Additional references and notes for TEX: A branch in desktop publishing evolution, Part 1

In the following, the number at the beginning of a note is a page number; words or a topic from that printed text page then appear indicating the position on the page to which the note or reference relates; then comes the note or reference itself.

78   RUNOFF   J. H. Saltzer, TYPSET and RUNOFF, Memorandum editor and type-out commands, MIT Project MAC, MAC-M-193, November 6, 1964, `web.mit.edu/Saltzer/www/publications/CC-244.html`

79   close brace   One use of braces in TEX is to indicate scope in the programming language sense.

81   TAOCP   Knuth's TAOCP website, `cs.stanford.edu/~uno/taocp.html`

81   Monotype   Fred Williams, The Monotype Story, spring 1984, `tinyurl.com/williams-monotype`

81   "genesis of TEX"   The Errors of TEX, chapter 10 of Knuth's *Literate Programming* CSLI Publications, Stanford, CA, 1992, `tug.org/texlive/devsrc/Master/texmf-dist/doc/generic/knuth`

81   "breaking paragraphs into lines"   TUG Interview Corner, interview of Michael Plass, 2009-12-20, `tug.org/interviews/plass.html`

81   "May 13 memo sketched the system's design"   `TEXDR.AFT`, Chapter 24 of *Digital Typography* (see note above); or click on "[1,DEK]" at `saildart.org/DEK`

81   "prototype implementation of TEX"   TUG Interview Corner, interview of Franklin Liang, 2009-12-20, `tug.org/interviews/liang.html`

81   "Plass remembers"   Plass interview (see note above).

81   "Knuth's work with TEX"   TEX originally meant "technical text": Donald E. Knuth, *TAU EPSILON CHI: A System for Technical Text*, Stanford Computer Science Department Report No. STAN-CS-78-675, September 1978. Later TEX became Tau Epsilon Chi with the logo TEX, as TEX is an abbreviation of $\tau\epsilon\chi$, Greek for both "art" and "craft".

81   "forty-year story"   Steve Ditlea, Rewriting the Bible in 0's and 1's, *MIT Technology Review*, September 1, 1999, `tinyurl.com/bible0s1s`

81   "invented for the job"   Chapter 7, How to Read a `WEB`, of Knuth's *Literate Programming*, CSLI Publications, Stanford, CA, 1992.

81   "With `WEB`, Knuth combined capabilities"   For more on `WEB`, see, for example, a description by Knuth at `literateprogramming.com/knuthweb.pdf`; and a significant-sized program in `WEB`, also by Knuth, but not related to TEX, at `literateprogramming.com/adventure.pdf`

81   "Liang's thesis research was completed"   Franklin Mark Liang, Word Hy-phen-a-tion by Com-put-er, Stanford University PhD thesis, August 1983, `tug.org/docs/liang/`

82   "TEX's automatic line-breaking algorithm"   This algorithm is described in a classic paper by Plass and Knuth: Donald E. Knuth and Michael F. Plass, Breaking Paragraphs into Lines. The paper was originally published in 1981 in *Software—Practice and Experience*. It is reprinted in Knuth's *Digital Typography*, pp. 67–155. It also was part of Plass's 1981 PhD thesis: Michael F. Plass, Optimal Pagination Techniques for Automatic Typesetting Systems, Stanford University PhD thesis, June 1981, `tug.org/docs/plass/plass-thesis.pdf`

82   "reported to the TEX community"   `tug.org/TUGboat/Contents/listauthor.html#Fuchs,David`

82   Zabala's Pascal implementation   `tug.org/TUGboat/Contents/listauthor.html#Zabala,Ignacio`

82   "people at Stanford who helped Knuth"   To the above list of students who helped Knuth, one can also add faculty member

emeritus Arthur Samuel who also found ways to support Knuth in his TeX efforts, as Knuth recounted in 1990 (Arthur Lee Samuel, 1901–1990, *TUGboat*, vol. 11, no. 4, 1990, pp. 497–498, `tug.org/TUGboat/tb11-4/tb30knut-samuel.pdf`). For instance, see Samuel's introduction to TeX: `i.stanford.edu/pub/cstr/reports/cs/tr/83/985/CS-TR-83-985.pdf`; for *TUGboat* writings by Samuel, see `tug.org/TUGboat/Contents/listauthor.html#Samuel,Arthur`

82   **"May 2017 desktop publishing pioneers meeting"**   ********We need to include the URL of the transcript of the video when the transcript is available.***** Last DTP meeting video, minutes 26 to 38.

82   **System Development Foundation**   `oac.cdlib.org/findaid/ark:/13030/tf429003m4/`

83   **"deflect requires for new features"**   Email exchange with Guy Steele, June 2017.

83   **.SAI files**   Click on "[TEX,DEK]" at `saildart.org/DEK`

83   **"Guy Steele. . . began porting TeX"**   Email exchange with Guy Steele, June 2017.

83   **Steele port to MIT**   In addition to our 2017 email exchange (see note above), Guy Steele provided us with copies of his SAIL emails from July 28 to September 8, 1978, and his MIT emails from September 2 to October 28.

83   **Ports to PDP-10s**   Other ports of TeX to PDP-10s are noted in Nelson H. F. Beebe, The design of TeX and Metafont: A retrospective, presented at the Practical TeX conference of 2005, `tug.org/tugboat/tb26-1/beebe.pdf`

84   **"TEXDVI, being an optional replacement for"**   TUG Interview Corner, Interview of David Fuchs, `tug.org/interviews/fuchs.html`

84   **"could be written using DVI output"**   David Fuchs, The Format of TeX's DVI Files, *TUGboat*, vol. 1, no. 1, pp. 17–19, `tug.org/TUGboat/tb01-1/tb01fuchs.pdf`

84   **"regardless of form of floating point arithmetic"**   Nelson H. F. Beebe, Extending TeX and Metafont with floating-point arithmetic, *TUGboat*, vol. 28 (2007), no. 3, pp. 319–328, `tug.org/TUGboat/tb28-3/tb90beebe.pdf`

84   **"based on user experience with TeX"**   Metafont went straight from SAIL to `WEB`.

84   **"Rather than talk about"**   Richard Palais email, 2017-11-30.

84   **"sketched his work with TeX"**   `webofstories.com/play/donald.knuth/61`

85   **Joy of TeX**   Michael Spivak, *The Joy of TeX*, American Mathematical Society, Providence, RI, 1986.

85   **Michael Spivak**   In addition to his AMSTeX work, Spivak early on also designed the MathTime professional fonts, based on and for use with the Times font or to replace the Computer Modern math fonts; these were made available via the PCTeX company.

85   **"Gordon Bell remembers"**   Email of 2017-08-03.

85   **"AMS commissioned Hermann Zapf"**   Zapf mentions this in his own life story: `linotype.com/1494/the-lifestory-of-hermann-zapf.html`

85   **"goal of being more like how mathematicians handwrite"**   *Digital Typography* (see note above), chapter 17—a reprint of a paper co-authored by Knuth and Zapf; see also `tug.org/TUGboat/tb22-1-2/tb70zapf.pdf`

85   **"first meeting of the TeX Users Group"**   Palais interview, `tug.org/interviews/palais.html`; Beeton interview, `tug.org/interviews/beeton.html`; Fuchs interview, `tug.org/interviews/fuchs.html`

85   **"first issue (October 1980) of *TUGboat*"**   `tug.org/TUGboat/Contents/contents1-1.html`

86   **"getting TeX running on many different computers"**   See the categories Output Devices, Site Reports, and "small" TeX at `tug.org/TUGboat/Contents/listkeyword.html`

86 **"developments in the TEX world would be permanently documented"**   *TUGboat* was originally subtitled *The TEX Users Group Newsletter*; as of 1988 its subtitle became *The Communications of the TEX Users Group*.

86 **"*TUGboat* has served the typical role"**   In parallel with *TUGboat*, TUG published 13 issues of *TEX and TUG News* from 1991–1995 and 20 issues of *The PracTEX Journal* between 2005 and 2012. The news function of the former was merged into *TUGboat*; the latter's goal was to publish only practical articles, where *TUGboat* has a spectrum of articles.

86 **"typography practitioners have said"**   For example, Charles Bigelow said this: Note on Typeface Protection, *TUGboat*, vol. 7, no. 3, 1986, pp. 146–151, `tug.org/TUGboat/tb07-3/tb16bigelow.pdf`

87 **"began to produce machine-drawn letters"**   Pages 64–72 of Donald E. Knuth, *Companion to the Papers of Donald Knuth*, Center for the Study of Language and Information, Stanford, CA, 2012.

88 METAFONT **implementation collaborators**   Tomas Rokicki was another implementation contributor to the Metafont project. While at Texas A&M, Tomas Rokicki created the initial version of what became the Web2C system that is used today to compile TEX. Rokicki started working for the TEX project in the summer of 1985, before his first term as a PhD student at Stanford. There he designed and implemented the PK font format and tools, a more compact form for the bitmaps output by Metafont.

88 **"part of his 1985 thesis"**   John Douglas Hobby, Digitized Brush Trajectories, Stanford dissertation, August, 1985, `ect.bell-labs.com/who/hobby/thesis.pdf`

88 **"Hobby mostly designed the algorithms and Knuth wrote all the code"**   TUG Interview Corner, Interview of John Hobby, `tug.org/interviews/hobby.html`

88 **"fonts were improved again"**   As described in this and the next subsection, Knuth redid his font design software and improved his set of fonts several times: the first version of the fonts was called Almost Modern; a second, never released, version was called Better Modern.

89 **"a program of some 23,000 lines"**   The book *Metafont: The Program* shows the Metafont implementation as an approximately 560-page WEB code listing (intermingled Pascal code and documentation). This results from the `mf.web` source file written by Knuth, which is slightly more than 23,000 lines; `mf.web` gets compiled (by the `tangle` program) into super-dense Pascal code (only suitable for computer processing). Translating that Pascal code into C (as is done in the major TEX distributions nowadays, C compilers being much more widely available than Pascal compilers), results in, coincidentally enough, about 23,000 lines of code, more or less as a human programmer might write them (except without any comments). So 23,000 lines is a plausible measure of the size of Metafont either way. Although there are many more refined metrics to measure program complexity, we chose to mention this one for simplicity. (By the way, TEX is very nearly the same size.)

89 **"wider audience and to encourage support"**   Jonathan Seybold email of 2017-09-03.

89 **"thought it deserved wider attention"**   Barbara Beeton was also at Stanford in March 1980 (the visit timed so she could also attend the Seybold-organized seminar) "to learn how to program Metafont and to create a prototype Cyrillic font for use in *Math Reviews*." The Seybold-organized meeting was also where she first met Bigelow.

89 **"thought it deserved wider attention"**   Bigelow notes (email of 2017-08-31), "The commercial typesetting systems guys [at the seminar] all said that TEX was too complicated and slow to be commercially acceptable. Of course, they are all gone now."

89 **"from Charles Bigelow as informal email text"**   Emails of June 6 and August 31, 2017. A parallel version of the story is in his interview in *TUGboat*, `tug.org/TUGboat/tb34-2/tb107bigelow-wang.pdf`

89 **"a notable example being grammatology"**   Which was based on an older notion of the study of letters, from the book *A Study of Writing: An introduction to the study of grammatology* by I.J. Gelb.

89 **"'Concepts of Text' course"**   The syllabus for that course is available in the Stanford archives.

90 **"METAFONT for lunch bunch"**   Before Bigelow got to Stanford, Knuth had a TEX-for-lunch bunch.

90 **Bernshteĭn polynomials**   `en.wikipedia.org/wiki/Bernstein_polynomial`

90 **Lynn Ruggles**   In 1983, Lynn Ruggles, a graduate student at Stanford, compiled a catalog of different approaches to digital type tools: "Letterform Design Systems", Stanford Technical Report No. STAN-CS-83-971, `i.stanford.edu/`

pub/cstr/reports/cs/tr/83/971/CS-TR-83-971.pdf

90 **Southall also influenced Knuth** `tug.org/TUGboat/tb36-2/tb113southall.pdf`, `i.stanford.edu/pub/cstr/reports/cs/tr/85/1074/CS-TR-85-1074.pdf`

90 **"first academic conference"** `visiblelanguagejournal.com/issue/73`

90 **"first academic conference"** At the time, Bigelow was leading the committee on letterform education and research of ATypI (Association Typographique Internationale).

90 **"number of interesting reports came out"** Pijush K. Ghosh on Indian scripts, `i.stanford.edu/pub/cstr/reports/cs/tr/83/965/CS-TR-83-965.pdf`; John Hobby and Gu Guoan on a Chinese Meta-Font, `i.stanford.edu/pub/cstr/reports/cs/tr/83/974/CS-TR-83-974.pdf`; A formal approach to letter form design by Ghosh and Bigelow `i.stanford.edu/pub/cstr/reports/cs/tr/83/966/CS-TR-83-966.pdf`; *The Euler Project at Stanford*, a monograph by David R. Siegel, 1985.

90 **"commission to design the Euler typeface"** Stanford library guide to the Euler project archive, `pdf.oac.cdlib.org/pdf/stanford/uarc/sc0362.pdf`

91 **"Knuth remembers that the digital typography program"** A summary of the TEX project, video #70. [3]

91 **"the METAFONT class which Knuth"** Donald E. Knuth, A Course in METAFONT Programming, *TUGboat*, vol. 5 (1984), no. 2, pp. 105–118, `tug.org/TUGboat/tb05-2/tb10knut.pdf`

91 **"he considered his work done"** Donald Knuth, Remarks to Celebrate the Publication of *Computers & Typesetting*, *TUGboat*, vol. 7 (1986), no. 2, pp. 95–98, `tug.org/TUGboat/tb07-2/tb15knut.pdf`

91 **"allow arbitrary 8-bit characters"** Donald E. Knuth, The New Versions of TEX and METAFONT, *TUGboat*, vol. 10 (1990), no. 3, pp. 325-328, `tug.org/TUGboat/tb10-3/tb25knut.pdf`

92 **"review bug reports accumulated in the interim"** See "Errata" at `www-cs-faculty.stanford.edu/~knuth/abcde.html`.

92 **"most recent two TEX tuneups"** Knuth's so-called "tune-up" reports for his two most recent reviews are readily available: Donald Knuth, The TEX tuneup of 2008, *TUGboat*, vol. 29 (2008), no. 1, pp. 233–238, `tug.org/TUGboat/tb29-2/tb92knut.pdf`; Donald Knuth, The TEX tuneup of 2014, *TUGboat*, vol. 35 (2014), no. 1, pp. 5–8, `tug.org/TUGboat/tb35-1/tb109knut.pdf`. They too are worth reading as an example of the care and careful explication Knuth puts into merely fixing a rare bug.