USING A COMPUTER TEXT PROCESSOR FOR DIRECT TECHNICAL WRITING

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It has been possible for some time for journalists and others to write directly on-line using a main-frame computer, yet few technical writers have done so. With a little training, anyone who now writes at a typewriter, can write directly into computer storage so that their original keystrokes are captured. This approach allows the technical writer---or any other kind of writer--- to prepare typed manuscript which needs no retyping and which can even be used to make the reproducible original after final editing.

The author demonstrated the approach described herein at the regular meeting of the Rochester Chapter of STC on 26 February 1980. The meeting was recorded on video tape and reproduced in Minneappolis on 16 May 1980. A Xerox Sigma-9 main-frame computer was used with a software system known as TEXT (revision B) and a Telray 3841D terminal with telephone coupler. The video output of this terminal was connected to four large television monitors to permit the entire audience to see the same image on a large screen as on the author's terminal during the writing process. When the writing process was finished, a Xerox 1700 printing terminal was used to printout the final product. The audience selected the subject from a list of five different subjects. They voted to have the author write an instruction manual entitled, INSTRUCTION MANUAL FOR X-ACTO KNIFE NO. 1 WITH 5 EXTRA BLADES. Using the object itself, the author wrote and edited the complete manual in the presence of the Rochester Chapter members and video cameras.

Box 1 shows a printout of the first page of the manual written at the meeting, and box 2 shows a printout of the data as entered with line numbers which was used to print out some of the same page. By comparing the commands shown in box 2 with the results in box 1, one can see the results of each command, e.g., line 1.000 uses the command _tuc which causes all lines which follow to be centered (Also see box 3.). Line 3.000 shows a single line feed command. Line 7.000 shows a free format command; this allows print commands to format the text as desired, e.g., double-spaced justified was used to print box 1. Line 41.000 shows a command to maintain the lines which follow as single-space lines, and the command on line 49.000 delimits this command. Notice that line numbers are not continuous. Although they may be renumbered easily, the original numbers have been maintained to show where lines have been added and deleted.

Box 3 shows sample entries using TEXT and gives basic instructions for its use. Text offers many, many capabilities not shown here or demonstrated at the meeting. These include such features as (1) automatic pagination, running heads and foots, and indexing; (2) the capability of entering tabular data by either columns or rows; and (3) a wide variety of printout modes.

COMMENTARY

There are many text processing systems available today. It is not the author's intent to suggest that TEXT is superior to others, or that the use of a main-frame computer is superior to word processing systems, but rather to suggest that technical writers in the last score years of the twentieth century should be

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Box one

INSTRUCTION MANUAL FOR

X-ACTO KNIFE NO. 1 WITH 5 EXTRA BLADES

INTRODUCTION

The X-Acto knife no. 1 with assorted blades is a convenient device for the technical writer, editor, and illustrator as well as the general user. Kit no. 5211 is a complete set with handle and an assortment of blades. The no. 1 X-Acto knife is used for cutting original illustrations, making insertions on reproduction copy sheets, and general office use. In addition, it can be used for hundreds of other purposes.

EQUIPMENT DESCRIPTION

The X-Acto knife set no. 1 includes the knife assembly, and six blades. One blade is installed at the factory in the handle assembly, and the five other blades are in a separate container. The set includes three no. 11 blades, two no. 16 blades, and one no. 17 blade.

UNPACKING INSTRUCTIONS

The X-Acto knife set comes in a plastic bubble pack. Break open the plastic cover and remove the knife CAREFULLY.

WARNING: Use care in removing the knife assembly. The blade is extremely sharp.

The container for the five additional blades is also included in the same plastic bubble pack. Examine the knife handle assembly and blades to insure that they conform with specifications.

THEORY OF OPERATION

Like all knives, the X-Acto knife depends upon two physical principles. First, pressure applied to the handle is applied to an extremely small surface area thus concentrating the applied force. Typically, the pressure exerted by the index finger on the handle of the X-Acto knife may cover a surface area of 300 square millimeters, while the working surface of the blade may be only 1 square millimeter. Thus, a mechanical advantage of 300 is often obtained. Second, a knife blade functions as a simple machine, the inclined plane, to increase mechanical advantage further. The X-Acto knife blade has an included angle of approximately 18 degrees, and therefore has the effect of increasing the mechanical advantage threefold (MA = $1/\sin 18^{\circ}$ = 3.2).

OPERATION

Removal of Blade

1. Hold the handle of the X-acto knife no. 1 so that the knurled ferrule is between the thumb and index finger of one hand, and the handle is secutely held in the other.

2. Rotate the handle counterclockwise with respect to the ferrule.

3. When the threads of the collet have been partically disengaged, pull the ferrule toward the handle to release pressure on the collet.

4. Pull the blade out of the collet carefully.

Installation of Blade

1. Insert blade in the slot of the collet of the knife assembly.

2. Hold the handle so that the knurled ferrule is between the thumb and the index finger of one hand, and the handle is securely

Box two

```
_tuc                                                                    1.000
INSTRUCTION MANUAL FOR                                                  2.000
X-ACTO  KNIFE NO. 1 WITH 5 EXTRA BLADES                                 3.000
_T+1                                                                    4.000
_tu                                                                     5.000
INTRODUCTION                                                            6.000
_tf                                                                     7.000
   The X-Acto knife no. 1 with assorted                                 8.000
blades is a convenient device for                                       9.000
the technical writer, editor, and                                      11.000
illustrator                                                            12.000
as well as the general user.                                           12.500
Kit no. 5211 is a complete set                                         13.000
with handle and an assortment of blades.                               15.000
The no. 1 X-Acto knife is used for                                     16.000
cutting original illustrations,                                        18.000
making insertions on repro- duction                                    21.000
copy sheets, and general office use.                                   22.000
In addition, it can be used for                                        23.000
hundreds of other purposes.                                            24.000
_t+1                                                                   25.000
_tu                                                                    25.500
EQUIPMENT DESCRIPTION                                                  26.000
_tf                                                                    27.000
   The X-Acto knife set no. 1                                          28.000
includes the knife assembly,                                           29.000
and six blades.                                                        30.000
One blade is installed at the factory in the handle assembly,          30.200
and the five other blades are in a separate container.                 30.400
The set includes three no. 11 blades,                                  31.000
two no. 16 blades, and one no. 17 blade.                               32.000
_t+1                                                                   33.000
_tu                                                                    33.500
UNPACKING INSTRUCTIONS                                                 34.000
_tf                                                                    35.000
   The X-Acto knife set comes in a                                     36.000
plastic bubble pack.                                                   37.000
Break open the plastic cover and                                       38.000
remove the knife CAREFULLY.                                            40.000
_t(s                                                                   41.000
WARNING: Use care in removing                                          46.000
the knife assembly.                                                    47.000
The blade is extremely sharp.                                          48.000
_t+1                                                                   48.500
_t)                                                                    49.000
The container for the five additional blades                           50.000
is also included in the same plastic bubble pack.                      51.000
Examine the knife handle assembly and blades                           52.000
to insure that they conform with specifications.                       53.000
_t+99                                                                  55.000
_tu                                                                    55.500
THEORY OF OPERATION                                                    56.000
_tf                                                                    57.000
   Like all knives, the X-Acto knife depends upon two physical principles.  58.000
First, pressure applied to the handle is applied to an extremely small surface area  59.000
thus concentrating the applied force.                                  60.000
Typically, the pressure exerted by the index finger on the handle      61.000
of the X-Acto knife may cover a surface area of 300 square millimeters,  62.000
while the working surface of the blade may be only 1 square millimeter.  63.000
Thus, a mechanical advantage of 300 is often obtained.                 64.000
Second, a knife blade functions as a simple machine, the inclined plane,  65.000
to increase mechanical advantage further.                              66.000
The X-Acto knife blade has an included angle of approximately 18 degrees,  67.000
and therefore has the effect of increasing the mechanical advantage threefold  68.000
(MA = 1/sin/18   = 3.2).                                               69.000
_tu                                                                    70.500
```

Box three

```
!TEXT    <<< Selects TEXT processor>
TEXT -- VERSION B00, 3/29/76
I400J8H9MALM SIGNED-ON 20:03 FEB 26, '80

WIDTH  40   DEPTH  54   CONTINUOUS-FORM DEPTH  54
----t----t----t-----------------------------------------------------------------t
    t    t    t                <<< Shows tab positions >>>                      t

UNFORMATTED MODE
NEXT LINE NUMBER     1.000      <<< Ready to accept text input.>

tuc      <<< Centering command>
UNFORMATTED MODE
Plege of Allegiance to the Flag
tf       <<< Allows format manipulation>
FORMATTED MODE
t+1      <<< Skips one (or more) lines>
   I plege allegiance to the flag of the United States of America,
and to the repbulic for which it stands, one nation,                 <<< Text entered.>
with liverty and justice for all.
t+99     <<< Ends page.>
```

```
pan      <<< Orders printing as typed with line numbers.>
SIGNAL WHEN READY
_tuc                                                                    1.000
Plege of Allegiance to the Flag                                         2.000
_tf                                                                     3.000
_t+1                                                                    4.000
   I plege allegiance to the flag of the United States of America       5.000
and to the republic for which it stands, one nation,                    6.000
with liverty and justice for all.                                       7.000
_t+99                                                                   8.000
```

```
fad;lege;ledge      <<<Find all, display with lege; replaced by ledge.>

PHRASE FOUND AND REPLACED ON LINES(S):
Pledge of Allegiance to the Flag      2.000
   I pledge allegiance to the flag of the United States of America,          5.000
CLP AT LINE   5.000
```

```
8;liverty;liberty
with liberty and justice for all.  <<<Correct typing error.>
NEXT LINE NUMBER    9.000
```

```
under God,        <<<Enter new words and then move (m) to position after line 6.>
m6;9
AFTER-- one nation,   --MOVE-- under God,   ?y
NEXT LINE NUMBER   9.000
```

```
pan6-7          <<<Check moved lines by printing out with line numbers.>
SIGNAL WHEN READY
and to the republic for which it stands, one nation,                    6.000
under God,                                                              6.500
with liberty and justice for all.                                       7.000
```

```
p     <<<Print with ragged right.>
SIGNAL WHEN READY
     Pledge of Allegiance to the Flag

   I pledge allegiance to the flag of
the United States of America, and to the
republic for which it stands, one
nation, under God, with liberty and
justice for all.
```

```
pj   <<<Print justified.>
SIGNAL WHEN READY
    Pledge of Allegiance to the Flag

    I  pledge  allegiance to the flag of
the United States of America, and to the
republic  for  which  it  stands,  one
nation, under  God,  with  liberty  and
justice for all.
```

taking advantage of the use of text processing systems for direct technical writing. It is not the author's purpose here to discuss economic viability, but rather to suggest the feasability of this approach. The advantages of direct on-line keystroking by technical writers include:

1. The ability to create original writing with a wide range of commands which permit manipulation of words, sentences and paragraphs at will in the self-editing process which writers use,

2. The capturing of the writer's keystrokes which reduces word processing time since the text only needs changing, not original typing,

3. The turn-around time to obtain typed text is vastly reduced,

4. The convenience of having working text easily available for changing, examining or excerpting, and

5. The ability to make general changes, e.g., changing nomenclature of equipment throughout an entire document with a single instruction.

Of course there are times when technical writers should not spend their time entering corrections. If the writer has entered his material on line and assigned it a file name, a word processing person can enter changes. Also, a word processing person can enter previously written text for the writer, produce printouts for review, and subsequently enter changes. And, word processing persons can enter text from writers' dictation. But, when dictation is inappropriate, I believe that the maximum efficiency of writing can be achieved when the original writer has the skill and equipment to enter original text and to make changes to the text directly himself. In addition to saving re-typing time when the writer has typed his manuscript, there is also improved quality because, with the self-editing process, the writer is free to move segments of his work about and to try various rephrasings of the same sentence until he has written the one he wants. There is also the question of minor changes to existing text; it is a common problem among technical writers to have to complete a form for getting a correction made which exceeds the magnitude of the change. When a given document is nearly ready--indeed thought to be ready--and a single letter error is found, it is often a time-consuming process to get the single letter corrected. Often the correction is made by one of several manual methods (white-out, splice, patching, etc.) and the original in electronic storage remains unchanged. This can be the source of errors once corrected appearing a second time to haunt the publishers.