

POLONAISE

Frederic Chopin

Op. 26, Nr. 1

Allegro appassionato

Cantata # 80 "Ein Feste Burg"

Nr. 8. Chorale.

J. S. Bach

Das Wort sie sollen las-sen stahn und kein Dank da zu ha - ben
Er ist bei uns wohl auf dem Plan mit sei- nem Geist und Ga - ben

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8th flag
stem
(stem)
head

head
stem
(stem)
8th flag

8th flag
16th flag
stem
head

head
stem
(stem)
16th flag

8th flag
32nd flag
stem
head

head
stem
32nd flag
16th flag

COMMA
semi-colon

ESC-up
ESC-down

ESC-down

ESC-left
ESC-right

ESC-right

ESC-left
shift +

shift +

shift *

- @ - @ → @ 7 x 7 @ 7 z

7 ? 7 1 7 :

z
i
& ()
%
< >

T U
X Y
Z dash

-	underline	staff lines
+	q, g, G or k	bar line
÷	ESC-ESC ESC-clean	dot or staccato
∨	ESC-TAB shift =	tie or slur
⋮	period	repeat sign
⊙	COMMA period	fermata

i	i	i	i	i	i
M f	N f	I b	M f	I b	S M

			o	e	d	e	o	
hij	lmno	pqrs	a	b	c	d	e	f
HIJK	LMNO	PQRS	A	B	C	D	E	F
abcd	ef tu	vwxy	a	b	c	d	e	f

GUIDE TO MUS.FNT SYMBOLS

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John Kelleher
San Diego, California

MANUS

A system for creating, editing, saving, and printing out music manuscript

for Atari computers with 48K RAM

The MANUS editor program,
the character set MUS.FNT
and all ancillary programs and materials are

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In order to print out MANUS files, including the GUIDE TO MUS.FNT SYMBOLS saved as the file "GUIDE.MSF" on the MANUS disk, you may have to create a driver program for your printer, which must then be saved to the MANUS disk as the file "DRIVER.OPT". The current DRIVER.OPT program works for the author's Panasonic KX-P1091 printer. See Appendix III, "Creating a Printer Driver", page 22.

STEP 1:

If you (now) have the correct "DRIVER.OPT" file installed on your disk, your first step should be to load in and print out the GUIDE TO MUS.FNT SYMBOLS saved as the file "GUIDE.MSF" on the MANUS disk. See Appendix I, page 20, "Printing out the GUIDE TO MUS.FNT SYMBOLS", for instructions. There is nothing glamorous about producing musical symbols with MANUS. You must look up the symbol on the "GUIDE", see which keystroke(s) will produce the symbol, then put the cursor where you want the symbol, and type.

STEP 2:

If you want to learn MANUS systematically:

- a. Learn MUS.FNT. See Appendix V, p. 26, and p.5. Type every symbol on the GUIDE TO MUS.FNT SYMBOLS.
- b. Go through this manual page by page and try out every command.
- c. Load the file EXAMPLE1.MSF from the MANUS disk and study and type over the notes.
- d. Try a complex project of your own.

If you just want to start fooling around:

Consult the Table of Contents if you get stuck.

"Manus" (MAH-noose) is Latin for "hand" (as in "manuscript"). MANUS is just a text editor, with some special adaptations for music. It does not understand anything about music or what you are doing (any more than your word processor understands the Gettysburg Address), nor will it play any music.

THE BAD NEWS:

1. There are no sixty-fourth notes or rests.
2. Chords, though readable, don't look very nice.
3. Slurs, dynamic markings, and ties are minimal or non-existent.
4. Some other special symbols are missing.

THE GOOD NEWS you can discover for yourself.

 Quick Reference Guide to MANUS commands

 Moving the SCREEN around the PAGE

RIGHT	C-S]	UP	CONTROL up-arrow
LEFT	C-S {	DOWN	CONTROL down-arrow
R - L	C-S ?	1 SCREEN UP	C-S up-arrow
		1 SCREEN DOWN	C-S down-arrow

 SCREEN controls

RIGHT	CONTROL ->	UP	CONTROL up-arrow
LEFT	CONTROL <-	DOWN	CONTROL down-arrow
RIGHT	TAB	B-M-T	C-S RETURN
L-M-R	C-S <		

Erase Page	SHIFT (or CONTROL) "Clear"
Insert one char.	CONTROL "Insert"
Delete one char.	CONTROL "Delete"
Insert line	SHIFT "Insert"
Delete line	SHIFT "Delete"

DEFINE RECTANGLE C-S "R"

PASTE	C-S "P"	:	
ERASE	C-S "E"	:	UNDO these 4: C-S "U"
INSERT	C-S "Insert"	:	
DELETE	C-S "Delete"	:	

Display SCREEN as Music	C-S "Q"
Display SCREEN as Text	C-S "9"
Load a Text Font	C-S "T"

LOAD PAGE C-S "4"
 SAVE PAGE C-S "5"
 PRINT PAGE C-S "6"

Keep Your Place C-S "inverse"
 Go To Your Place C-S "G"

STEMS/no stems when note heads typed	C-S "S"
FLAG notes	C-S "F"
NO (undo Stem or Flag)	C-S "N"
Do off-staff stems differently	C-S "space bar"

Disk Directory	C-S "D"
QUIT	C-S "Q"
Display Other PAGE	C-S "O"
Display Music PAGE	C-S "M"

 Inner Mysteries of the GUIDE TO MUS.FNT SYMBOLS

(This page is meant to be read with the "GUIDE" in hand. It points out things only implicit on the "GUIDE" page. There is a rough correspondence between where something is on the "GUIDE" page and its elucidation on this page.)

Most MUS.FNT notes are made from more than one symbol. An eighth note, for example, is constructed from an eighth flag, a stem, and a note head. Notes with stems going up are built up differently than notes whose stems go down.

(IN ALL CASES, INVERSE-"comma" MEANS CTRL-comma, ETC.):

ACCIDENTALS and the key(s) to press to make them. It matters whether the accidental is on a space or a line.	ACCIDENTALS not on the staff	RESTS RESTS not on the staff
---	---------------------------------	------------------------------------

TREBLE CLEF	BASS CLEF	C (VIOLA) CLEF
-------------	-----------	----------------

MISCELLANEOUS SYMBOLS

TRANSITION FLAGS (see p. 18)
 on-staff, then off-staff values given

KIND OF NOTE	and corresponding:	FLAGS	NOTE HEADS	STEM
stem up, on staff		It matters where the flag is within its group of notes	It matters whether a note head is on a space or through a line	
stem up, off staff				
stem down, on staff				
stem down, off staff				

 RECTANGLES and How to Define Them

A single character is a 1 x 1 rectangle.
 A PAGE line is an 80 column x 1 line rectangle.
 A bar line is a 1 column x 5 staff lines rectangle.
 A measure is a rectangle.
 Any rectangular area up to half a PAGE (80 columns x 48 lines) can be defined as a MANUS Rectangle.

 How to define a Rectangle using C-S "R"

(RETURN will abort at each stage).

1. Put cursor where upper left corner of the Rectangle should be and press C-S "R".
 EFFECTS:
 - a. A bell sounds.
 - b. Cursor stops blinking.
 - c. Only R-L controls now work:
 CONTROL ->, CONTROL <-
 C-S "]"
 C-S "["
 C-S "?" :Use these two in tandem to quickly
 C-S "<" :define 80 columns
 - d. Cursor will not move past defined left corner.
2. Put cursor where upper right corner of the Rectangle should be and press C-S "R" again.
 EFFECTS:
 - a. A bell sounds.
 - b. Cursor returns to upper left corner.
 - c. Only UP-DOWN controls now work:
 CONTROL down-arrow
 CONTROL up-arrow
3. Put cursor where lower left corner of the Rectangle should be and press C-S "R" one last time.
 RECTANGLE IS NOW DEFINED.

(1) (2)
 * *

*
 (3)

 To initiate any one of the following four Rectangle operations: Pasting, Erasing, Inserting, and Deleting, put the cursor where the UPPER LEFT CORNER of the Rectangle should be and then press the appropriate key.

 PASTING (C-S "P")

The contents of the currently defined Rectangle can be pasted anywhere on the PAGE.

Original PAGE:

```
AAAAA.....-----
BBBBB.....-----
.....-----
.....-----
```

SAMPLE RECTANGLE:

```
AAAAA
BBBBB
```

The Rectangle PASTED on a PAGE:

```
AAAAA..AAAAA-----
BBBBB..BBBBB----AAA
.....-----BBB
.....-----
```


 Once a Rectangle has been defined, its DIMENSIONS (not its contents) can be used to Erase, Insert and Delete areas on the PAGE.

ERASING (C-S "E")

Any area on the PAGE the size of the current rectangle can be erased.

Original PAGE with one Rectangle-sized area ERASED:

```
AAAAA.....-----  
BBBBB..-----  
.....-----  
.....-----
```

INSERTING (C-S "Insert" key)

Rectangle-sized blank spaces can be inserted and text pushed to the right.

Original PAGE with a Rectangle-sized blank INSERTED:
(Text pushed past right of PAGE is lost unless Undone)

```
AAAAA.....-----  
BBBBB..-----  
.....-----  
.....-----
```

DELETING (C-S "Delete" key)

Rectangle-sized areas can be deleted and text pulled to the left.

Original PAGE with a Rectangle-sized area DELETED:

```
AAAAA.....-----  
BBBBB..-----  
.....-----  
.....-----
```

Inserting or Deleting 80-column lines

a.
Shift "Insert" will insert one blank line, pushing the rest of the PAGE down one line.

Shift "Delete" will delete one line, pulling the rest of the PAGE up one line.

Neither of these can be corrected by the Undo key.

b.
If the current Rectangle is 80 columns wide, and the cursor is at the far left of the PAGE (meaning that any Rectangle operation will affect the full 80 columns):

C-S "Insert" will insert as many blank lines as there are lines in the current Rectangle, pushing the rest of the PAGE down that amount. Text pushed past the bottom of the PAGE is lost unless Undone.

C-S "Delete" will delete as many lines as there are in the current Rectangle, pulling the rest of the PAGE up that amount.

Both of these can be corrected by the Undo key.

The most common use of an 80-column C-S "Insert" might come in defining an 80-column Rectangle, Inserting that amount of space into the PAGE, and then Pasting the contents of the Rectangle into the blank area.

UNDO a Paste, Erase, Insert or Delete (C-S "U")

By far the author's favorite key, since the most necessary.

1. UNDO will only correct the most recent Rectangle operation (whether P,E,I or D).
2. UNDO will work correctly only if nothing else has changed on the PAGE except the change made by the P,E,I or D.
3. UNDO is deactivated when a new Rectangle is defined and remains inactive until the next P,E,I or D.

Words and Music on the Same PAGE

It is possible to combine words and music on one MANUS page even though MUS.FNT is composed almost entirely of musical symbols. ATASCII 126, ESC-DELETE, is a reserved character in MUS.FNT and in the MANUS system. This character sends a special message to the MANUS print-out routine: "until further notice, use the 'other' character set to print out the PAGE".

Load a Text Font (C-S "T")

This "other" character set is normally a text font. Any standard 9-sector character set can be loaded in, or the normal or (if an XL/XE) international Atari set can be used, by pressing C-S "T". The normal Atari set is the default.

(The print-out routine replaces every ESC-DELETE character with a space).

To turn on, and then turn off, the text font during a print-out, therefore, place an ESC-DELETE both before and after every phrase of text. Please remember that a PAGE line is much wider than a SCREEN line. Everything on the PAGE up to the next ESC-DELETE will be printed as text: (a "*" is substituting for ESC-DELETE in this example)

.....*TEXT TEXT TEXT
.....*TEXT TEXT TEXT
TEXT TEXT*-----
.....*TEXT TEXT*-----

The SCREEN as Music, the SCREEN as Text (C-S "0", C-S "9")

Even though the ESC-DELETE character will cause a toggle between the text font and MUS.FNT during a print-out, the SCREEN can only display one character set at a time. C-S "0" will display everything on the SCREEN as MUS.FNT characters. C-S "9" will display everything using the text font. Toggle back and forth to work on music or text.

The easiest way to work on a song, which intimately links words and music, appears to be the following. Create a staff, then switch to text display and type the words in, allowing more space if you know you will have several notes over a single syllable. Remain in text display and type

just the note HEADS over the correct syllables. This will adequately mark where each note should go. Then switch to music display and complete the notes.

Using the Text Font as the Default Font

The text font can be used as the default font when printing, if the SCREEN is displaying the text font instead of MUS.FNT when the print-out routine is called. A warning buzzer will sound. The PAGE will be printed as text, and only what is bracketed by ESC-DELETE characters will be printed as music, just the reverse of the normal situation. Creating a (mostly text) memo PAGE with musical examples in the text is one use of this reverse mode. See the file EXAMPLE2.MSF.

DISK Input-Output

Load a PAGE from Disk (C-S "4")

Place the cursor over the listed filespec and press RETURN, or edit the listed filespec and press RETURN, or type a complete filespec (D1:FILE.EXT, D:FILE.EXT, D8:FILE.EXT, etc.) on a blank line and press RETURN. RETURN on a blank line aborts.

Files always load from the beginning of the PAGE on down, no matter where the cursor is. Files shorter than the standard 96 lines can also be loaded. Merely loading a 'short' file will not cause everything on the PAGE to be erased. Only the material the short file actually replaces will be lost. If it is desirable to have a clear PAGE before loading a 'short' file, SHIFT "Clear" will do the trick.

Save a PAGE to Disk (C-S "5")

Place the cursor over the listed filespec and press RETURN, or edit the listed filespec and press RETURN, or type a complete filespec (D1:FILE.EXT, D:FILE.EXT, D8:FILE.EXT, etc.) on a blank line and press RETURN. RETURN on a blank line aborts.

You may save less than a whole PAGE if you choose 'Y' when prompted. In that case only the lines from the top of the PAGE up to and including the line the cursor is on will be saved. Pressing any other key than 'Y' at the prompt will cause the entire 96 line PAGE to be saved.

MANUS files, whether of short or standard length, can of course be sent to another MANUS user via a modem. Not only a file of music manuscript, but also a file (perhaps not an actual BBS message) consisting of a bulletin-board-style message with musical examples, could be transferred from user to user in this way (see EXAMPLE2.MSF on the MANUS disk). For reasons of compatibility (see also Appendix IV, p. 24, "MUS.FNT Universality?"), the author strongly suggests that all MANUS (MUS.FNT) files be named with an .MSF (Mus.Fnt) extender: BACH.MSF, MYMUSIC.MSF, etc. This will help to create a readily-identifiable and compatible corpus of MUS.FNT files for users to share.

Print a PAGE (C-S "6")

The strange-looking line of characters is the instructions to the printer loaded in from DRIVER.OPT (see Appendix III, page 22). Make sure the printer is ON, place the cursor over the line of characters, and press RETURN. RETURN on a blank line aborts. If instead the line reads: "DRIVER.OPT", it means the driver contains a symbol which cannot be printed to the screen. Place the cursor over this line and press RETURN.

If the text font is the default font (see pages 12-13), a warning buzzer will sound and a printed warning will appear on the screen.

Once printing begins, hitting RETURN at any point will stop the print-out routine and return you to the MANUS page.

Note for advanced users:

The instructions to the printer can be edited on the spot, if desired. The line currently displayed is composed of the ATASCII equivalents, in order, of the command bytes sent to the printer: Decimal 27 is printed as the ESC character, etc. Typing the ATASCII equivalent of new command bytes, and then pressing RETURN on the edited line, will send the edited driver instructions to the printer. The new instructions will appear as the default until changed or until the MANUS program is QUIT.

Keep (and Go To) Your Place (C-S "inverse", C-S "G")

Keep your place on the PAGE by holding down CONTROL and SHIFT and pressing the "inverse video" (a.k.a. Atari) key. You can then investigate other areas of the PAGE and return to your place via C-S "G". This is good for work within one PAGE; your place is automatically saved when you move from PAGE to PAGE (Music to Other and vice-versa).

Saving A Few Keystrokes

In general, every MANUS musical symbol has to be built up keystroke-by-keystroke, but there are two exceptions to this: when a note head is typed, and when flags are put onto notes.

Stems automatically put onto note heads (C-S "S")

Stemming is automatically turned on whenever MUS.FNT is displayed on the screen (but it can manually be turned off), and is automatically turned off whenever the text font is displayed (but can manually be turned on, for instance, to add notes to a text (see pp. 12-13)). Pressing C-S "s" will manually toggle Stemming on and off. A flash of light at the screen border will indicate that the toggle has taken place.

When Stemming is on, two keystrokes worth of note STEM appears automatically when any appropriate note HEAD is typed. Even with Stemming on, the stems will not appear if they will overwrite any other character. (As they might if, for example, a chord were being constructed).

When Stemming is ON,
typing a note head (e.g. CTL-F) produces 

One other thing will happen while Stemming is on: typing a note STEM, by itself, will not cause the cursor to advance.

Usually stems need to be put on top of each other, making a longer stem or a bar line. With Stemming on, the cursor need be moved only once (up or down) to make a longer stem.

With most characters, character is typed and the cursor advances:

```

cursor position > >
character      ^

```

With Stemming ON and typing a note stem (e.g. CTL-G), cursor does not advance:

```

>
|

```

Do off-staff stems differently

(C-S "space bar")

Some or all of the stem automatically made while Stemming is ON may be off the staff. Stems off the staff (i.e., in blank space) can have ledger lines running through them, or not, and the choice depends completely on the musical context. Since MANUS is much too dumb to understand things like "musical context", the choice is left to you. Change (toggle) how the off-staff part of a stem will look by pressing C-S "space bar". A flash of light at the border of the screen will signal the change in status. When MANUS is first run, off-staff stems made during Stemming will have ledger lines through them.

ledger lines through stem

if toggle ON



all stems

ledger lines through stem

if toggle OFF



only stems on the staff

Flag-maker (C-S "F")

To automatically Flag a note or a series of notes:

1. Put the cursor right on the top (bottom) part of the first stem in the group and press C-S "F". You'll hear a "deet-deet" sound.
2. Put the cursor at the end of the group and press C-S "F". The same R-L controls which work when defining a Rectangle (p. 8) will work here.
3. After the end of the group has been defined, you'll hear another "deet-deet".
4. Now press "8" for eighths, "6" for sixteenths, or "3" for thirty-seconds.
5. At any stage, RETURN will abort.

(3) press "8", "6", or "3"

cursor on this line->



Result:
flags built on these
one (or two) lines



The cursor must be right on the first stem--not above (below) it--for Flagging to work. The actual flags will be built on the line(s) directly above (below) the line the cursor is on.

IMPORTANT: The Flagging routine looks for note stems only on the particular line the cursor is on. If a note stem in the group you wish to flag does not reach as high (low) as the cursor line, that stem will not be detected, and the note will be flagged incorrectly. The moral: before Flagging, be sure ALL the stems in a group of notes reach as high (low) as the cursor line.

cursor on this line->
middle stems will not
be detected



One further caution: MANUS does not know where your staves are located on the PAGE, but it still needs this information to figure out whether to (in effect) re-draw a staff line through any flags it constructs. It therefore looks above (below) the very first note in the group:

Routine will look at these 1 (or 2) spots (X) for blank spaces

cursor on this line->



If NOT a blank space, routine assumes all flags on that line need a staff line

Multiple flag values in a group

"Transition flags" on the GUIDE TO MUS.FNT SYMBOLS are used to join a group which has two different flag values (an eighth with two sixteenths, for example). Transition flags will give the best-looking (if not the perfect-looking) solution for the "joint" between the different-value flags. To flag such a group:

1. Use the Flag-maker to Flag the first notes (with value "A") up to but not including the first stem which needs a different value (value "B").
2. Flag the value B notes. Be sure to adjust the cursor up or down if needed (if, e.g., value A's flags are one keystroke high and B's, two).
3. For both 1 and 2, check above (below) the first stem before Flagging.
4. Use the GUIDE to see which keystroke(s) are needed for the transition flag. The on-staff, then off-staff, values are given. Mix-and-match as needed.
5. Replace the first flag of value B with the transition flag.

(1)



(2)



(5)



NO (undo Stemming or Flagging) (C-S "N")

C-S "N" will correct only the most recent operation, whether that operation was Stemming or Flagging.

Disk Directory (C-S "D")

Drive numbers 1 - 9 are legal. Any .MSF extender will be highlighted.

Quit (C-S "Q")

Returns to DOS. CAUTION: Any PAGE in memory will be erased and is not recoverable. RESET has the same effect.

The Other PAGE and the need for Macros (C-S "O")

Nothing is different about MANUS's handling of the Other PAGE except that it is a completely separate PAGE from the Music PAGE. It is suggested that the Other SCREEN be a different color from the Music SCREEN.

Any Rectangle from the Other PAGE can be transferred to the Music PAGE, and vice-versa. The need for Macros is thus considerably reduced. For example, the file TEMPLATE.MSF (consisting of a blank staff, clefs, etc.) is included on the MANUS disk. Whenever necessary, this file of templates could then be loaded into the Other PAGE, its contents ready to be Pasted to the Music PAGE.

Music PAGE (C-S "M")

The Music PAGE is the one which appears when MANUS is first loaded in.

APPENDIX I

Printing Out the GUIDE TO MUS.FNT SYMBOLS

1. Once you have made a working copy of MANUS, get it running.
2. When you see a blinking cursor, hold down both CONTROL and SHIFT at the same time and press the number "4". If you did not copy the file GUIDE.MSF to your working copy, put the original MANUS disk in drive 1. Type D:GUIDE.MSF and press RETURN. The file will load in and will look quite mysterious on the screen.
3. Once the file has loaded, press CONTROL-SHIFT "6" to Print it. Be sure the printer is on, and try to be sure you have installed the correct printer instructions (see Appendix III or Page 3). Put the cursor over the line of what looks like gobbledy-gook (the printer instructions), and press RETURN.
4. The file should now print out. See Page 3 or the Table of Contents, Page 2, for more information.

APPENDIX II

Changing the Screen Color (SCR.OPT File)

It may be difficult to read MUS.FNT symbols (which are in essence displayed in the highest resolution the Atari 8-Bit computer is capable of) unless the colors of the symbols (characters) and screen are adjusted for your monitor or TV. The MANUS editor loads in the file SCR.OPT as part of its initial housekeeping. This file contains information about the color and brightness of the text, the screen, and the "warning" border color for both the Music and the Other PAGES (See "Moving the SCREEN around a PAGE", page 6).

At present the Music SCREEN's colors are the Atari default, and the Other SCREEN's colors are white (yellow) text on a dark green background. Both have a dark grey "Warning" border color. To experiment with different screen colors, go to DOS and use the BINARY LOAD command to run D:SCRTEST.COM.

You may save the changed colors to your back-up disk under the name DRIVER.OPT. Caution: the existing DRIVER.OPT file, even if it is locked (protected), will be replaced by this procedure. MANUS will then display the screen colors you have selected every time it runs.

A sidelight: SCRTEST.COM loads in the character set SCR MUS.FNT. This is a (copyrighted) subset of MUS.FNT, which replaces only the "non-typewriter" ATASCII characters (the CONTROL characters, for example) with musical symbols, leaving all letters, numerals, and punctuation marks intact. You may find this font useful from time to time in non-MANUS environments. Notwithstanding its copyright, you have permission to use SCR MUS.FNT for your own purposes, as long as these purposes are not for profit and as long as you do not give SCR MUS.FNT to anybody else.

APPENDIX III

Creating a Printer Driver

The file DRIVER.OPT is loaded in by the MANUS editor as part of its initial housekeeping. This file contains the information needed by the author's Panasonic KX-P1091 printer.

The current DRIVER.OPT file may not work with your printer, or you may want to experiment with other printer drivers. You may load, edit, test, and save printer drivers by using the program PRINTEST.COM. Go to DOS and use the BINARY LOAD command to run D:PRINTEST.COM.

PRINTEST.COM loads in the file DRIVER.OPT, which becomes the default driver. PRINTEST.COM also loads in the file EXAMPLE1.MSF, which is what will be printed when the test-print option is selected from the menu.

There are some printer driver files on the MANUS disk. They have an extender of .PD. For example, the current DRIVER.OPT file is a copy of the file PANAL091.PD. You will see a directory of the available .PD files when you select the "Load Printer Driver" option from the PRINTEST menu. Notice that you may load any file, not just one with a .PD extender, so you can save and load printer driver files with total freedom as to filenames.

You may save the current printer driver under any filename by selecting option 2. Caution: any existing file, even a locked (protected) one, will be replaced by this procedure. Once you have settled on a driver, you will wish to save it to your back-up disk under the name DRIVER.OPT. MANUS will then load your printer driver every time it runs.

Test-print using the current driver by selecting option 3. Once you see the print-test display screen, put the cursor over the line of gobbledygook (the current driver) and press RETURN. Once printing begins, pressing RETURN at any time will abort printing and return to the menu. Advanced users should consult page 14 of this manual for an alternate method of creating/editing the current driver. (When using this alternate method, you do not have to include the length of the driver (position # 00), only the actual printer codes).

Selecting option 4 causes the printer code numbers to be printed to the screen. In addition, a command line appears

from which printer code numbers can be added or changed. A maximum of fifty printer code numbers are allowed in a MANUS printer driver file. Note that position # 00 in the printer driver file indicates how many printer code numbers (not including position #00) are in the current driver. This count must be accurate if the driver is to work properly.

In general, printer codes are sent as integers from 0 to 255. If your printer's manual instructs you to send a character to the printer instead of a number, the character will need to be translated into the number which is its ATASCII equivalent before being included in the DRIVER.OPT file. To find the ATASCII number for a character use this form in BASIC (in the example below the result will be 65):

```
PRINT ASC("A")
```

To create a driver file for your printer, refer to your printer's manual. In a "command summary", and perhaps elsewhere, the manual will tell you which codes (in decimal integers) to use. It may be useful to use option 4 of PRINTEST.COM to examine the current DRIVER.OPT file or another .PD file. Include the following information, in order, in your driver file:

1. How many printer code numbers are in this file? You simply count all the numbers you use to code steps 2-5 and enter it at position #00.
2. The code to set line spacing. Set so that there is neither overlapping nor blank space between printed lines. (# 1-3 in the author's DRIVER.OPT file).
3. The code for a line feed--but only if everything is getting printed on the same line. (The author's printer does not require the line feed code, so it is omitted).
4. The code to tell the printer to print using bit-image (graphics) mode (and which bit-image mode to use). (# 4-6 in the author's driver).
5. Length of the line. MANUS will always send 640 bytes per line, so make the line length "128 2" ($128 + (2 * 256) = 640$). Make sure the bit-image mode selected (in number 4, just above) can print at least 640 dots per line (80 dots per inch).

In the included .PD files a line feed will appear in option 4 as either 10 (Control J) or 138 (inverse Control J). Omitting or including it should get the paper feeding properly, if that's all that's wrong. Also check the current DIP switch settings. If you write for help, include the command summary and the DIP switch table.

APPENDIX IV

MUS.FNT Universality?

MUS.FNT is not a text font, but rather a highly structured set of 128 graphic symbols. These symbols can be combined in orderly ways to build up a representation of a page of music manuscript. In spite of its essentially graphical character, MUS.FNT is handled very much as a text font. Each graphic symbol is linked to a particular ASCII (ATASCII) character. A symbol is put on the screen by typing it in. The completed graphic image, the PAGE, is saved or loaded essentially as text, not as a bit-image.

Since all computers can send text to and receive text from any other computer via a modem, it should be relatively easy to transfer MUS.FNT (MANUS) files from computer user to computer user, even if the computers in question are incompatible in other ways. A whole note, for example, could both be sent and received as capital "A". At either end, MUS.FNT (which only takes up 1K of memory) would be used to translate the "A" into the correct graphic symbol.

Considering the proliferation of MUS.FNT into many computer environments to be a possibility, the author here lays down a few guidelines which may help ensure the compatibility of all MUS.FNT files:

1.
The author strongly suggests that MUS.FNT (MANUS) files all be identified with the extender ".MSF" (for "Mus.Fnt"). This will facilitate storage and identification, especially on a BBS.
2.
.MSF files imply PAGES which are 80 columns wide and 96 lines long. The designation of 80 columns per line must be considered absolute, as there are no added End-of-Line characters or other formatting information in an .MSF file. (E.G., blank lines consist of 80 spaces). Therefore a column-width standard is critical to layout. 96 lines can be considered the standard, but adherence to a page-length standard is not as critical to layout as is adherence to a page-width standard.
3.
MUS.FNT symbols do not cover every conceivable musical situation, and in any event, the temptation to tinker is ineradicable. The author therefore identifies three

possible levels of tinkering, listed in increasing order of malignancy:

- a. Changing the LOOK of the standard MUS.FNT symbols.
- b. Changing which KEY identifies which standard MUS.FNT symbol.
- c. Changing the CONTENT of MUS.FNT.

Level "a" is always acceptable. Changing the LOOK (not the function) of a MUS.FNT symbol, for example to adapt its look to a 24-pin or a laser printer, is always legal, since this level of change does not affect the storage or transmission of .MSF files.

Level "b" (which amounts to redefining the keyboard) is allowed, with the proviso that all files must still be saved and transmitted in standard format.

For example, INTERNAL to a particular computer, ASCII 20 can represent the "space" whole note off the staff, and ASCII 65 can represent the whole rest; but a conversion must be made so that in the EXTERNAL world, ASCII 65 will always stand for the "space" whole note off the staff, and ASCII 20, the whole rest.

Level "c" is illegal. MUS.FNT's potential as a universal music font would be completely lost if its contents could be altered. Every MUS.FNT symbol must be included in every MUS.FNT adaptation. Whether MUS.FNT makes the best use of the 128 ASCII characters or not, it is strictly forbidden to change the FUNCTION of any MUS.FNT character.

In any event, since MUS.FNT and the MANUS system are copyrighted materials, no tinkering should be done without express written permission from the author.

APPENDIX V

Tutorial: MUS.FNT 101

Have in Hand: the GUIDE TO MUS.FNT SYMBOLS

As is mentioned on page 3, MANUS is essentially just a text editor. (You could type in the Gettysburg Address or Beethoven's Fifth, and MANUS wouldn't know the difference). When you use MANUS, you type MUS.FNT symbols, true; but MANUS doesn't know that. It handles MUS.FNT symbols the way it handles anything you type: as text. This has practical consequences, and is one of the big differences between MANUS and other music manuscript editors.

For instance, when you use other music manuscript editors you specify a note by pointing to it on a screen display of a piano keyboard, or even by playing the note on a MIDI instrument connected to your computer. With MANUS, you have to physically put the cursor at the point on the screen where you want the note to go, and type it in.

Once the cursor is at the proper place, you must consult the GUIDE TO MUS.FNT SYMBOLS to determine which keypress will give you the proper symbol. An important feature of both accidentals and note heads is that you must type a different key depending on whether the symbol is supposed to go on a space or through a line. Notice that you can't place the cursor over JUST a line or JUST a space; it will always cover a little bit of both. --That makes it sound like the cursor's fault! In fact, it's one of the tricks which make MUS.FNT (and therefore, MANUS) possible, and which also unfortunately makes your job more complicated; once the cursor is in position, you must still choose between the "line" and "space" version of the symbol.

Near the bottom-right of the GUIDE TO MUS.FNT SYMBOLS, notice the line of note heads: whole note, half note, and quarter-note heads, and notice that there are different keys for "line" and "space" notes.

But that's not all you have to decide. Because MANUS treats everything you type as text, whenever you type a MUS.FNT symbol, it will completely overwrite whatever symbol was there previously. Many MUS.FNT symbols have an on-staff and an off-staff version. The off-staff version is just the symbol itself; but the on-staff version consists of the symbol plus a line drawn where a staff line would go. Why

two sets? Because even a staff line gets overwritten when typed over! (A staff line is treated as "text", too). The on-staff version in essence "puts back" the part of the staff line which gets overwritten when the symbol is typed.

Observe on the GUIDE that there are on-staff and off-staff versions of each note head. Finally, notice that you have to press a different key depending on whether the note needs an up-stem or a down-stem.

Until you start to remember which keystroke goes with which note head, this section will probably be the most-consulted portion of the GUIDE. In order, you see:

the line of note heads			
the keys for on-staff, stem-up note heads			
"	off-staff,	"	"
"	on-staff, stem-down	"	"
"	off-staff,	"	"

To the right of the note heads are the keys to press for note stems; to the left are flags. There is no great need to learn everything about MUS.FNT flags, since MANUS will ordinarily do most of the work of flagging for you (see pp. 17-18). It is worthwhile, however, to look closely at the top of the GUIDE and observe, for example, that it takes two keystrokes to make a sixteenth flag over an up-stem, while it only takes one keystroke to make a sixteenth flag over a down-stem. Some familiarity with these idiosyncracies will stand you in good stead when operating the MANUS Flag-maker.

MUS.FNT is complicated; not too complicated to use, but complicated enough! Is all this complication necessary? MUS.FNT is complicated because it is really not a font at all, but a set of very trickily-constructed graphic symbols. The tricks (and therefore, the complications) enable a wide range of musical symbols to be produced even though MUS.FNT takes up only 1K RAM. Using MUS.FNT produces a nearly 800% savings in display memory, which enables (among other things) entire pages of music manuscript to be viewed and edited within only 48K RAM. MUS.FNT is a blessing, not a curse--even if it is a complicated blessing!

You have now graduated from MUS.FNT 101. Please look at page 5, "Inner Mysteries of the GUIDE TO MUS.FNT SYMBOLS", for more information, or return to page 3 or to the Table of Contents.

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