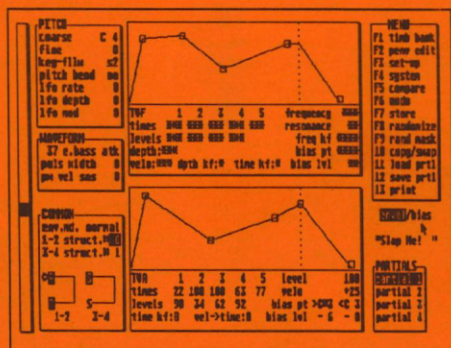# Dr. T's MUSIC SOFTWARE

FULFILLING THE PROMISE OF MIDI!

CAGED ARTIST
and Dr. T's
presents

Roland MT-32 Editor/Librarian
for the
Atari ST Computer
USER'S GUIDE

MT-32 EDITOR/LIBRARIAN

for the ROLAND MT-32 SYNTHESIZER

LICENSE AND CONDITIONS OF PURCHASE

Dr. T Presents...

C A G E D   A R T I S T ' S

A T A R I   S T

E D I T O R / L I B R A R I A N

for Roland MT-32 Sythesizers

October 1987
Version 1.0

Program and Manual
by Robert J. Melvin

T A B L E   O F   C O N T E N T S

C H A P T E R   1

G E T T I N G   S T A R T E D

Welcome, and thanks for buying Dr T. / Caged Artist
software. My goal in creating this series of software
products was to make the program intuitive enough such
that the manual is barely necessary, without the usual
trappings of user-friendliness (Are YOU Sure?). To me,
this is important since my Muse gets P.O.'d and deserts
me whenever I have to open a manual or think too stren-
uously about the software. I guess it's just the way my
brain is wired. For this purpose, I have designed my own
user interface, which I think is even easier than GEM,
and avoids most of GEM's bugs and inconveniences. So pull
up a mouse and get ready to make some noise!

                        - Bob Melvin
                          a.k.a. caged artist

Other Editing Programs by the author:

CZ-Rider	APL,C64	Four-op Deluxe*	APL,C64,ST
DX-Heaven	APL,C64,ST	Matrix-6	APL,C64,ST
ESQapade	ST only	PCM-70	APL,C64,ST
JX-8P	APL,C64	Kawai K3	APL,C64,ST
Roland D-50	ST only	Korg DP-2000,3000	ST only
Korg DS-8	ST only	Roland MT-32	ST only

                * for TX-81Z, FB-01, and DX-21/27/100

NOTE: Anything enclosed in brackets refers to a key on
the computer keyboard (e.g. [RETURN] is the Return key).
"Clicking on" something means positioning the mouse
cursor over it and pressing the left mouse button.

1.1 CONNECTIONS

Initially, you'll want to connect the instrument to the
computer, both MIDI IN to MIDI OUT and vice versa. This
is called "bi-directional" communication. In the future,
if you don't plan to get data from the synth or do bulk
dumps, you may get by with one connection (computer OUT
to MT-32 IN). Refer to Chapter 11 for a complete
discussion of the built-in MIDI Merge and some useful
system set-ups.

1.2 SET UP THE SYNTH

The MT-32's Unit Number must agree with the computer's
Unit number. To check the MT-32 Unit Number, press the
SOUND button while pressing the MASTER VOLUME button. The
computer is initially set to number 17, as is the MT-32
when it is shipped, but a different unit number may be
selected in the SYSTEM Mode (more on that later).

1.3 START THE PROGRAM

Turn on the computer with the Program Disk in Drive A.
If you are using a color monitor, this program requires
you to be in Medium resolution mode: in the Options menu
of the GEM desktop select "Set Preferences" - this dialog
box will allow you to change the resolution. Select the
icon labeled MT32EDIT.PRG by double-clicking on it. In a
few seconds the program should be up and running.

The program gets all the patches and timbres from the MT-
32 as it starts. You will see the "requesting timbres"
message. If all is well, the entire contents of the MT-
32's programmable memory is uploaded to the computer.

******************IMPORTANT NOTE*************************
MIDI CABLES: The Atari MIDI OUT uses two pins which are
usually not connected for a MIDI Thru output. MANY
cables sold as MIDI cables wind up connecting these two
pins to the MIDI signal, which may result in a random
scrambling of the MIDI signal. IF YOU EXPERIENCE MIDI
ERRORS, OR BIZARRE MIDI BEHAVIOR OF ANY KIND, THERE IS A
GOOD CHANCE THAT YOU'RE USING THE WRONG TYPE OF CABLE!
The cable should be a simple, cheap, three-conductor
type, as opposed to the fancier 5-conductor type.
****

******************IMPORTANT NOTE TOO*********************
When you turn the ST's power OFF, leave it off for 10
seconds. Give its memory banks a full lobotomy.
Otherwise, bizarre anti-social behavior may ensue.
****

1.4 TERMINOLOGY

Roland has a particular terminology that they like to use:

Partial: The lowest and most basic unit of a MT-32 sound is a partial. The partial could be a complete PCM or synthesizer type sound, with its own "wave generator," and pitch, filter and amplitude envelopes (which they call the "time-variant" filter and amplifier, otherwise known as TVF and TVA).

Timbre: A timbre combines four of these partials, and ties them together with a group of parameters called the "common" parameters. Most important of these is the "structure," which determines how the four partials are utilized (analogous to the "algorithm" in Yamaha lingo).

Patch: A patch is a performance oriented feature, which maps MIDI program change numbers to either preset or user-programmed timbres, and allows these timbres to be transposed and detuned.

Part: Not to be confused with "partial" !!! Being multi-timbral, the MT-32 has the ability to play eight different patches at a time, plus one rhythm patch. These are called "Parts," because each is usually set to its own MIDI channel, and plays one "part" of a sequence. If you have a guitar controller in MONO mode, you could think of these as "strings."

1.5 THE WAY IT WORKS

The MT-32 is set up to respond to external MIDI messages,
obviously because it has no keyboard. It's perfect for
using with either a sequencer or a guitar controller. It
may be used merely as another layer, echoing a master
keyboard, but this would be wasting a great deal of sonic
potential. Personally, I use it with a Roland GM-70
Guitar to MIDI converter, and it's the absolute best
synth I've ever had for smoothly tracking a complex
guitar performance (I use it in MONO mode, with lots of
pitch bending and controllers).

```
MIDI          Patch          Timbre Banks          Part
program ---> Bank  ...  Preset A, B,    ----> Play/Edit
change       1-128       Memory, Rhythm         Buffer
1-128
```

                    control over detuning, etc.

In any performance situation, you will probably use MIDI
program change messages to select the sound for each
Part (each Part should be on a different MIDI channel).
The program change calls a corresponding Patch from the
MT-32's Patch Bank. The Patch in turn points to a Timbre
which the MT-32 loads from one of its Timbre Banks into
the Play/Edit Buffer, and sets the detuning, bend range,
assign mode, and reverb switch. Other functions, such as
the output level and panning for each Part, may be set by
MIDI controller messages (these are not part of the
Patch).

Patches give you a necessary degree of programmable control over the presets. With Roland's method, each channel is more independent than the Yamaha FB-01 "Configuration" or TX-81Z "Performance" memories, which some of you may be familiar with. Fortunately, Roland's system is very flexible --it allowed me to create a hybrid thing I call a "Set-up," which is the equivalent of Yamaha's "Performance." With a Set-up, all the current patches along with their channels, panning, volumes, and some "Master" parameters are saved and loaded as a unit. It's like taking a snapshot of the MT-32 at a particular moment in time. This may provide the primary way of working with the MT-32 for some people, while others may prefer to keep things seperate, and rely less on the computer. In either case, this feature is always useful to document a specific performance -- and it's the ONLY way to change and remember channel assignments, reverb settings and several other important MT-32 parameters.

If you rely on MIDI program change commands to select your MT-32 sounds, you'll need to edit the Patch Bank directly. The Patch Bank is like a typical "program change table," with some extra goodies thrown in, as I mentioned above. If you're heavily into creating your own sounds, you may need a different Patch Bank for every Timbre Bank you create. This is why they are stored to and loaded from disk together. Then again, you may want several Patch Banks for each Timbre Bank, or you may want to stick with one Patch Bank and forget it. This is why Patch Banks may also be loaded seperately.

Naturally, you'll want to create your own Timbres and organize them into Timbre Banks, which is what the majority of this program is about.

C H A P T E R   2

T H E   B A S I C S
_____

2.1 GETTING AROUND

The entire program can be run with the mouse. The only
time you must use the keyboard is while entering a new
file name when saving a new file. Alternatively, nearly
all the program's functions may be accessed without the
mouse, with the exception of copying parameters, changing
the randomization mask, and using the graphic editing.

The mouse operation should be fairly intuitive. The left
mouse button usually selects something, and the right
always plays the synthesizer. Point at menu items and
select them, or point at a parameter and select it. Point
ANYWHERE and hold down the button while moving the mouse
to move the slider (thus changing the current parameter).

PLEASE NOTE THAT YOU DO NOT HAVE TO POINT AT THE SLIDER
BOX TO MOVE THE SLIDER! --POINT AT A PARAMETER (OR AT ANY
EMPTY SPACE ON THE SCREEN) AND HOLD DOWN THE BUTTON WHILE
MOVING THE MOUSE UP OR DOWN PAST THE SLIDER'S CURRENT
VERTICAL POSITION, WHICH "GRABS" THE SLIDER AND ALLOWS
YOU TO MOVE IT.

In this manual, I use the term "select" when mouse or
keyboard entry is possible, and "click on" when only
mouse entry is being referred to.

2.2 THE PART SELECT BOX

The PART SELECT Box, found in the TIMB BANK Mode, shows
the contents and status of the computer's eight Part Edit
Buffers, which usually, but not necessarily, coincide
with the eight timbres currently playing on the MT-32.
The name of the timbre is followed by the bank position
the timbre was originally loaded from. If a timbre has
been edited, it is followed by an asterisk. Clicking in
the PART SELECT Box selects the "current" Part Edit
Buffer, the listing for which is then highlighted.

2.3   LOADING A TIMBRE

In the TIMB BANK mode, load a timbre by pointing at
it and pressing the left mouse button (i.e. "click on
it"). Or, use the cursor keys to move the pointer to the
name of a timbre, and press [Return]. The timbre will be
sent to the synth, and loaded into one of the computer's
Part Edit Buffers. The current Part Edit Buffer is
selected by clicking in the PART SELECT box.

2.4   USING THE PROGRAM MENUS

The Menu choices appear on the right of the screen. To
select a menu item, either click on it, or hit the
function key shown to the left of the menu item. (F11 and
up are selected by [shift]-[F1] etc.). The right mouse
button is used to play the synthesizer, more on that in
section 2.7.

2.5   DEFAULT PARAMETERS

Try selecting "system" in the menu. You should now be in
the SYSTEM Mode. Among the parameters in this mode are
the Unit Number to which the program sends data, the disk
drive on which files are stored, the program's color
scheme, etc. These parameters may be changed and saved to
disk, from which they are loaded when the program is
booted. See Chapter 5 for more on the SYSTEM Mode.

2.6   BANK FILES

A Bank File is the basic unit of storage for this
program. Bank Files are loaded from disk. The timbres in
the Bank File may be moved, copied, or swapped between
all the Bank Files in the computer's memory. A timbre may
be edited and then stored back into a Bank File. When a
Bank File has been changed in any of these ways, it must
be saved on the disk to make the change permanent.

The computer contains internal memory for two MT-32 Bank
Files, each of which contains 64 timbres and 128 patches.
Switching between the Bank Files can be done whenever you
see the FILE SELECT box - including during a "copy",
"swap" or "store" operation.

2.7 PLAYING THE MOUSE

The right mouse button plays the synthesizer or
synthesizers on the Solo/Rechannelize channel. This
channel is automatically set by the program in several
ways (see below), or may be manually set in the SYSTEM
Mode. The note number is selected by the left/right
position of the mouse. The range of 80 notes is centered
around the G which is the center key on a standard 5-
octave keyboard. The velocity is selected by the up/down
position of the mouse cursor when the note is turned on,
with full velocity at the top of the screen and minimal
velocity at the bottom.

I've also added the ability to transmit Modulation values
when a note is played by pressing the left key (while the
right key is held). The modulation amount is controlled
by the vertical position of the mouse. The program uses
the middle 2/3rds of the screen to go from OFF to FULL
modulation. The modulation returns to zero when the note
is released. The mouse may simulate Pressure or any of
the 32 Continuous Controllers (e.g. Mod Wheel, Breath, or
Foot Controller). The controller is selected via the
SYSTEM Mode "Mouse Mod Controller" parameter.

The mouse can be made to play glissando-style with the
Mouse Glissando parameter (also found in the SYSTEM
Mode). With Mouse Glissando ON, a new note is triggered
when the right mouse button is held down and the mouse is
moved horizontally. Every eight pixels is a new "key."

The "Solo Channel", the channel on which the mouse plays,
may be changed by the computer when a different part is
selected via the PART SELECT box, or when a parameter is
selected in SET-UP Mode. The new Solo Channel reflects
the channel for the current Part, as programmed in the
SYSTEM Mode.

C H A P T E R   3

M O D E S   A N D   M E N U S
_____

3.1 MODES

* The SYSTEM Mode shows System Parameters for the
computer such as Unit Number, Merge functions, Disk
Drive Select, etc.

* The TIMBRE BANK Mode shows the names of all available
timbres in the computer's memory. This mode is used to
organize timbres into bank files, and to load or save
these bank files to disk. Also, this is where individual
timbres are selected for editing (Chapter 6).

* The MAIN EDIT and PENV EDIT modes show individual
timbre parameters (partial and common) and allow them to
be changed under computer control (Chapters 7 and 8).

* The SET-UP mode allows editing of the current patch
data for the eight Parts, including the extra pan and
volume controls. Also, the MT-32 System Parameters, such
as partial reserve, MIDI channel, and reverb settings may
be edited (Chapter 9).

* The PATCH BANK Mode shows all 128 MT-32 patches, and
allows them to be directly edited (Chapter 10).

3.2 MENUS

Each Mode has its own menu in the upper right corner of
the screen. The menu includes selections to take you to
the other modes, as well as all the available operations
for that mode. Menu items may be selected by either
pointing and clicking or by pressing the function key
shown to the left of each menu item (11 and up use the
shift key. e.g. 11 means [shift]-[F1]).

In addition to the available Modes, each menu has a mode-
dependent list of options. The options are discussed in
detail in the chapters which follow:

SYSTEM MODE MENU (see Chapter 6)

load mask   Load Randomization mask from disk.
save mask   Save Randomization mask to disk.
sv config   Save all System parameters to disk.

TIMBRE BANK MODE MENU   (see Chapter 7)

load file   Load MT-32 bank file from disk.
save file   Save MT-32 bank file to disk.
copy   Copy timbre from one position to another.
move   Move timbre from one position to another.
swap   Exchange timbre between two positions.
store   Store edited timbre in a bank file.
get parts   Get timbres for all 8 parts from the MT-32.
get all   Get a bank file from the MT-32.
send all   Send a bank file to the MT-32.
print   Print out a list of timbre names.
format   Format a blank disk for storage.
quit   Exit the program for good.

MAIN or PENV EDIT MODE   (see Chapter 8)

comp/copy   Compare timbre with any other timbre, and
             copy parameters from it.
undo   Recall last edited timbre.
store   Store the edited timbre into a bank file.
randomize   Change parameters by a random amount.
rand mask   Select which parameters are randomized.
copy/swap   Move sections of data between partials.
load prtl   Load a partial from disk.
save prtl   Save the current partial to disk.
print   Print out the current screen's parameters.

C H A P T E R   4

C H A N G I N G   P A R A M E T E R S

4.1 SELECTING A PARAMETER

A parameter may be selected either by clicking on its value, or by moving to it via the left and right cursor keys. Once selected, the parameter may be changed in several ways:

4.2 THE "VIRTUAL SLIDER"

On the far left hand side of the screen is the "virtual slider", a hollow rectangle with a solid one inside it. When a parameter is selected, the solid rectangle's vertical position shows the parameter's current value. There are several ways to move the slider:

CLICK IN THE SLIDER BOX, the slider will jump to the cursor's position and follow the cursor as long as the left mouse button is held.

CLICK ON A PARAMETER AND HOLD THE LEFT MOUSE BUTTON. Keep the left mouse button depressed and drag the mouse up or down such that you pass the current vertical slider position. The slider then becomes active, and works just as if you had clicked on it. Since up/down movement with the mouse takes less effort than lateral movement, this is almost always more convenient. Parameters will be transmitted when you release the button.

CLICK IN THE MIDDLE OF NOWHERE. If you click on an area of the screen which has no parameters or menu items, you may change the currently selected parameter using the technique in the preceding paragraph. Of course, you must pass the current slider position before the slider starts moving. Once you've selected a parameter, this will make it easier to change: just aim for a wide open space, and with one sweeping gesture you're in business.

4.3 [+] AND [-] KEYS

The BIG [+] and [-] keys on the numeric pad may be used
to raise or lower the currently selected parameter's
value by one. The parameter change is sent to the synth.

4.4 DIRECT NUMERIC ENTRY

The current parameter may be changed by keying in the new
value with the number keys on the computer. The value
must have the correct number of digits (e.g. if a
parameter's limit is 99, key in two digits - zero would
be entered as [0] [0]). The sign of signed numbers is
changed with the small [+] (or [=]) and [-] keys. Hitting
any key other than a number or sign key cancels any
numbers that were incompletely entered. If a number is
entered which exceeds the upper limit of a parameter's
range, the parameter is set to the upper limit (similarly
with the lower limit). In some cases, when a parameter
goes to 100, two digit entry is accepted (to get 100, hit
[9][9][+]).

4.5 NAME ENTRY
The computer keyboard may be used directly to key in the
timbre name, instead of numeric entry.

4.6 ENVELOPE INPUT

Envelopes may be changed graphically, by clicking in the
box associated with an envelope point, and dragging the
point with the mouse.

C H A P T E R   5

S Y S T E M   M O D E

The SYSTEM Mode includes parameters which set up the
computer program and control features such as Merge and
Mouse Play.

5.1 CHANGE SYSTEM PARAMETERS

Select "system" in any menu. You may now change the
parameters using the techniques discussed in Chapter 4 -
Changing a Parameter. Be aware that some parameters will
wait (if MERGE is ON) until all notes are off before
changing. This was done to avoid the possibility of stuck
notes. If this happens, you will receive a prompt and
you'll have to hit a key or mouse button to continue. You
can also save some of these parameters to disk; see
section 5.14 to make your System Parameter settings the
default settings.

5.2 UNIT NUMBER

The Unit Number is used in all System Exclusive Messages
sent by the computer. It should be set to the same Unit
Number as the MT-32. To check the MT-32 Unit Number,
press the SOUND button while pressing the MASTER VOLUME
button. I assume all MT-32's are shipped with their unit
number set to 17, which is also the way this program is
shipped. If you have more than one MT-32 on line, use
this parameter to switch between them.

5.3 SOLO CHANNEL

This channel is used by the MERGE SOLO and RECHANNELIZE
features as the output channel for all MIDI channel voice
messages. It is also the channel the mouse plays on. If
SOLO or RECHANNELIZE is in effect when this parameter is
changed, the computer will wait until all keys are off to
effect the change (see note below).

When a new part is selected with the PART SELECT box, or
when a part-related parameter is selected in the SET-UP
Mode, this channel is automatically set to the channel
programmed for that part (see SETUP Mode - Chapter 9).

5.4 MERGE ENABLE

This parameter turns the MERGE function ON and OFF. All
MIDI messages except System Exclusive are merged with the
MIDI messages from this program.

5.5 MERGE SOLO

When ON, this parameter lets only the Channel Voice
Messages (key on and off, controllers, etc.) for the
designated channel through, and filters all other
channels. It will also merge any System Real Time
Messages, such as timing information.

5.6 MERGE RECHANNELIZE

When ON, all Channel Voice Messages at the computer's
MIDI IN are re-transmitted on the designated channel.
This is intended for Master Keyboard input.

**********************IMPORTANT NOTE**********************
When MERGE is ON, it attempts to keep track of notes, so
that it may know when to allow various changes such as
MERGE OFF, SOLO ON, etc. to occur without causing hung
notes. If you get a prompt advising you that notes may be
on, releasing them should allow the program to continue.
If not, you'll have to hit a key on the computer or a
mouse button to continue.
****

5.7 STORAGE DRIVE

The current drive is selected here. Any drive from A-H may be used to store bank files, randomization masks, Patch Banks, and Set-ups. The default value for this parameter is saved by the "sv config" command. The "sv config" command (5.14) only saves to drive A, however, since that is the drive the program must be booted from.

5.8 MOUSE MOD CONTROLLER

The Controller which can be simulated by the mouse is selected with this parameter. The mouse can play Pressure (Aftertouch) or any Continuous Controller (1-31). See Section 2.7 for more on how to play the mouse.

5.9 MOUSE GLISSANDO

The mouse can be made to play glissando-style with the Mouse Glissando parameter. With Mouse Glissando ON, a new note is triggered when the right mouse button is held down and the mouse is moved horizontally. Every eight pixels is a new "key."

5.10 FILTER PROGRAM CHANGES

When Merge is ON, program changes may come through and cause a ball of confusion. You don't want this to happen, so you should turn this parameter ON, except for special occasions. Program changes will be blocked.

5.11 RANDOMIZATION %

This parameter is used during a Randomize operation to determine the amount of randomization. See the EDIT Mode chapter (7.5 - 7.6) for more on the Randomize feature.

5.12   COLORS

If you are using a color monitor, you can change the color scheme. The colors are stored along with the other defaults by using the "sv config" command. You are free to customize the program to your whim, or to keep up with the current fashion trends, whether it be day-glo, earth tones, pastels or whatever!

5.13   B/W

With the high resolution monochrome monitor only, this parameter selects black on white (ON) or vice versa.

5.14   SAVE ALL SYSTEM PARAMETERS TO DISK   sv config

With the program disk in drive A, select "sv config" in the SYSTEM Mode menu. The following system parameters are saved to disk and are automatically loaded whenever the program is started: the Unit Number and Solo Channels, Merge On/Off, Solo, Rechannelize, the Color or B/W parameters, the Storage Drive, the Mouse Mod Control and Glissando settings, the Randomization percentage, and the entire current Randomization Mask.

5.15   LOAD AND SAVE RAND MASK

The Randomization Mask may be individually loaded from or saved to disk. A Randomization Mask is also saved with the other system default values by a "sv config" command. The "load mask" and "save mask" functions are similar to the "load file" and "save file" functions covered in the next chapter (Chapter 6).

5.16   RHYTHM PART SEND

THE MT-32 CURRENTLY HAS A BUG! If you attempt to change any Patch parameter for the Rhythm Part, the MT-32 auto-matically trashes its Patch Bank memory -- not a useful feature. This parameter should be turned ON only if Roland fixes this bug.

C H A P T E R   6

T I M B R E   B A N K   M O D E

When the program is first started, it will enter the
TIMBRE BANK Mode. The screen displays the names of the
two computer Bank Files, and the names of the 64 timbres
in the currently selected Bank File. Timbres may be
loaded into or stored from one of the computer's Edit
Buffers. Timbres may be copied to another position in
either Bank File, swapped with another timbre from either
Bank File, or moved anywhere within the same Bank File. A
Bank File may be downloaded to, or uploaded from the
synth in its entirety.

```
┌─────────────┐ ┌PART SELECT──────────────────────┐ ┌─MENU──────────┐
│ Dr.T. presents│ │1 ElecPiano1 M04   5 Violin 2  M54│ │F1 main edit  │
│ CAGED ARTIST'S │ │2 Clavi 1    M20   6 Harp 2    M59│ │F2 penv edit  │
│ MT-32 EDITOR  │ │3 Syn Brass3 M27   7 BottleBlow 701│ │F3 set-up     │
│ (c) 1987 by  │ │4 Echo Bell  M41   8 Orche Hit 701│ │F4 patch bnk  │
│ Robert Melvin │ └──────────────────────────────────┘ │F5 system     │
└─────────────┘                                        │F6 load file  │
                                                        │F7 save file  │
┌─────────────────────────────────────────────────────┐│F8 copy       │
│ 01 AcouPiano1  17 Harpsi 1   33 Fantasy    49 Str Sect 1│F9 move       │
│ 02 AcouPiano2  18 Harpsi 2   34 Harmo Pan  50 Str Sect 2│10 swap       │
│ 03 AcouPiano3  19 Harpsi 3   35 Chorale    51 Str Sect 3│11 store      │
│◊04 ElecPiano1  20 Clavi 1    36 Glasses    52 Pizzicato │12 get parts  │
│ 05 ElecPiano2  21 Clavi 2    37 Soundtrack 53 Violin 1  │13 get all    │
│ 06 ElecPiano3  22 Clavi 3    38 Atmosphere 54 Violin 2  │14 send all   │
│ 07 ElecPiano4  23 Celesta 1  39 Warm Bell  55 Cello 1   │15 print      │
│ 08 Honkytonk   24 Celesta 2  40 Funny Vox  56 Cello 2   │16 format     │
│ 09 Elec Org 1  25 Syn Brass1 41 Echo Bell  57 Contrabass│17 quit       │
│ 10 Elec Org 2  26 Syn Brass2 42 Ice Rain   58 Harp 1    └──────────────┘
│ 11 Elec Org 3  27 Syn Brass3 43 Oboe 2001  59 Harp 2    
│ 12 Elec Org 4  28 Syn Brass4 44 Echo Pan   60 Guitar 1  ┌FILE SELECT──┐
│ 13 Pipe Org 1  29 Syn Bass 1 45 DoctorSolo 61 Guitar 2  │PRESET_A.M32 │
│ 14 Pipe Org 2  30 Syn Bass 2 46 Schooldaze 62 Elec Gtr 1│BANK_N02.M32 │
│ 15 Pipe Org 3  31 Syn Bass 3 47 BellSinger 63 Elec Gtr 2└──────────────┘
│ 16 Accordion   32 Syn Bass 4 48 SquareWave 64 Sitar     
└─────────────────────────────────────────────────────┘
```

The timbre which is loaded in the computer's currently
selected Part Edit Buffer is shown in inverse video.
The PART SELECT Box shows the contents of the Part Edit
Buffers, and allows the "current" buffer to be selected.

6.1 SELECTING AN INTERNAL BANK FILE

Use the mouse to click on one of the file names in the
FILE SELECT box. The timbre names for the selected file
appear on the screen, and the file's name is highlighted.
The FILE SELECT box may be used whenever it is displayed
(including during copy, swap, or store operations. The
number keys 1-2 will also select the file whenever the
FILE SELECT box is displayed.

6.2 SELECTING A TIMBRE

To load a timbre into the computer's current Part Edit
Buffer, and send it to the synthesizer, simply point at
the name and click the left mouse button. Or, lacking a
mouse, move the pointer (see below) to the desired name
and press [Return]. The timbre you have selected will now
be available for editing in the MAIN and PITCH ENVELOPE
EDIT Modes, and should be audible on your synth.

The PART SELECT Box shows the names of all the timbres
which are currently loaded. Also shown is the Bank
position from which they were loaded:

"?": Signifies that the timbre was received from the MT-
     32 in a "get parts" function.

"M" and "x": The first and second computer Timbre Banks.

6.3 THE POINTER

The timbre which is currently playing will be highlighted
(shown in inverse video), both in the PART SELECT Box
and in the Timbre Bank (if it was loaded from the bank).
In addition, there is a small pointer which remains to
the left of the timbre numbers. The pointer signifies
that this is the timbre which will be loaded if [Return]
is pressed, and this is the timbre which will be used for
the "comp/copy" feature in the EDIT Modes.

The pointer may be moved with the mouse by clicking to
the left of the timbre number, or by using the cursor
keys.

6.4 LOADING A BANK FILE   load file

This operation loads a bank file from the disk into one
of the computer's temporary (RAM) bank files. With the
display showing the bank file you wish to replace, select
the "load file" operation. The computer will catalog the
disk, displaying the names of all the bank files only.
Click on the desired file name, and then click in the
"OK" box. If you prefer, you may also manually type in
the file name, and press [Return].

CAUTION: If you have made important changes or updates to
a bank file, you must save the file to disk before
loading another file over it.

6.5 SAVING A BANK FILE   save file

* Find or make a formatted disk on which to save your
sounds. See the ST Owner's Manual section on "How To
Format Your Blank Disk" for this simple procedure. *

With the display showing the bank file you wish to save,
select the "save file" function. If you are saving the
file under the same name it had when it was loaded, all
you need do is to click on the "OK" box or hit [Return].
Otherwise, you'll want to hit [Esc] and then enter a new
file name (the ".M32" extension is automatically added).

6.6   SEND A BANK FILE TO THE SYNTH   send all

The entire currently selected bank file may be sent when
the "send all" command is selected, replacing the 64
user-programmable Timbres and 128 Patches in the MT-32.
Two prompt boxes will ask you if you wish to send first
the Timbres, and next the Patches. Click on "YES" (or hit
[Return]) to transmit, or "NO" to skip it.

****
NOTE: This program uses a bi-directional method to send
bulk data, so both MIDI In and Out must be connected.
****

6.7   GET A BANK FILE FROM THE SYNTH   get all

First, make sure the MIDI out of the MT-32 is connected to
the MIDI in of the computer (and vice versa). Select the
"get all" command. The transfer is automatic. Both
Timbres and Patches are up-loaded to the computer (i.e.,
a whole Bank File) . If nothing happens, check your
connections and Unit Number (see Chapter 1).

6.8   STORE EDITED TIMBRE INTO A BANK FILE   store

This command allows you to store your edited timbre in
any Bank File position, replacing whatever was in that
position. The old position is highlighted. Select the
position using the same method you would use to load a
timbre.

NOTE: TO MAKE ANY CHANGE PERMANENT, THE ALTERED BANK
FILE SHOULD BE SAVED TO DISK. SEE CHAPTER 6.5.

6.9 COPY A TIMBRE   copy

This command takes a timbre from either Bank File, and
copies it to any position in either Bank File. This is a
destructive copy, meaning that the timbre which occupies
the position to be copied to is obliterated by the copy.
See notes below.

6.10 MOVE A TIMBRE   move

This command allows you to shuffle timbres within a Bank
File, without losing any data. The source timbre is moved
to the selected destination position. All the locations
between the source and destination are shifted to adjust
for this change. See notes below.

6.11 SWAP A TIMBRE   swap

This command allows two timbres from any Bank File and
position to be exchanged. See notes below.

NOTES:

In all the above operations, select the source and
destination in the usual way - using the FILE SELECT box
or number keys, and clicking on the desired timbre.
This will not disturb the current Edit Buffer timbre.

The functions automatically repeat until you click in the
ESCAPE box, or hit the [Esc] key. The computer remembers
the source and destination bank file, and automatically
switches bank files for you on subsequent repetitions.

If you make a mistake, click in the ESCAPE box or hit
[Esc]. These commands cannot be "undone."

Through all the above operations, the computer attempts
to keep track of the location of the currently loaded
timbre (the location is shown in inverse video).

6.12   GET PART TIMBRES   get parts

Occasionally, for a multitude of reasons, and especially
because of the way Patches work, the Timbres playing in
the MT-32 may not be those shown in the PART SELECT box.
The solution is to use this function, which gets all
eight timbres from the MT-32 and up-loads them to the
computer's Part Edit Buffers. As with all "get"
functions, the MT-32 must be connected bi-directionally.

6.13   FORMAT A DISK   format

This command leads you through a series of dialog boxes
which let you format a single or (if possible) double-
sided diskette. If you change your mind, click on the
CANCEL box. The first box asks for single or double sided
format. You should not select double-sided if you only
have a single sided disk drive. The second box asks you
to insert a blank disk into drive A (and only drive A).
Clicking on PROCEED starts the process of formatting,
The lower right hand side of the screen shows the
progress (there are 80 tracks per side).

6.14   PRINT OUT NAMES   print

The currently displayed list of timbres in a bank file
may be printed out by selecting the PRINT function. If
the printer is not ready, the program will wait for you
to hit a key (or mouse button). If it's still not ready,
PRINT is cancelled.

6.15   EXIT THE PROGRAM   quit

This command allows you to quit the program. Everything
important should be saved to disk before quitting, as the
timbres in the computer's memory will be lost.

C H A P T E R   7

T I M B R E   E D I T   M O D E S

A single Timbre in the MT-32 comprises a LOT of data.
Don't be fooled by the size of its box, this machine is a
monster!

Each Timbre includes four partials. A partial includes
sections on PITCH, WAVEFORM, TVF (filter) and TVA
(amplitude) envelopes, and a PITCH ENVELOPE. You may
click in the PARTIAL select box to select one of the four
partials for editing. The partials are tied together by
the COMMON data, which includes the all-important
"structure" parameter - see Appendix E for more detail.
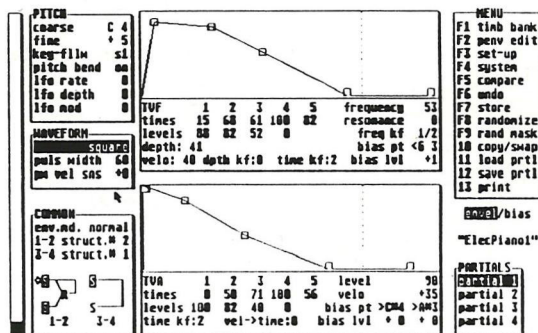
There are two EDIT Mode screens to handle all the data:
the MAIN EDIT screen (shown above) and the PITCH ENVELOPE
EDIT screen. Both screens show all the COMMON data, as
well as the PITCH and WAVEFORM for the current partial.
The MAIN screen has the TVF and TVA, while the other has
only the PITCH ENVELOPE.

7.1 MEMORY ORGANIZATION

There are several buffers in the computer dedicated to
the editing of a timbre; the Edit Buffer, the Compare
buffer, and the Undo buffer. In the BANK Mode, timbres
are loaded from a Bank File into the Edit Buffer.   The
timbre in this buffer is then edited using the techniques
introduced in Chapter 5 - Changing Parameters, as well as
the techniques in this chapter, and stored back into the
bank file using the STORE command. The Compare buffer is
used to COMPARE an edited timbre with another timbre
(usually the original timbre), and to copy parameters
from the other timbre. The Undo buffer holds a copy of
the last edited sound which may be recalled by the UNDO
command.

Memory Organiztion

```
                                _____
                               |  UNDO  BUFFER     |  (periodically
                               |_____|    updated)
                                         ^
                               undo      |    (undo swaps buffers)
      BANK FILE                          |
                         load->          v
                   ___   _____    _____
                  |timbre 00 |<--------->| EDIT BUFFER     |
                  |timbre 01 |  <-store  |_____|
                  |timbre 02 |                   ^
                  |timbre 03 |                   |    (copy
                  |timbre 04 |                   |      parameters)
                  |timbre 05 |  compare          |
                  |timbre 06 |---------->| COMPARE/        |
                  |timbre 07 |           | COPY BUFFER     |
                  |  ...etc. |           |_____|
                  |_____|
```
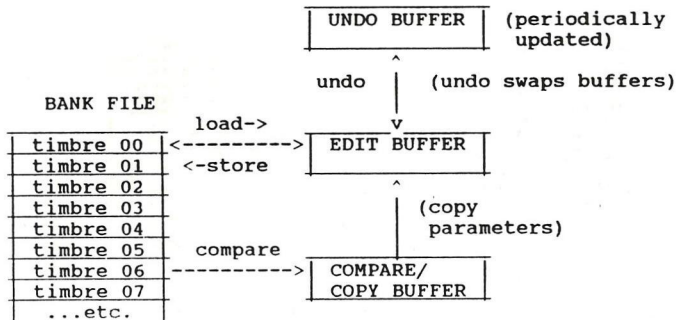
7.2 COMPARE/COPY PARAMETERS   comp/copy

This function causes the timbre from the current BANK Mode
Pointer position (see section 6.3) to be loaded into the
Compare Buffer, displayed, and sent to the synth. Note
that parameters from <u>any</u> timbre in any bank file, not
just the original timbre, may be compared or copied by
going to the BANK Mode and repositioning the Pointer,
using either the cursor keys or by clicking to the left
of the timbre number.

If you have a color monitor, you will note that any
parameters which have different values from those in the
edit buffer are shown in a different color. On the
monochrome monitor, they are underlined.

You may copy any parameters from the compared timbre by
clicking on the parameters. This adds that parameter to a
list of parameters which will be copied when you click in
the "OK" box. (clicking again removes that parameter from
the list to be copied). Upon clicking in the "OK" box,
the selected parameters are copied to the Edit Buffer,
and the resultant timbre is sent to the synth. If you
made a mistake, "undo" will undo the whole operation.

7.3 UNDO

Undo swaps the last edited sound (stored in the Undo
buffer) with the sound in the Edit buffer. The Undo
buffer is updated under the following circumstances:

1. Whenever a NEW parameter is changed.

2. When a timbre is loaded to the Edit buffer and the
   timbre currently in the Edit buffer is an edit.

3. When parameters are copied using "comp/copy."

4. When the "randomize" feature is used.

5. When an envelope point is moved.

6. When "get parts" is used (updated for all 8 Parts).

This command therefore undoes "randomize," "get parts"
and "comp/copy," and recalls the edited timbre when a new
timbre has been loaded over it. It also can be used to
gauge the effect of your latest parameter change, to help
you stay on course when you're going for a certain sound.

7.4 STORE THE EDITED TIMBRE

This function is the same as the STORE command in the
BANK Modes. However, the program returns to the EDIT Mode
one second after showing you that the timbre was indeed
stored. See Chapter 6.8 for more information.

NOTE: TO MAKE ANY TIMBRE CHANGE PERMANENT, THE BANK MUST
BE SAVED TO DISK. SEE "SAVING A BANK FILE" IN CHAPTER 6.

7.5 RANDOMIZE   randomize

This program includes a versatile and easy to use random
timbre modifier/generator. It allows you to select the
parameters which will be randomized, and the amount of
randomization. It operates on the timbre currently in the
Edit buffer, so it can be used to generate anything from
slight variations to entirely random timbres.

First, set up a randomization mask (see next section).
Then, set the Randomization % parameter to the desired
value. The Randomization % factor, which is found and can
be edited in the SYSTEM Mode, is the amount (in terms of
a percent of a parameter's total range) which a parameter
can deviate. For example, if a parameter goes from 0 to
99, its range is 100, and a Randomization % of 20 means
that a random number between -20 and +20 will be added to
the parameter the next time it is randomized. This amount
is always at least +/- 1.

Finally, select the "randomize" command. If you like what
you hear, store it. If you don't, you can undo it with
the "undo" command and try again.

7.6 RANDOMIZATION MASK   rand mask

The best feature of this program's randomizer is the fact
that you select which parameters are to be randomized.
For example, you may choose to randomize only tunings,
or times, levels, or any combination. Since you have
control, you can use your creativity and a knowledge of
the parameters to make random timbres which have a
greater chance of being useful.

Select "rand mask" and click on the parameters to be
randomized, they will appear in inverse video. Clicking
on one that's already on will turn it off. When you're
done, click in the "OK" box. Use the "randomize" command
to do the randomization.

To load from, or save a mask to the disk, or to save a
mask as the default mask, follow the procedures in
sections 5.14 and 5.15.

7.7   LOAD AND SAVE PARTIALS   load prtl
                                                      save prtl

The currently displayed partial may be individually saved
to, or loaded from disk. In this manner, it is easy to
create hybrid timbres which have elements of two or more
existing timbres. These function use the standard FILE
SELECT box, and work pretty much the same as "load file"
and "save file" (see Chapter 6). When a partial is
loaded, the entire timbre is re-transmitted to the MT-32.
For best results when loading a partial, you should note
its type (SYNTH, PCM, or RING MOD) and make sure the
structure also calls for that type.

7.8   COPY/SWAP SECTIONS OF A TIMBRE   copy/swap

This function moves sections of data around within a
timbre. Copy is used to duplicate data. For example, you
could copy one partial to all the others and then detune
them all for a "fatter" sound. Swap is used to exchange
data. You may want to experiment with swapping just for
fun.

To use this function, select source and destination
partials in the FROM and TO boxes respectively, and
choose the section of data to be copied or swapped in the
SECTION box ("wave gen" includes both PITCH and WAVEFORM
parameters). When you're ready to proceed, click in
either the "SWAP" or "COPY" box, and the action will take
place. The resulting timbre is sent to the synth. If not
satisfied, use "undo" to restore the old timbre.

7.9   PRINT   print

Use this function to print out the Edit screen text. If
the printer is not ready, the program will wait for you
to hit a key (or mouse button). If it's still not ready,
PRINT is cancelled. Note that this function prints out
only the page which is currently displayed. To print out
an entire voice timbre, you should print out the TIMB
EDIT and PENV EDIT screens for each partial.

C H A P T E R   8

G R A P H I C   E D I T I N G

_____

> Now here's something you'll really like!
> -Rocket J. Squirrel

Forget about those messy times and levels. In fact,
forget about numbers, you won't need them here. Here you
will shape the envelope with your mouse, and a minimal
bit of hand/eye coordination. Graphic Envelope Editing
makes it easy to pick a point on an envelope and move it
anywhere it can be moved.


```
P-ENV     0   1   2   3   4      depth   3
 times        29  35  30  95     velo rng 0
levels  -17 +39 -33 +17 -50      time kf  1
```
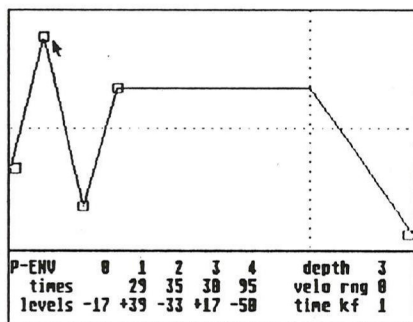
8.1 THE ENVELOPE GRAPHS

All envelopes are shown with LEVEL the vertical and TIME
the horizontal. KEY ON is the left side of the screen.
KEY OFF is where the vertical dotted line is. On the
PITCH ENV graph (shown above), the horizontal dotted
line represents zero pitch change. Note the little
boxes, which are used to grab a point for dragging.

8.2   MT-32 ENVELOPES

Both the TVF and TVA envelopes are 5-segment envelopes.
The envelopes start at a level and time of zero. Each of
the first four segments have level and time parameters
which determine the level of the next point and the
amount of time it takes to reach it. The fourth segment
is usually the Sustain segment, and its level is held
until the key is released, at which time the fifth
segment brings the level back to zero. If the COMMON
parameter "envelope mode" is set to "no-sus" the fifth
segment will begin immediately after the fourth segment.

8.3   GRAPHIC INPUT

To edit a point, click in its box, and keeping your
finger firmly placed on that left mouse button, drag it
around. When you have released, the updated parameters
will be sent to the synth, and you can play the mouse a
little to hear what you did.

UNDO: Use the "undo" command in the menu to undo a
graphic editing change. This will undo the most recent
change only.

NOTE: The graphs do not include effects due to the "time
key follow" and "velocity to time" parameters. If two
envelopes look the same but sound different, check these
parameters.

ANOTHER NOTE: None of the envelopes are accurate with
respect to a linear time scale, but they do provide a
good visual reference and are easier to deal with than
accurate ones would be.

To get a hard-copy picture of the graphs, the screen may
be printed out in graphics format (on some printers) with
the built-in Atari screen dump (see your ST manual), or
with any other RAM-resident screen dump program.

C H A P T E R   9

S E T - U P   M O D E

```
┌SYSTEM──────────────────┐      ┌MENU──────┐
│Master Tune......... 0   │      │F1 timb bank│
│Master Volume....... 74  │      │F2 main edit│
│                        │      │F3 penv edit│
│Reverb Mode......[room] │      │F4 patch bnk│
│Reverb Time..........6   │   ▶  │F5 system   │
│Reverb Level.........3   │      │F6 ld set-up│
└────────────────────────┘      │F7 sv set-up│
                                 │F8 get setup│
┌SYSTEM────PATCH─────────────────│F9 get parts│
│ prtl midi  timbre    key fine bend assn rvb out pan│10 undo     │
│ resv chnl  select    shft tune rng mode sw lev pot │11 print    │
│                                                    └──────────┘
│1  3   2  B 5 Slap Bass1  0   0  12   1  on  00   7
│2  10  3  A49 Str Sect 1  0   0  12   1  on  00   8
│3  6   4  B32 Brs Sect 1  0   0  12   1  on  00   7
│4  4   5  B15 Sax 1       0   0  12   1  on  00   8
│5  3   6  A42 Ice Rain    0   0  12   1  on  00   4
│6  0   7  A 4 ElecPiano1  0   0  12   1  on  00  10
│7  0   8  B47 BottleBlow  0   0  12   1  on  00   0
│8  0   9  B59 Orche Hit   0   0  12   1  on  00  14
│R  6   10                 0   0  12   1      00
```

The SET-UP Mode combines MT-32 System parameters, such as
Master Volume, Reverb Type, MIDI channel assign, etc.,
with the current Patch parameters for all eight Parts
plus the Rhythm Part.

Together, these parameters describe the entire state of
the MT-32 at any given time (with the exception of
timbres which may have been edited). Set-up parameters
may be edited, saved to, and loaded from disk. The MT-32
System parameters, as well as volume and pan, do not get
stored in any sort of bank form (unlike the Patch
parameters). The only way to save these parameters is by
saving Set-up parameters to disk.

When a parameter is selected which corresponds to a Part (1-8 or R), the Solo Channel (also the Mouse Channel) is automatically changed to that Part's channel, making it easy to check things out by playing the mouse.

In displaying the Patch name, the computer assumes that the currently selected timbre bank is the same as the "Memory" timbre bank in the MT-32. To avoid confusion, this should be the rule when working with Set-ups.

****
WHEN WORKING WITH SET-UPS, MAKE SURE THE SELECTED TIMBRE BANK IS THE SAME BANK CURRENTLY LOADED IN THE MT-32.
****

9.1 MIXING TIMBRE AND SET-UP MODES

You will find that SET-UP Mode does not mix well with TIMBRE BANK or EDIT Modes. This is because whenever any current Patch parameter or parameters are sent to the synth, the timbres pointed to by the Patches are automatically loaded by the MT-32. So if a Set-up is loaded from disk, or if any Patch parameter is edited in the SET-UP Mode, a timbre will be re-loaded by the MT-32, from its memory.

Therfore, it is best to seperate timbre editing and patch editing tasks -- finish one before undertaking the other. Edited timbres should be stored before working with the Set-up. Conversely, if you want to edit a timbre which has been loaded via a set-up, you should use the "get parts" function before going to EDIT Mode.

Also, if a new timbre is selected for a Part from the TIMBRE BANK Mode, the Patch timbre number is not changed. You must do it manually, if that's the desired effect.

9.2   GET SET-UP PARAMETERS   get setup

This function is used to get the settings of all the Set-
up parameters from the MT-32. As with all "get" commands,
the MT-32 must be connected bi-directionally. This
is automatically called when the program is booted.

NOTE: If MIDI messages such as Program Change, Panning,
and Volume come through (Merge is ON), they will change
Set-up parameters in the MT-32. If this happens, you'll
need to use "get setup" to get the changes.

9.3   LOAD AND SAVE SET-UP PARAMETERS   .   ld set-up
                                                      sv set-up

All Set-up parameters may be saved to disk. When loaded
from disk, the parameters are also sent to the MT-32,
replacing the current MT-32 System and Patch parameters,
which causes timbres to be loaded into all eight Parts.
The "ld set-up" and "sv set-up" functions are similar to
the "load file" and "save file" functions covered in
Chapter 6.

The Set-up can be used to save the state of the MT-32
for a particular performance. The MT-32 can be restored
to this state by loading a Set-up file from disk.

NOTE: If the Set-up uses timbres from the MT-32 "Memory"
timbre bank, the timbres in the MT-32 must be the same as
when the Set-up was saved, since the timbres are referred
to by number only.

C H A P T E R   1 0

P A T C H   B A N K

```
┌PATCH BANK──────────────────────────────────┐        ┌─MENU──────┐
│                                             │        │F1 timb bank│
│ midi timbre          key fine bend assn rvb │        │F2 set-up   │
│ pgm  select          shft tune rng mode  sw │        │F3 system   │
│                                             │        │F4 ld p-bank│
│  33  A33 Fantasy       0    0   12   1   on │        │F5 sv p-bank│
│  34  A34 Harmo Pan     0    0   12   1   on │        │F6 get all  │
│  35  A35 Chorale       0    0   12   1   on │        │F7 send all │
│  36  A36 Glasses       0    0   12   1   on │        │F8 fill->end│
│  37  A37 Soundtrack    0    0   12   1   on │        │F9 undo     │
│  38  A38 Atmosphere    0    0   12   1   on │        │10 print    │
│  39  A39 Warm Bell     0    0   12   1   on │        └───────────┘
│  40  A40 Funny Vox     0    0   12   1   on │
│  41  A41 Echo Bell     0    0   12   1   on │        ┌───────────┐
│  42  A42 Ice Rain      0    0   12   1   on │        │  1- 16    │
│  43  A43 Oboe 2001     0    0   12   1   on │        │ 17- 32    │
│  44  A44 Echo Pan      0    0   12   1   on │        │ 33- 48    │
│  45  A45 DoctorSolo    0    0   12   1   on │        │ 49- 64    │
│  46  A46 Schooldaze    0    0   12   1   on │        │ 65- 80    │
│  47  A47 BellSinger    0    0   12   1   on │        │ 81- 96    │
│  48  A48 SquareWave    0    0   12   1   on │        │ 97-112    │
│                                             │        │113-128    │
└─────────────────────────────────────────────┘        └───────────┘
```

The Patch Bank Mode allows you to directly edit the
patches stored in the MT-32. There are 128 Patches, 16 of
which are viewable at any time. The left-hand column
shows the MIDI Program Change number of the Patch (1-
128). You may click in the box in the lower right corner
of the screen to select the range of Program Change
numbers shown.

To hear any audible change, the corresponding MIDI
program change message must be sent, so this isn't an
immediate mode like SET-UP was. To hear a patch, you
could easily try it in SET-UP Mode, then program it in
PATCH BANK Mode.

In displaying the Patch names in PATCH BANK mode, the
computer assumes that the currently selected timbre bank
is the same as the "Memory" timbre bank in the MT-32. To
avoid confusion, this should be the rule.

****
WHEN WORKING WITH PATCHES, MAKE SURE THE SELECTED TIMBRE
BANK IS THE SAME BANK CURRENTLY LOADED IN THE MT-32.
****

10.1 LOADING AND SAVING PATCH BANKS   ld p-bank
                                              sv p-bank

Patch Banks are loaded and saved along with the "load
file" and "save file" Timbre Bank commands. They can
also be seperately loaded and saved with these commands.
When a Patch Bank is loaded with this command, it is
automatically sent to the MT-32.

10.2 FILL TO END   fill->end

This function takes the currently selected parameter and
copies it to all higher-numbered patches, then sends the
result to the MT-32. This could be used, for example, to
change all the bend ranges to 2. First, change #1's bend
range, then select "fill->end" and it is done. If you
make a boo-boo, "undo" may be used to undo this function.

C H A P T E R   1 1

M I D I   M E R G E

There are several good ways to patch together a system
which will take advantage of the MERGE features built
into this program. The system you choose will depend on
the equipment and sequencer or sequencing software you
have. This chapter gives an introduction to the Merge
feature, and a few examples of systems which take
advantage of it (more on Merge in the System Parameters
chapter).

11.1 MIDI MERGE

This software contains a MIDI MERGE function which merges
MIDI data with System Exclusive data. The MIDI MERGE
may be OFF or ON. When ON, the MIDI information which
appears at the computer's MIDI IN jack is combined, or
"merged," with System Exclusive Data from this program.

One of the incoming channels may be SOLOed (only input on
one specific channel is merged) or RECHANNELIZED (input
on all channels is converted to the specified channel).

If you own an external sequencer, or another computer
which is used for sequencing, you will be able to
play a sequence concurrently and adjust synthesizer
parameters or load timbres from the computer. With the
SOLO feature, the instrument you are voicing (or any
other channel) may be soloed in the sequence.

Another situation in which MERGE is especially useful is
with rack mounted modules such as TX-7, TX-816, FB-01, or
MT-32. Using MERGE, the synth may be voiced from any
master keyboard.

Instead of changing the master keyboard or the synth's
MIDI channel, or putting the synth in OMNI mode, use
RECHANNELIZE while voicing to achieve the same effect.

11.2 MERGE MODES

OFF: nothing is re-transmitted

ON : everything is re-transmitted, except
during disk access or printing, and combined
with System Exclusive messages from this
software. System Exclusive messages are not
re-transmitted.

SOLO: Only messages on the designated MIDI
channel are re-transmitted.

RECHANNELIZE: Messages received on ANY MIDI
channel are re-transmitted on the designated
channel.

****

IMPORTANT NOTE : When MERGE is ON, it attempts to keep
track of notes, so that it may know when to allow changes
such as MERGE OFF to occur without causing stuck notes to
occur. If the program shows the prompt "Notes On?" while
changing a Merge-related parameter, it's waiting for all
notes to be off. If all notes are already off, hit the
ANY KEY to resume.

****

11.3 SYSTEM EXAMPLES

BOB'S BASIC TWO-COMPUTER SYSTEM:

```
        out  in        out   in    out     *thru box in
Master ---- Sequencer ----  Voicing  ---- Slave synths
Guitar        Computer      Computer   (Matrix-6, ESQ-1,
(GM-70)   (Compaq or ST)   (Atari ST)  D-50, MT-32, DX-7,
                                        TX-81Z, PCM-70)
```

*It is always a good idea to have a MIDI thru box or
matrix switcher to feed all the slaves.

This very simple system works very well, as my sequencing
software includes MIDI merge also. With this, I can
record a sequence, play any of my synthesizers directly,
have the sequencer play them, or any combination of the
above. And I can load and edit timbres from the computer
while everything else is going on, WITHOUT REPATCHING OR
EVEN FLIPPING A SWITCH! No Merge boxes required.

A ONE-COMPUTER SYSTEM would be set up the same way, with
the Sequencer and Voicing Computer combined in one
computer. This system also takes advantage of the Merge
feature.

Option: A MIDI matrix switcher, such as those made by
Kamlet, 360 Systems, J.L. Cooper and others, can be very
useful in any system. The ideal switcher would have one
input and output for each MIDI instrument. If inputs are
lacking, an extra input switch (cheap) can select one
slave output to be connected to the main switcher, to be
used when and if bi-directional communication is needed –
for example, to get sounds from a slave. Personally, I
have a 4-in, 8-out matrix switcher (with memory) from 360
Systems, and a Roland input switcher (and I'm happy).


```
Master Keyboard         <----->
                                  Matrix
Computer(s)             <----->   Switcher
                                  Box
Slave Synthesizers      <----->
```

A P P E N D I X   A

H E L P F U L   H I N T S

Start out with a bank file of initialized timbres. Save
this file under the name WORKBANK.M32 or whatever. As you
edit timbres, store them into this "scratch" file.
Periodically, save the scratch file to disk. With all the
cheap storage that this program affords, there is no
reason to be stingy about saving timbres which may not be
perfect --they may turn out to be useful someday.

A P P E N D I X   B

C H A N G I N G   T H E   D E F A U L T   F I L E

To get your own file of sounds to load automatically at
program start-up, do the following: First, save
INITBANK.M32 under some other name or on a different
disk. Then, on the Program Disk, save the file you wish
to be the default, and call it INITBANK.M32

A P P E N D I X   C

F O L D E R S

Folders may help to organize your sounds better if you've
got many files on a disk, or if you've got a hard disk.
From the GEM desktop, create a folder for each sub-group.
For example, since I've got a hard disk and all these
editing programs, I keep everything that has to do with
the MT-32 in one folder. When the FILE SELECT box appears,
you may click on the folder to access its contents. The
program remembers the last folder used for each disk
drive. To get back to an outer level of the disk, click
in the upper left box -- this is just standard GEM
procedure.

A P P E N D I X   D

R A M   D I S K S

You can use a RAM disk to increase the performance of
this program. This program uses 70K for itself and 32K
for synth data. This should leave a great deal of free
memory. To take advantage of this, boot up the computer
with the RAM disk program, and copy frequently used data
files from the floppy disk to the RAM disk (hint: keep
this data in a folder, and just copy the folder).   Then
start the program, WHICH MUST BE RUN FROM ITS ORIGINAL
PROGRAM DISK (i.e., don't copy "MT32EDIT.PRG" to the RAM
disk). Use the SYSTEM Mode Storage Drive parameter to
switch to the RAM disk (usually drive C).   When using the
RAM disk, disk Input/Output is EXTREMELY fast.   However,
you MUST remember to copy any altered files from the RAM
disk to a floppy disk, either from within the program, or
after you've exited the program.

A P P E N D I X   E

P R O G R A M M I N G   T H E   M T - 3 2

Herein lies a crash course on the care and feeding of
your MT-32. You WILL learn to make great sounds on it,
without randomizing! Like its big bro, the D-50, it is an
extremely easy and rewarding synth to program.

THE PARTIAL:

```
PITCH       --->  WAVE        TIME         TIME
PITCH LFO   --->  GENER-  ---> VARIANT ---> VARIANT
PITCH ENV   --->  ATOR        FILTER       AMPLIFIER
```


The Partial is based on a waveform generator, which can
either be a synthesizer waveform (triangle or square), or
one of 100 PCM sampled waveforms. This is the source of
all the noise.

The Pitch parameters determine the initial pitch of the
Waveform Generator, and how it relates to key position
and the pitch bender. There is also a Low Frequency
Oscillator (LFO) which can modulate the pitch.

The Pitch Envelope controls the pitch of the Waveform
Generator over the course of time, after a note is
sounded.

The Pitch-Modulated Wave Generator output is then run
through a Time Variant Filter, which is basically just
like the VCF of yore -- same idea. Its basic purpose is
to modify the signal's frequency spectrum over time.

Finally, the Pitch-Modulated and Filtered Wave Generator
output is sent to the Time Variant Amplifier, which
shapes the volume of the timbre over time when a note is
played.

ONE TIMBRE:

```
PARTIAL 1 ----> STRUCTURE ---->
PARTIAL 2 ---->
        |
PARTIAL 3 ----> STRUCTURE ---->
PARTIAL 4 ---->
        |
ENV MODE
```

A Timbre is a collection of up to four partials, arranged
into groups of two called structures. The structure not
only determines how the two partials are connected, but
it also chooses whether the PCM or Synthesizer Waveform
will be used for each Partial.

In several structures, one partial "ring-modulates"
another. Two of the structures are "stereo" structures,
placing the two partials in seperate speakers.

There is an overall "envelope mode" parameter, which may
be set so that sustain is ignored for all envelopes -
especially useful for rhythm sounds.

Each partial's output may be muted, so that partials
which don't need to sound won't be needlessly causing a
frog in the MT-32's throat (there can be a total of only
32 partials sounding at any given time).

The structure, envelope mode, mute, and the name of the
timbre are called the "COMMON" parameters, since they are
common to all of the partials.

C O M M O N   P A R A M E T E R S

STRUCTURE

The Structure controls both the type of waveform used for
each partial, and the way the partial's output is
utilized. A partial can have a Synthesizer waveform (S),
or a PCM waveform (P). A partial's output may "Ring-
Modulate" with another partial. Otherwise, it may be
simply mixed with the other partial. If a partial is a
PCM partial, the Time-Variant Filter will have no effect.
This is why all TVF parameters are shown as asterisks
when a PCM partial is displayed.

There are two structures for each timbre. One handles
partials 1 and 2, the other partials 3 and 4.

When you change the structure number, you will see the
graphic display change to show you how the partials are
connected. A pointer points to the currently selected
partial. The "P" or "S" refers to the partial's sound
source type. Ring Modulation is shown by an "R". The
following table is a more literal description of the
various structures.

STRUCT. NUMBER	OUTPUT DESCRIPTION			
1	Synth	mixed with	Synth	
2	Synth	mixed with	Ring Mod by Synth	
3	PCM	mixed with	Synth	
4	PCM	mixed with	Ring Mod by Synth	
5	Synth	mixed with	Ring Mod by PCM	
6	PCM	mixed with	PCM	
7	PCM	mixed with	Ring Mod by PCM	
8	Synth	panned rt.	Synth panned left	
9	PCM	panned rt.	PCM panned left	·
10	Synth	Ring Mod by Synth	(Ring Mod only)	
11	PCM	Ring Mod by Synth	(Ring Mod only)	
12	Synth	Ring Mod by PCM	(Ring Mod only)	
13	PCM	Ring Mod by PCM	(Ring Mod only)	

MUTE

Any partial may be muted by clicking on the "P" or "S" corresponding to that partial. If a partial is muted it is shown in normal video. Usually, the "P" or "S" is shown in inverse video, so it looks like a little box.

Muting is an extremely handy programming tool. It is used to isolate a single partial, making it easy to hear that partial's contribution to the total sound.

Also, some timbres don't need all four partials. The unused ones are muted. My understanding is that this makes it possible for more voices to sound simultaneously, as there is a 32 partial limit in the MT-32.

ENVELOPE MODE

The Envelope Mode may be set to "no-sus", meaning that the sustain section of an envelope is ignored. As soon as the envelope reaches the point at which the sustain section would have started, it begins the release section. A setting of "normal" gives you sustain as usual. This Envelope Mode affects all envelopes in the Timbre.

NAME

The 10-character name is part of the COMMON data. Any standard ASCII character may be used, although some may not look the same in the MT-32's display.

P A R T I A L   P A R A M E T E R S

```
┌PITCH──────────┐
│coarse    C 4  │
│fine      + 5  │
│key-fllw    s1 │
│pitch bend  on │
│lfo rate     0 │
│lfo depth    0 │
│lfo mod      0 │
└───────────────┘
```

PITCH

Coarse: The basic pitch of the partial's sound generator
when Middle C (C4) is played is set here. It is
adjustible in semi-tone steps from C1 to C7.

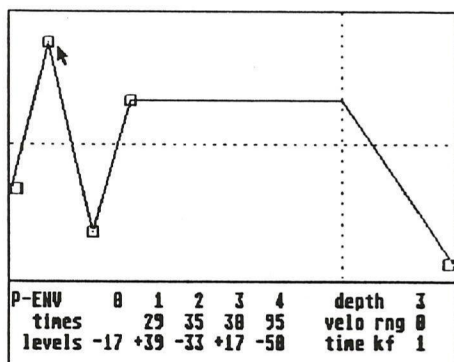Fine: Fine adjustment of the pitch (+/- 50 cents).

Key Follow: Determines the extent to which the pitch will
follow the key number. Besides the semi-tone per key
scale, you can get quarter tones, eighth tones, fixed
tuning, even backwards keyboards. The value shown
represents how many octaves are changed over 12 keys. The
values "s1" and "s2" are slightly stretched tunings
(slightly greater than "1", which is the standard).

Pitch Bend: The effect of the pitch bender on this
partial's pitch may be turned ON or OFF.

LFO Rate: This sets the rate (frequency) of the Pitch Mod
LFO from 0 to 100. Higher values quicken the rate.

LFO Depth: This sets the depth of Pitch Modulation direct
from the LFO (0 to 100). Higher values mean more
modulation.

LFO Mod: This sets the sensitivity to Pitch Modulation
from the LFO via the Mod Wheel (0 to 100).

```
P-ENV    0   1   2   3   4     depth    3
times        29  35  30  95    velo rng 0
levels  -17 +39 -33 +17 -50    time kf  1
```

PITCH ENVELOPE

Times and Levels: These control the shape of the pitch
envelope. With this envelope only, there are parameters
for both the starting and ending levels of the envelope,
making easy to "bend up from" or "trail off to" other
pitches.

Depth: This sets the overall maximum effect of the pitch
envelope from 0 (no effect) to 10 (+/- 3 octaves).

Velocity Range: As this parameter is increased from 0 to
2, the effective depth for lower velocities is decreased.
It has no effect if you play hard, but if you play softer
you'll notice less pitch envelope depth.

Time Key Follow: This parameter is used to speed up the
pitch envelope as you go up the keyboard from Middle C
(C4), and slow down the envelope as you go down the
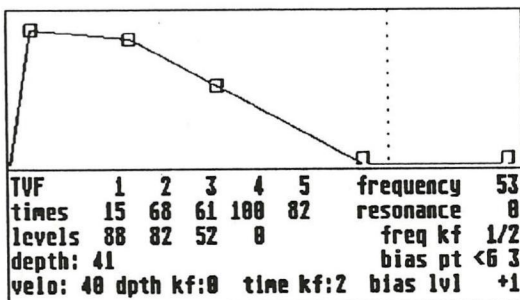keyboard. The range is from 0 (no effect) to 4 (maximum
effect).

WAVEFORM

Waveform or PCM Wave Number: This selects the waveform of
the sound source. Depending on the STRUCTURE selected for
the partial, it may be either a PCM sampled sound, or a
Synthesizer waveform. Some of the PCM sounds are "one-
shot" sounds, usually the attack sound of a particular
instrument. Others are loops which may be used for
sustained sounds. A synthesizer wave may be either square
or sawtooth. When a square wave is selected, the Pulse
Width controls come into effect.

NOTE: PCM waveform names have noot been standardized by
Roland, so I've named them as best I can. These are
subject to change if someone at Roland discovers the lost
MT-32 manuscripts.

Pulse Width: This changes the "width" of the square wave,
which changes its harmonic content in a way that will be
familiar to all you analog style synthesists. At zero,
the wave is a square wave, with equal up and down cycles.
At 100, the upper cycle is much longer than the lower
cycle, so that the ratio of upper to lower, hitherto
known as the pulse width (and destined to take the place
of the mud shark in your mythology) is bigger.

Pulse Width Velocity Sensitivity: Velocity can increase
or decrease the initial Pulse Width setting. This
parameter sets the sensitivity from -7 to +7. With
negative values, the pulse width becomes smaller by
playing the keyboard harder. With positive values it
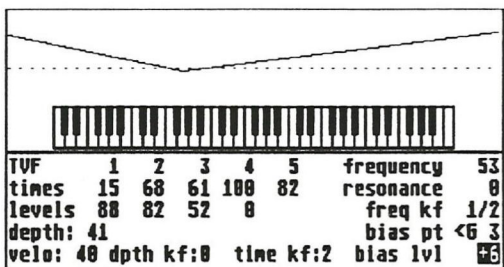becomes larger.

```
TVF      1   2   3   4   5    frequency    53
times   15  68  61 100  82    resonance     0
levels  88  82  52   0         freq kf    1/2
depth: 41                       bias pt   <6 3
velo: 40 dpth kf:0  time kf:2  bias lvl     +1
```

TIME VARIANT FILTER   (Synthesizer Partials ONLY)

Frequency: The cutoff frequency of the filter. That is, the frequency above which the filter will begin to attenuate. It is adjustible from 0 to 100. As you lower the cutoff value, more high frequencies are attenuated and the waveform gradually approaches a sine wave, then fades out as the fundamental frequency is attenuated.

Resonance: This boosts frequencies around the cutoff frequency. The amount of boost is adjustible from 0 to 30. As resonance is boosted, the sound becomes more "un-natural" and "electronic." Too much boost and your O-rings may go, causing a "major malfunction." Unlike most analog filters, the resonance cannot be set so high that the filter acts like an oscillator, which may disappoint analog fans.

Frequency Key Follow: Key follow can change the frequency cutoff point according to the key played. As with Pitch Key Follow, the value represents how many octaves the filter changes over 12 keys. A value of "1" is standard, but lower values are often used to relatively decrease the high harmonics of the higher notes (high notes can frequently sound too "bright" or "piercing" otherwise). Effect due to Frequency Key Follow is always zero at Middle C (C4).

```
┌─────────────────────────────────────────────┐
│                                               │
│ ╲                                        ╱    │
│  ╲___                                 ___╱    │
│      ╲__                           __╱        │
│· · · · ·╲__· · · · · · · · · ·__╱· · · · · ·  │
│           ╲_____╱               │
│ ┌─────────────────────────────────────────┐  │
│ │▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌▐█▌│  │
│ └─────────────────────────────────────────┘  │
│ TVF      1    2    3    4    5   frequency  53│
│ times   15   68   61  100   82   resonance   0│
│ levels  88   82   52    0         freq kf  1/2│
│ depth: 41                         bias pt <G 3│
│ velo: 40 dpth kf:0  time kf:2  bias lvl    +6  │
└─────────────────────────────────────────────┘
```

NOTE: The Bias Graph for the TVF shows the effect of <u>both</u> the Frequency Key Follow parameter and the Bias Point and Level parameters. The vertical range shown on the graph is approximately two octaves down and three octaves up. The horizontal dotted line represents the unadjusted cutoff frequency.

****
BIAS GRAPHS MAY BE VIEWED IN THE MAIN EDIT MODE BY
CLICKING ON THE WORD "BIAS," JUST UNDER THE MENU.
****

Bias Point and Level: This is another Key Follow adjustment, which serves exactly the same purpose, but is more flexible than the Frequency Key Follow described above. With these parameters, you may select the range where the adjustment takes place as well as the amount of the adjustment. The range (bias point) may be selected from <A1 to <C7 (read "less than A1" to "less than C7") and from >A1 to >C7 ("greater than A1" to "greater than C7").

Example:
          >C4: The bias level affects only keys above C4.
          <B3: The bias level affects only keys below B3.

The Bias Level for the TVF can be set from -7 to +7. Positive values raise the filter cutoff curve over the specified range, while negative values lower it.

TVF ENVELOPE   (Synthesizer Partials ONLY)

Times, Levels: These parameters control the shape of the
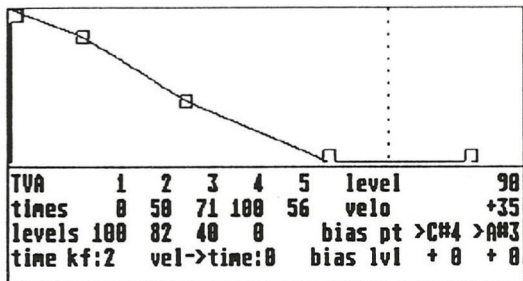envelope (see the section on MT-32 Envelopes).

Depth: This sets the amount of envelope used to control
the filter cutoff frequency. The cutoff frequency is
added to by the envelope -- this parameter sets the depth
of this modulation. A value of "0" gives NO envelope
effect, while a value of "100" gives "FULL envelope
effect.

NOTE: If the frequency is set too high to start with, you
will not get the full effect of the envelope, as the
filter frequency will "max out."

Velocity: The amount of velocity may also control the
depth of the envelope, adding to the initial depth. Use
"depth" to set the low-velocity depth of the envelope,
and adjust "velo" so that the amount of envelope
modulation sounds right when you play hard.

Depth Key Follow: The position of the key may also
control the depth of the envelope. Zero means no change
according to key, but greater values give keys above
Middle C (C4) more envelope depth, and lower keys less
depth. The depth at Middle C remains constant.

Time Key Follow: The "times" of the envelope may be
modulated by key position. As this parameter is
increased, envelopes for notes above Middle C (C4) become
shorter, and those below Middle C become longer. The
higher the value, the more pronounced the effect. Time
Key Follow can be used to simulate the effect of string
instruments, where higher strings decay more quickly than
lower strings.

```
TVA      1   2   3   4   5   level         98
times    0  50  71 100  56   velo         +35
levels 100  82  40   0       bias pt >C#4 >A#3
time kf:2   vel->time:0       bias lvl  + 0  + 0
```

TIME VARIANT AMPLIFIER

Level: This sets the overall level of the Partial, by
setting the depth of the amplitude envelope. The range is
from 0 to 100.

Velocity: This sets the amount which the depth of the
envelope (level) is affected by velocity. Adjustible from
-50 to +50, negative values lower the level as you play
harder, while positive values increase it.

Bias Points and Levels: The TVA has two programmable Bias
Curves to handle keyboard scaling (key follow) chores.
The Bias Points are the same as with the TVF. The Bias
Levels only go negative (0 to -12), thus attenuating the
levels within the bias range.

Times and Levels: These parameters control the shape of
the TVA envelope (see the section on MT-32 envelopes).

Time Key Follow: This changes envelope time relative to
key position, like the TVF parameter of the same name.

Velocity to Time: With the TVA envelope, velocity can be
set to modulate the time of the first stage of the
envelope, making it faster when the key is struck harder.
As the value is increased from 0 to 4, the effect becomes
greater.

P A T C H   P A R A M E T E R S

Patch parameters exist in both the SET-UP Mode, which
controls the currently selected Patches, and the PATCH
BANK Mode, which is used to edit the stored Patches. For
more on these parameters, read pages 23-24 of the MT-32
manual.

Timbre Select: This selects the timbre which is pointed
to by the patch. The Timbre Bank may be set to A or B
(presets), M (programmable memory), or R (preset rhythm
timbres). The timbre number may be set from 1 through 64,
except for rhythm, which accepts only 1-60 (31-60 are the
same as 1-30. Note that this points to a timbre, but the
actual timbre itself is not stored as a part of the
patch.

Key Shift: This is used to transpose the Timbre +/- 24
semi-tones.

Fine Tune: This parameter detunes the Timbre +/- 50
cents.

Bend Range: This sets the range of the Pitch Bender in
semitones from 0 (no bend) to 24.

Assign Mode: This sets the key assign mode for the patch.
There are four modes, all polyphonic:

  POLY 1: Single Assign, priority to data last received
  POLY 2: Single Assign, priority to data first received
  POLY 3: Multiple Assign, priority to data last received
  POLY 4: Multiple Assign, priority to data first received

Reverb Switch: This controls whether or not the output of
a patch is sent to the reverb (ON or OFF).

Output Level (not stored with the patch): Controls the
overall output level of a Part (0 to 100).

Pan Pot (not stored with the patch): Controls the stereo
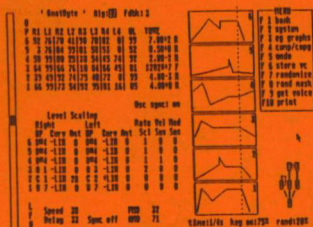placement of a Part (0 to 14, 7 is center)
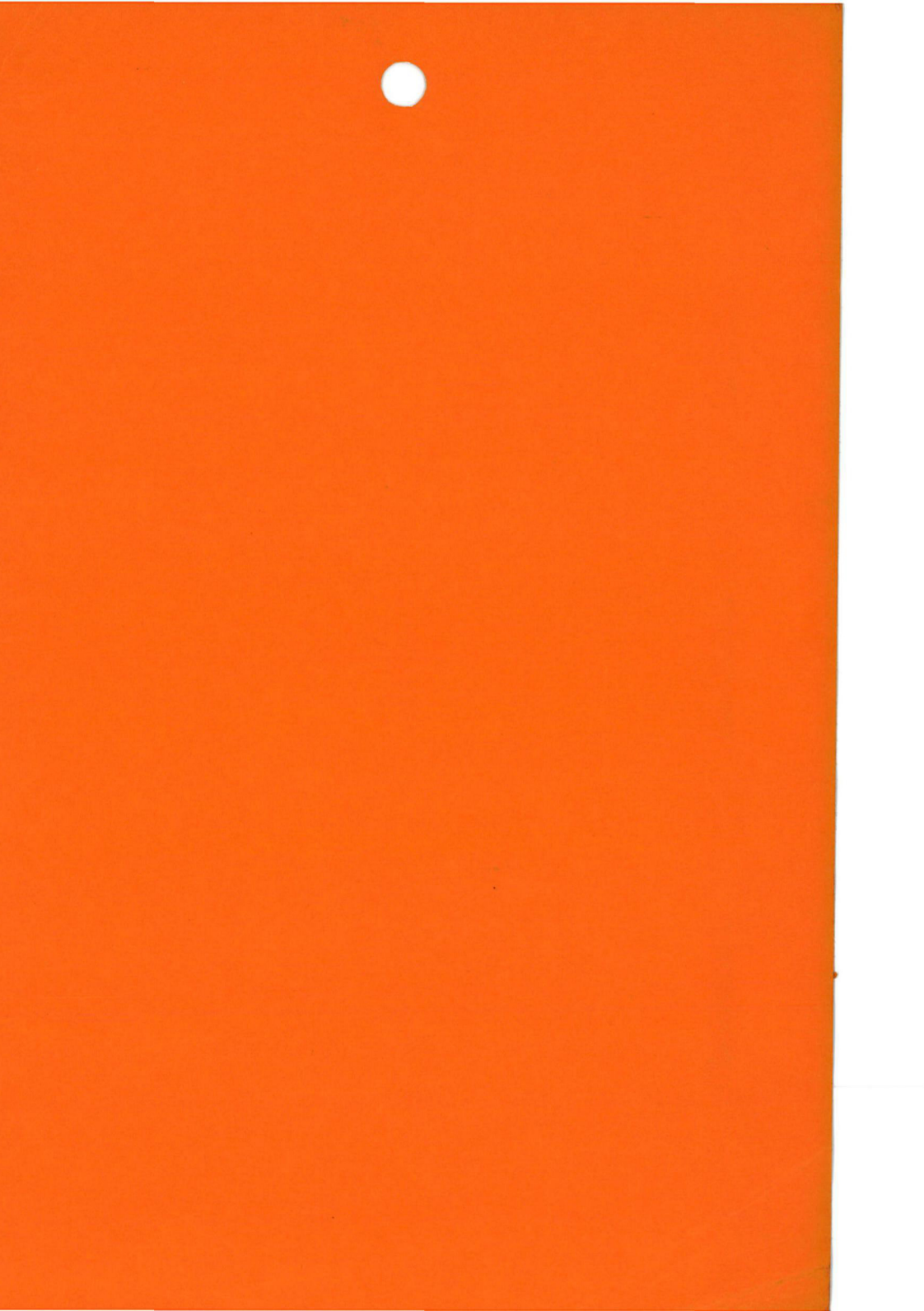
Dr. T'S MUSIC SOFTWARE
220 BOYLSTON STREET SUITE 306
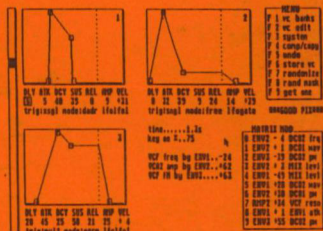CHESTNUT HILL, MA 02167
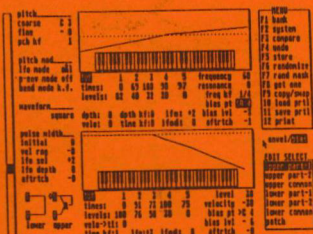(617)-244-6954

The Dr. and the Caged Artist...
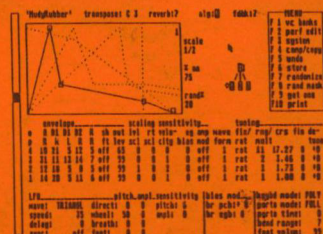# CREATING EXCITING NEW WAYS TO CREATE EXCITING NEW SOUNDS!

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M-6 Tricks

Roland D-50

4-OP Deluxe

Features include:

Totally Mouse-Driven user interface
Play any note, velocity, or controller via the Mouse **without** touching the synthesizer
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Randomize-Mask of all editable parameters, YOU choose the parameters YOU want to randomize!
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Copy parameters from any voice to another
At least two banks of patches in memory at any time
Flexible **Copy, Move, and Swap** of voices between any slot or bank
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And It's Fun Besides!

Other Dr.T's products for the Atari ST include: Keyboard Controlled Sequencer v1.5 and Copyist v1.4 scoring/transcription programs. Caged Artist editor/librarians Oberheim "M6-Tricks", Ensoniq ESQ-1 ESQ'apade, Lexicon PCM-70, DX-Heaven, 4-OP Deluxe (DX100, 27, 21, FB-01, and TX-81Z), Roland D-50, MT-32, and Korg DS-8 and DP2000/3000. New Programmable Variations Generator (PVG) and Multi Program Environment (MPE). Some products available on Macintosh, Amiga, Commodore 64, Apple IIe, and IBM-PC computers, call for details.

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