TEX: A portable typesetting language

Richard Ottolini and Chuck Sword

TEX (pronounced 'tek' for $\tau\epsilon\chi$, Greek for craft) is a language for typesetting text, equations, and illustrations. It was developed by Don Knuth, computer professor at Stanford and author of the famous *Art of Computer Programming* series. The main advantage of TEX is that it has been installed on many different kinds of computers, operating systems, and output devices.

Installation of TEX

To obtain TEX, first join the TEX User's Group (TUG). Apply to

```
TUG
c/o American Mathematical Society
P.O. Box 6248
Providence, RI 02940.
(401) 272-9500 x. 232
```

TUG provides information about users categorized by computer set-up, software sources, documentation, and user's meetings. You will be directed to one of the following site coordinators for the TEX code.

```
CDC Cyber
DEC 10
DEC 20
IBM 370
UNIVAC 1100
VAX UNIX
VAX VMS
```

TEX is written in PASCAL, for which most computers have compilers. TEX was installed on our computer in a day without much difficulty. The cost of TEX is $50–$200 dollars, which pays for administration costs. Stanford does not yet charge royalties.

Knuth intends that TEX be a public domain code to provide a vehicle for advanced typesetting research. Several computer companies plan to support TEX, and will of course, sell this service. TEX modifications are still under the strict control of Knuth. No one will be allowed to call a code TEX unless it passes a rigorous test.

Comparison of TEX with *Troff*

We have been using the UNIX *Troff* (typesetter run-off) utility for several years to prepare SEP documents. Our preliminary observations of the two typesetting systems are:

- *Troff* is a little easier to use, especially when formatting tables.
- TEX is more flexible. It is more intelligent concerning fonts, text formatting, and equations.
- The philosophy behind *Troff* is to provide specialist programs for formatting equations, tables, and graphics. TEX integrates everything into one package. *Troff*'s approach results in special formatting syntaxes for special cases. On the other hand, TEX tends to be more consistent and flexible.
- *Troff* has been around longer. The fonts, manuscript packages, and documentation are in better shape. However, TEX is gaining fast.
- Since TEX is newer it has made improvements over *Troff* and is still being improved. *Troff* is not developing very much these days.
- TEX is *portable* and running on many different computer set-ups. *Troff* runs primarily under UNIX or UNIX clones.
- TEX is part of a larger typesetting research project. Associated code includes *METAFONT*, a mathematical method of generating typefonts (see August 1983 Scientific American) and *WEB*, an excellent automatic documentation utility.

TEX software for *Geophysics* and SEP article formats

The usability of TEX is highly dependent on formatting software specialized for user's needs. We have created a package of special TEX macros (i.e. commands) for formatting *Geophysics* papers. The TEX documents in this SEP report were created using this macro package. This package is available for distribution, though a better package will come out later built upon soon to be released general manuscript packages.