publishers' typesetting equipment can delay book-length manuscripts for weeks and run up costs well beyond those of conventional typesetting. Worse still from the publisher's point of view, some inexperienced and unskilled TeX-using authors — including distinguished scientists — blame the publisher and typesetter when their work is held up.

As editors of conventional manuscripts, my colleagues and I could identify problems early and request changes before texts went into production. Even experienced electronic manuscript specialists cannot evaluate a TeX manuscript reliably just by looking at the author's laser-printed version. Messy or nonstandard coding may fail to reproduce the same beautiful output when fed into professional typesetting equipment. Consequently, there are real hidden productivity costs associated with an "inexpensive" TeX manuscript; it may require open-heart surgery rather than a haircut. Publishers and typesetters discovering such insurmountable glitches have been known quietly to set the author's electronic manuscript aside and dispatch the hard copy to Asian compositors for conventional keyboarding. This may be speedier than waiting for the author to learn the fine points of TeX, but it inevitably delays production, embarrasses author and publisher alike, and introduces new errors. What computerization offers — or simplifies — with its right hand it can withdraw — or recomplicate — with its left.

TeX demonstrates the additional burdens of vigilance that advanced technology imposes. It may slash production times and costs for a scientific or engineering publisher, but only if either (1) the whole burden of typesetting is shifted to the author, who then has to be knowledgeable and vigilant about levels of detail that copy editors and typesetters otherwise would supervise, or (2) the author's editor is prepared to spend hours learning the fine points of TeX, adding technical support to his or her job description.

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Other staples of the modern computer environment come in for similar scrutiny — icons, Windows, ill-advised use of color, replacement of expensive mainframe hardware by low-cost (but high-upkeep) networked workstations and microcomputers, ...

There's much food for thought in this book, and I recommend it to anyone who wonders where is all that spare time that was promised to us by the proponents of modern technology.

Answer to the question

And why does a lion represent TEX? Here are Don's comments on the subject to the guests at the grand bash held at the Computer Museum in Boston in honor of the publication of the *Computers & Typesetting* series, on May 21, 1986.[2]

> One final note: People often ask me why TEX and METAFONT are symbolized in these books by a lion and a lioness. When Duane Bibby first came up with the lion idea, I instinctively felt that it was right, but I never understood exactly why this was, until about

[1] *Why Things Bite Back: Technology and the Revenge of Unintended Consequences*, by Edward Tenner. New York: Alfred A. Knopf, 1996, ISBN 0-679-42563-2; pp. 192-193, quoted with permission.

[2] For the complete text of all the remarks at that fest, see *TUGboat* **2** #2 (1986), pp. 93–98.

a month ago when I was in the Boston Public Library. I passed by the magnificent stone lions on the library's grand staircase, and I thought: "That's it! TEX and METAFONT try to be like these lions, fixtures that support a great library.[3] I love books, and lions represent books!" No wonder I'm so happy when I realize that TEX and METAFONT have already contributed to the making of several dozen books of fine quality; it makes me extremely pleased to think that this research will probably contribute to the making of many more fine books in years to come.

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[3] (Editor's note.) One is also reminded of the lions that grandly guard the entrance to the New York Public Library, which celebrated its 75th anniversary during [that] same week.