Steinberg

SYNTHWORKS
D5/10/20/110/MT32

USER'S MANUAL

Version 1.0

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GENERAL INTRODUCTION

A. HELLO!

Welcome to SYNTHWORKS, a powerful new Steinberg program designed to help you get the very best out of your musical instrument.

SYNTHWORKS ?...

Synthesizer Editing softwares were born from the fact that today's synthesizers are both complex and unfriendly to program. Therefore an editor must have an extremely powerful and easy-to-use interface. This is the first characteristic of the SYNTHWORKS programs.

Another point is that synth manufacturers make major efforts producing original instruments which are as innovative as possible compared to their competition. This is why every SYNTHWORKS program has got its own original and distinct layout, to match as closely as possible the synth architecture. This approach makes the SYNTHWORKS line unique.

Finally, there is a main philosophy behind the software. We offer the musician the shortest path between ideas and their realization allowing work to proceed as the speed of thought. We believe that a software program must not delay you or break your rhythm. Your inspiration must remain intact. This program has been developed with this aim in mind. We have conceived new techniques to speed up your work. For example the famous GEM has been re-written to multiply operation speed (try a comparison with any other GEM program!). SYNTHWORKS works on ATARI 1040 and all Mega STs, even with the Blitter-chip. You will find a disk with the color program and another with the black-and-white version.

IMPORTANT:
In order to run the SYNTHWORKS software you must have the software key fitted into the ATARI ST's ROM-PORT (found on the left hand side of all current ST computers). Be sure that the key is both THE RIGHT WAY UP and when you insert or remove it, TURN THE COMPUTER OFF.

This kind of copy protection has important advantages for you:

- You have no risk of damaging your disk drive since there is no disk protection.
- You can make as many disk backups as you like.
- You can put your program on a hard disk.

Before you go any further, you should make backup copies of the program disks which come with this manual, then use the copies as your "working disks" and put your originals away somewhere safe.

Always use copies of the original disks for your work.

Load the program by double clicking on the icon "SYNTH_B.PRG" (black-and-white monitor) or on "SYNTH_C.PRG" (color monitor).

Note: the folder labelled "LA.DAT" contains files used by the program (i.e. "there is nothing for you inside").

Do not forget to turn up the monitor volume as the program sometimes sends beeps for control purposes.

The best way to understand SYNTHWORKS is to read the manual and at once try out the examples and techniques described. But you might also use the "HELP MODE"...

B. HELP MODE

This program is capable of explaining itself to you! If you choose the menu option "HELP MODE" (or press <HELP> on the ATARI) the mouse cursor becomes a question mark. You can then move this question mark onto a menu option and click, a window will open displaying information about it.

Where an item is obvious enough (example: the menu option "Quit"), no explanation is given.

In order to use this option, you need to have your program disk in the drive.

Re-Calling the help mode will take you out of that mode (the mouse cursor returns to its usual form).

Another way of getting help is to select the menu option "HELP Dispatch". In this case, a window opens and displays all the available topics (some of them are not available in help mode). Click on a topic and its related information will appear in a new window.

You close a window by clicking on its upper left corner, or by pressing <Esc> on the ATARI.

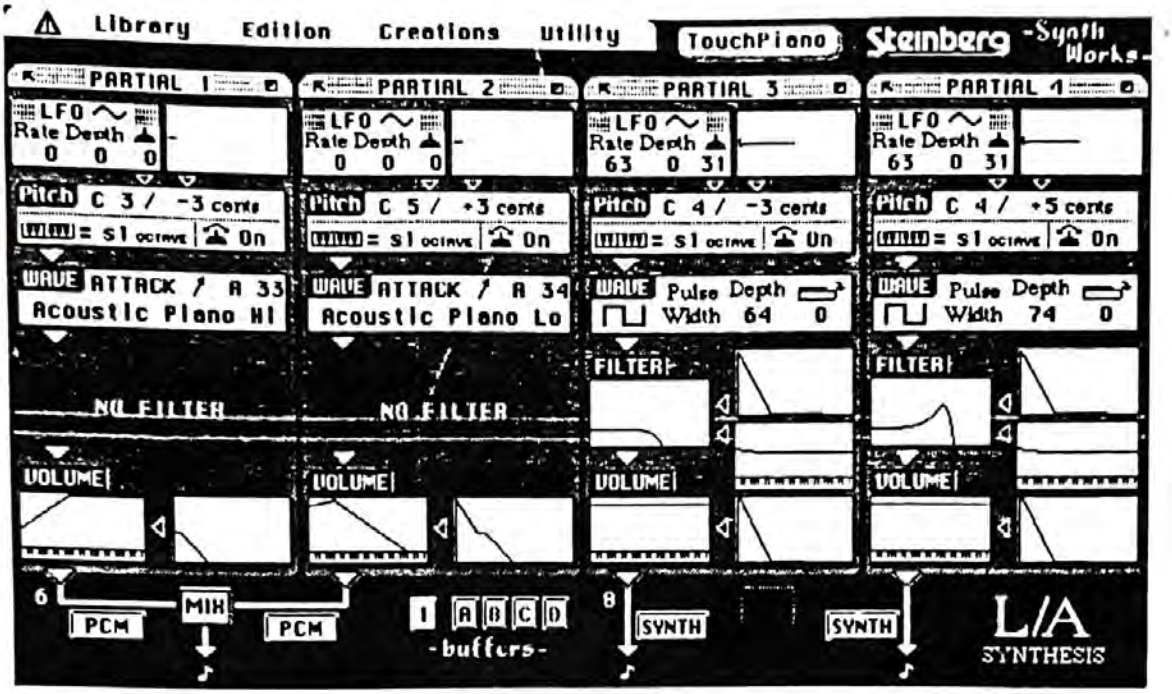
This help system contains most of the information covered by the manual supplied with the package.

C. SURVEY OF THE PROGRAM

The program is split into three main parts, each having a dedicated screen:

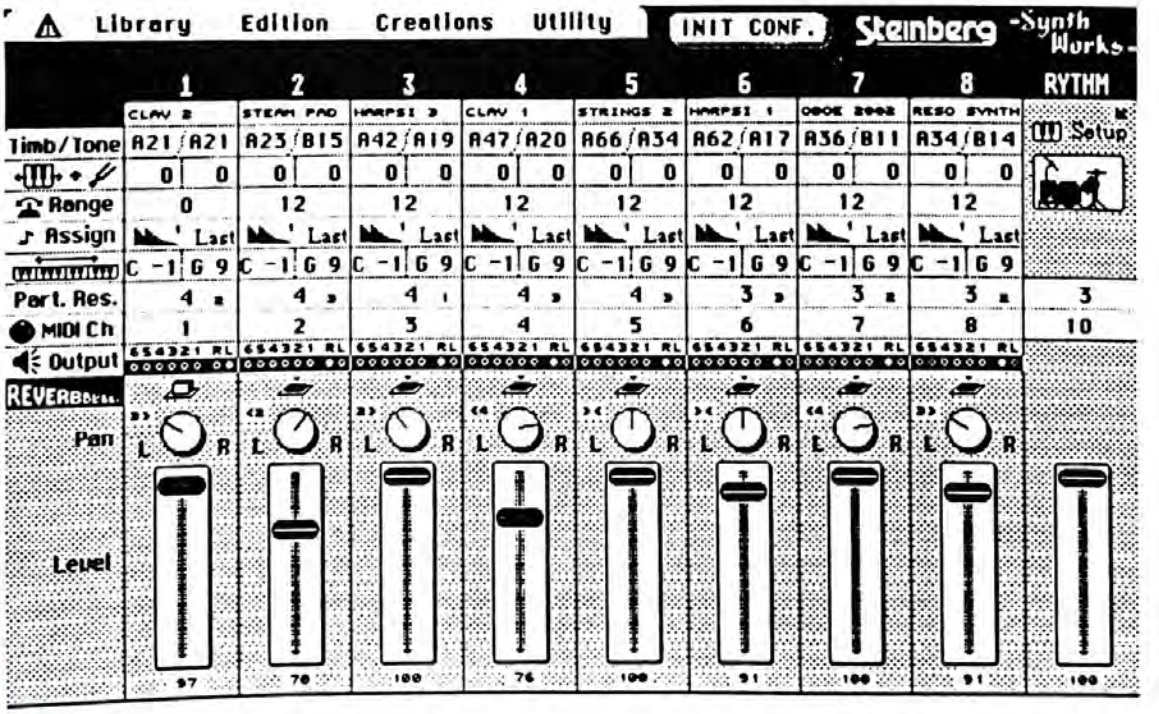
1. TONE EDIT PAGE

From this page, you are able to create and modify TONES. In other words, this page deals with SOUNDS.



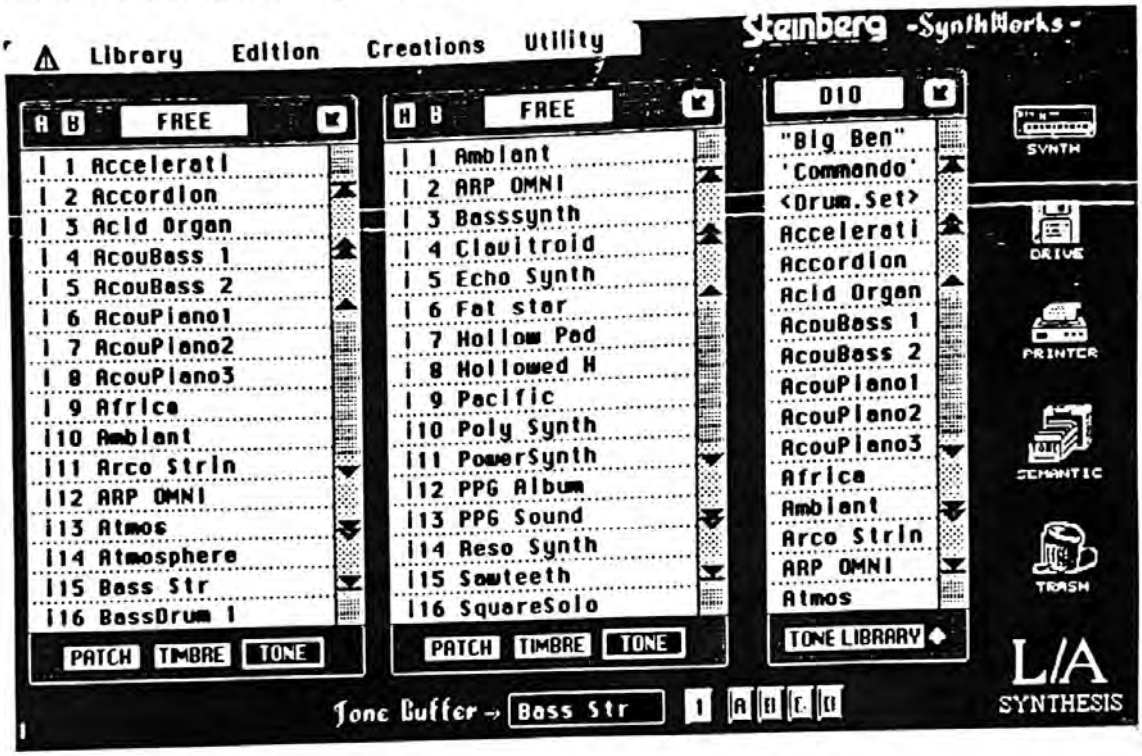
2. CONFIGURATION PAGE

From this page, you are able to create or modify PATCHES and MULTI TIMBRAL configurations. In other words, this page helps you to choose the sounds and configure your synth for a musical performance.



3. LIBRARIAN PAGE

From this page you manage your TONE, TIMBRE and PATCH memories via two banks and a large library.



Besides these 3 software areas, several important utilities are provided, such as a multi tasking sequencer, some automatic sound creation functions, a virtual keyboard, a drum kit editor, etc...

The manual is built around these different parts.

D. BEFORE GOING FURTHER...

Before going further you will have to MIDI-connect your synth:

MIDI-IN of the ATARI to MIDI-OUT of the synth.
MIDI-OUT of the ATARI to MIDI-IN of the synth.

If you have an MT32 or D110 expander and use a master Keyboard, simply join the MIDI OUT of the ATARI to the MIDI IN of the expander and the MIDI OUT of the Master keyboard to the MIDI IN of the ATARI (Note that if you want to transfer a bank you will have to connect the MIDI IN of the ATARI with the MIDI OUT of the synth). In that configuration, you will use the SYNTHWORKS MIDI MERGE function to direct the MIDI data coming from the keyboard to the ATARI MIDI OUT port.

When you have an expander and a master keyboard, it is a good idea to have an external MIDI merge box. Such a device can merge the data coming from the master keyboard and from the ATARI into one stream which goes into the MIDI IN of the expander, leaving the MIDI IN of the ATARI free to receive the MIDI OUT of the expander.

If you do not completely understand your synth, we advise you to read the chapter "SYNTH INTRODUCTION".

E. REMARKS

The information in this manual is presented under the assumption that you are familiar with the basic operations of your ATARI. In other words, if you don't know how to use the mouse, to select a menu option, or drag an icon, you should probably review your ATARI owners guide.

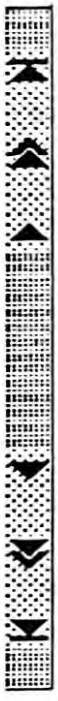
1. Keyboard Equivalents

When a menu option is ended by a symbol, pressing the corresponding key on the ATARI keyboard calls the option as if you selected it from the menu. Using keyboard equivalents is a matter of personal preference, but they can be faster than the standard menu selection process.

2. Windows

SYNTHWORKS windows are not "GEM windows", for fast operation!

- When a window is open, you can close it by clicking on the upper left corner or by pressing the "Esc" key on the ATARI.



- To scroll rapidly through the data displayed in a window, you have to click on the arrows of the window's right side. Depending on the arrow you click on, you can move from line to line, or from page to page, or you can directly jump to the beginning or to the bottom of a list. If you click with the right mouse button, then the scrolling is slower.

  When only one window is active, you can also use the Atari keyboard: if you press the vertical cursor keys then you move from line to line and if you also press <Control> at the same time, then you move from page to page.

- The presence of an arrow in the upper right corner of a window means that a menu is available: clicking on this arrow pulls down this menu.

3. Miscellaneous

- About the term 'inverse video' used in this manual: In the b/w version of the program 'inverse video' display means 'white letters on black background'; in the colour version it is exactly the opposite.

This manual will give you some tips and hints about how to use your synth, yet it is assumed that you have already read your synth owner's manual! It is a good idea to have it within reach while using SYNTHWORKS.

SYNTHWORKS is very easy to understand, but read the manual in any case; you might find it handy! (especially for discovering things you would not expect!).

SYNTH INTRODUCTION

SYNTHWORKS is fully compatible with the following Roland gear: D10, D20, D110 and MT32. These synthetizers have many common points; here follows a basic description of their architecture:

They have 3 kinds of sound memories: TONE, TIMBRE and PATCH memories (The MT32 has only 2 kinds). When you use your synth for playing, you select TIMBRES or PATCHES. When you create new sounds, you work on TONES.

A. TONES

A TONE memory is the actual SOUND memory, that is to say a collection of 246 parameters that control the sound generator of your synth. (For some unknown reason, a "tone" is called a "timbre" in the MT32 manual unlike the D10/20/110 manuals. We shall use the vocabulary of the D10/20/110 manual. In the D50 manual, a "tone" represents something different still!).

A TONE has got a 10 character name.

There are 191 preset TONES in the D10/20/110 (63 being dedicated to percussion sounds) and 64 programmable TONES.

There are 158 preset TONES in the MT32 (30 being dedicated to percussion sounds) and 64 programmable TONES (that are always erased when you switch off the instrument(!)).

B. TIMBRES

A TIMBRE memory does not produce a sound "by itself" (unlike a TONE) but it is a group of 8 parameters which is linked with a TONE memory (preset or programmable) and that use this TONE as sound source (this concept is very important to understand). Therefore modifying the TONE means also modifying the TIMBRE sound.

A TIMBRE attributes a key transpose to the TONE, a bender range, etc...The name of a TIMBRE is in FACT the name of the TONE.

There are 128 programmable TIMBRE memories. A TIMBRE is called a PATCH in the MT32 manual.

TIMBRES are used to create multi timbral CONFIGURATIONS: the synth has 8 "PARTS", each with an individual MIDI channel and TIMBRE. When working with a sequencer, a TIMBRE for each PART can be called with a PROGRAM CHANGE message, and the PART volume and panning can be monitored through CONTROL CHANGE messages.

Using TIMBRES has a meaning mostly when working with a sequencer.

C. PATCHES

A PATCH memory (not for the MT32) is a group of parameters that memorize a combination of sounds READY for playing. Like TIMBRES and unlike TONES, a PATCH does not produce a sound "by itself" but uses TONE memories as sound sources.

A PATCH is a combination of 2 TONES (D10/20) or 8 TONES (D110) with individual key transpose, bender range, etc..., as well as a reverb setting.

A PATCH has got a 16 character name (D10/20) or 10 character name (D110).

There are 128 programmable PATCHES in the D10/20 and 64 in the D110 (because they use more memory).

When working with a sequencer, PATCHES can be called by PROGRAM CHANGE message. But they can also be used for "live" application.

SYNTHWORKS stores these memories in one big bank containing 64 TONES, 128 TIMBRES and up to 128 PATCHES (depending on the synth). Since TIMBRES and PATCHES have a meaning ONLY through TONE memories, it would have been clumsy to provide separate banks for these 3 sort of memories.

D. PARTIAL RESERVATION

This is a very important concept in these instruments, yet not often well understood.

We shall see later that a TONE is made of 4 sound units called PARTIALS, each one being able to be muted. To produce a sound, a TONE needs between 1 and 4 active PARTIALS (usually the more PARTIALS, the more complex the sound can be).

The synth has the capacity to play 32 PARTIALS at the same time. In other words you can play simultaneously 8 TONES which are made up of 4 PARTIALS, or 16 TONES of 2 PARTIALS, or 32 TONES of 1 PARTIAL, or 10 TONES of 3 PARTIALS and 1 TONE of 2 PARTIALS, etc...The polyphony is not fixed, it floats depending on which TONES are being played at the time. The synth organizes itself internally in real time to provide the necessary number of PARTIALS to the notes that you play at the time.

"PARTIAL RESERVE" is an option that allows you to reserve a certain number of PARTIALS to a certain PART in order to never have a lack of polyphony on that PART. If a PART requests more PARTIALS than are reserved for it (for instance you play a big chord), then the synth will check in real time for unused PARTIALS and will use them temporarily, if any are available. If a PART needs some PARTIALS that are reserved and if all PARTIALS are used at that time, then a note being played and using unreserved PARTIALS will be switched off to provide free PARTIALS.

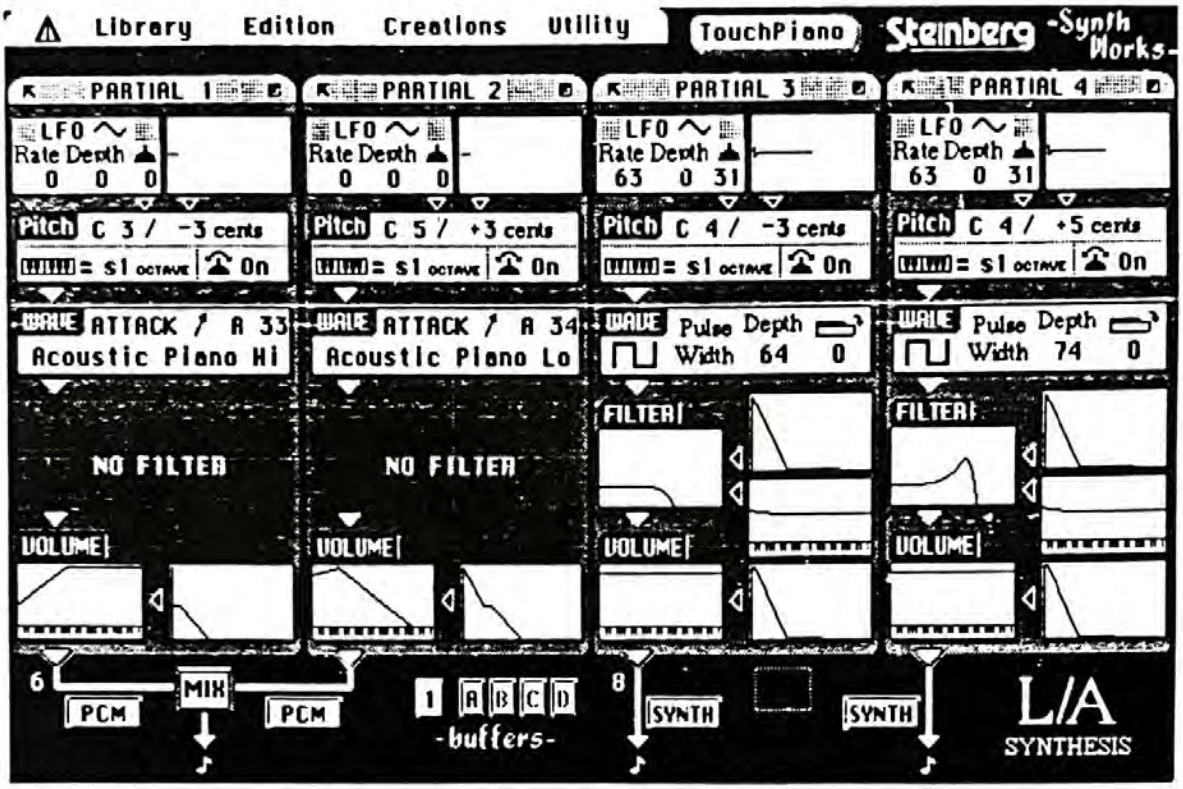
E. SYNTH TYPE

Before you start to experiment with the program and your synth, it is necessary to tell SYNTHWORKS which is the synth you are using: D10, D20, D110 or MT32. As a matter of fact, each one works in a slight different way!

Select the type of synth in the very left menu. When you have selected the right synth, you should save the setup.

TONE EDIT PAGE

A. INTRODUCTION



When you start up the program this will be the first page you see. When you are on another page, you can switch to the TONE EDIT page by selecting "EDIT TONE" in the menu "Edition" (or you can press '1' on the ATARI numeric keypad).

As a first approach, you could "click around" and see what happens. If this program is your first one from the SYNTHWORKS series, then read the chapter on EDIT MODES: this explains the different ways to change parameter values.

If you have read the chapter "SYNTH INTRODUCTION", you certainly understood that if you want to create or modify SOUNDS, then you must edit "TONES".

What is a TONE ?
A TONE is a COMBINATION of up to 4 PARTIALS. What is a PARTIAL then ? A PARTIAL is a simple synthesis module based on one oscillator with various modulation options. A PARTIAL can be in two distinct modes:

PCM or SYNTH. In the first case the module produces a sampled sound (PCM); in the other case, a "synthetic" wave associated to a filter is the start point.

And what is a COMBINATION ?
The 4 PARTIALS are organized in 2 STRUCTURES of 2 PARTIALS. For example PARTIAL 1 and 2 can inter modulate through a process known as "RING MODULATION" in order to produce more harmonics, or they can be mixed or output in stereo, etc... 13 structures are possible (see your synth manual for more information).

A PARTIAL can also be muted.

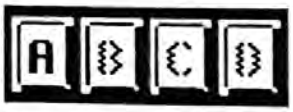
Any TONE is made of 1 TO 4 PARTIALS.

The screen has been designed in a manner to show the architecture of the sound at the first glance. You will for instance identify at once the 4 PARTIALS.

Each PARTIAL section displays, in order:

- THE PITCH PARAMETERS
- THE WAVE PARAMETERS
- THE FILTER PARAMETERS (TVF)
- THE AMPLIFIER PARAMETERS (TVA)

B. TONE BUFFERS



You can see four buttons labelled A,B,C and D (you will also find them on the LIBRARIAN page). These buttons symbolize the four available TONE buffers.

Every synthesizer programmer has probably come across the following situation at some point:

You find a good sound, try to improve it and fail; and retracing your steps produces a less than satisfying result.

The 4 buffers have been designed to solve this problem. The buffers can be copied quickly so you can always make a backup of any sound improvement and, when re-editing fails, immediately return to the previous sound stored in the buffer.

Another advantage is high speed access. Comparing sounds is much easier. This is how to proceed:

When you start up SYNTHWORKS, A is black while B, C and D are light gray. This means that the parameters and graphics on screen display the sound stored in buffer A. Changing a parameter means changing the sound in A as A is black and thus active.

Now move the pointer to B and click with the left mouse button. You will now see the parameters and graphics of the sound in buffer B (if you have just started up the program the contents of A and B are identical, so you will see no difference; modify A a little beforehand, perhaps).

If you click on C or D their content is displayed. It is important to know that when selecting a buffer the sound is sent from your ST to your synth, so you can play it straight away from the keyboard.

How to copy a buffer:
Simply click on the source buffer with the RIGHT mouse button: a "sprite" is created. Drag this sprite to the destination buffer and click again thus creating a backup of your sound. Now you can continue editing it in the active buffer.

How to save a sound:
On the librarian page, the same buffer display exists. By dragging the TONE name onto a bank or library, you can save the buffer. This is explained in detail in the chapter about the banks and the library.

At the left side of the buffer buttons lies a single button displaying a number ranging from 1 to 8. This button represents the synth TONE buffer to which SYNTHWORKS sends editing changes, as well as TONE dumps.
Your synth has 8 TONE buffers, one for each multi timbral PART.

When you set the destination buffer, and if the AUTO RECHANNELIZING function is on (see the dedicated chapter), then the SYNTHWORKS MIDI channel is automatically modified according to the CONFIGURATION page (This is important for the AUTO NOTE and MIDI MERGE functions).

Note:

When creating a new sound on a D10 or D20, your synth can be in PERFORMANCE or MULTI TIMBRAL mode. If you are in PERFORMANCE mode, then you must work with PART 1 or 2. In MULTI TIMBRAL mode, it does not matter but do remember that you can play only PARTS 1 and 2 from the keyboard.

If you are in PERFORMANCE mode on the D10/20, the sounds that you can select and play are the "PATCHES". When working on a TONE, you should rather select a PATCH in mode "WHOLE". If the PATCH was in mode "DUAL", then you would hear 2 TONES at the same time, which is not too good when editing. If you work with a master keyboard (controlling an MT32 or D110), be sure to set the right MIDI channel on your keyboard in order to play the PART that you are editing (see the chapter "AUTO RE-CHANNELIZING" about this subject).

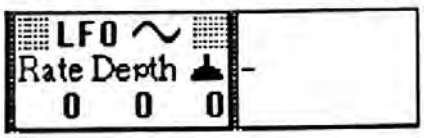
C. PARAMETER DESCRIPTION

Here follows a brief description of the parameters that can be edited from the TONE edit page.

1. PITCH

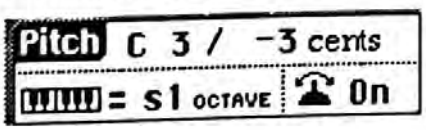
The parameters that affect the PITCH:

- **LFO:** Low Frequency Oscillator; used for Vibrato. You can adjust the Rate and the Depth of the effect, as well as the Depth when the Modulation lever of the keyboard is pushed.



- **ENVELOPE:** to modify the pitch of the sound along time. Used for a guitar attack for example, or for effects. See the chapter dedicated to the envelopes for more details. One hint: you can adjust how much the pitch can be changed with velocity; if one or two PARTIAL(S) are sligthly sensitive to this parameter but not the other ones, then you can get interesting flange effects dependent on your performance. Interesting for lead and "synth" sounds.

- **BASIC PITCH:** you can adjust the key transposition of the PARTIAL from C1 to C9, and tune it to +-50 cents. A slight detune between PARTIALS can produce nice chorusing effects.



The bender icon lets you set if you want the bender to modulate the pitch of the PARTIAL or not.

The one octave keyboard icon is an interesting but often unrecognized parameter: you can set if you want 12 keys to represent 1 octave (usual case) or half an octave (then you have a quarter tone scale as used in India), etc...

The S1 and S2 values mean STRETCH 1 and 2. They need a bit of explanation: Experience has proved that people playing violin (having only their ear for reference) tend to play high pitched notes higher than they should. The "STRETCH" setting simulates this effect: the higher the note on the keyboard, the greater the difference between the theoritical and the 'real' pitch value. This function can definitely add a realistic touch to your sounds.

2. WAVE

If the PARTIAL is in PCM mode (look just below the PARTIAL box), then you can see the name of the PCM wave which is used. Above this name lies the type of PCM (percussion, attack, sustain, etc...).

To modify this wave, simply click on it: a window opens and displays all the available PCM waves sorted by category. You can scroll quickly through the 256 waves; to select the one you like, simply click on it: it becomes reverse video. When you have found what you looked for, you can close the window by clicking in the upper left corner of the window, or by pressing <Esc> on the ATARI keyboard. Another possibility is to click on the desired name with the right mouse button: the wave is selected and the window closes at once. It is strongly advised to be in "AUTO NOTE" mode when looking for the right wave (see the corresponding chapter).

The D10, D20, D110 have got 256 waves, and the MT32 128, only. Besides, there is no correspondance between those waves: if you have both a MT32 and D10/20/110, then you might be interested in the SYNTHWORKS sound convertor (on the Librarian page).

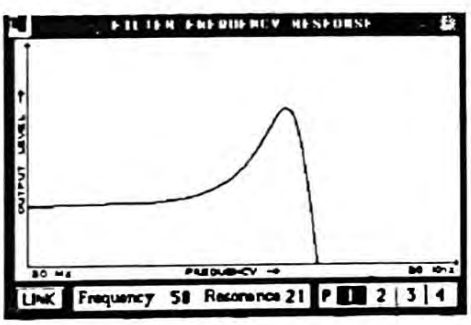
SYNTHWORKS will show the right PCM names according to the synth type.

Note: in the PCM list, you will see two sets of identical percussion PCM waves. The second set is different from the first one only by the fact that the synth master tuning does not affect those waves.

If the PARTIAL is in SYNTH mode, then you can select SQUARE or SAWTOOTH wave, as well as the WIDTH of the wave (simply think of this parameter as a spectrum modifier). The small icon symbolizes velocity: you can adjust how much velocity can change the WIDTH of the wave, and therefore its harmonic content.

3. FILTER (TVF)

IF the PARTIAL is in SYNTH mode, then a filter is available. SYNTHWORKS displays clearly if there is a filter or not so you can always see the right PARTIAL structure.



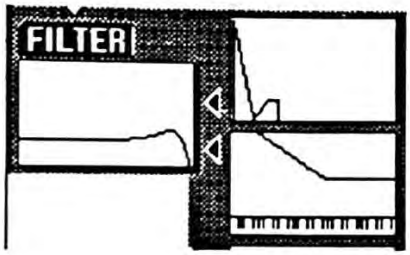
- If you click on the left mini graph, a window opens and displays the filter frequency response curve from 20Hz to 20Khz. You can edit the frequency and resonance parameters by pointing the mouse on the values as for any other parameter, or you can directly draw the curve with the mouse. For this simply point the mouse anywhere in the curve field and drag the mouse. If you move in the horizontal direction then you modify the frequency response of the filter, and if you move vertically you modify its resonance. SYNTHWORKS provides this editing method because experience has proved that it is useful to edit both the frequency and the resonance in real time for instant feed back (the point is that these two parameters are very related to each other).

If you click on the buttons labelled 1,2,3,4 you can edit the filter of any other PARTIAL (which is much faster than closing the window and opening a new one). Instead of clicking on the buttons, you can also press 1 to 4 on the ATARI numeric keypad.

Clicking on the LINK button turns it reverse video, you are then in a mode where all 4 filters are edited simultaneously. More exactly it works like this: when you modify a filter, then the OTHER filters are modifyed in the same PROPORTION (when you release the mouse). The advantage of this option is obvious: you can modify the overall timbre of a sound with a single operation.

In the upper right corner of the window lies a small symbol: click on it to get into a mode where the curve background is not refreshed. Try to modify the filter, espescially from the numerical values, and you will produce nice looking curves!

To get out of the window, click in the upper left corner or press <Esc> on the ATARI.



- At the right side of the filter mini graph lie two other graphs. One represents the envelope that modifies the frequency of the filter against time (see the chapter about envelopes). The other one repre sents the amount of filtering according to the keyboard area. Click on this graph...a window opens:

Two curves are displayed. If you modify the parameters by dragging them, then the curves are redrawn accordingly. The one octave keyboard icon is the same as the one described above, in PITCH. Often it is set to value 1 to remove an equal amount of harmonics wherever the sound is played on the keyboard. If you select a value above 1, then high pitched sounds will have a lesser NUMBER of harmonics compared with low pitched sounds, which is a natural effect.

The parameters BIAS POINT and BIAS LEVEL can precisely adjust the amount of filtering for a certain part of the keyboard. The curve shows you where the filtering is modified.

Here again you can pass from PARTIAL to PARTIAL without closing the window, as described for the filter curve.

4. VOLUME (TVA)

Two mini graphs are dedicated to the volume of the PARTIAL. The right one is of course the envelope (see the dedicated chapter). Click on the other one: a window opens and displays the volume of the PARTIAL according to the place you play on the keyboard.

There are 2 BIAS POINTS. The two points can be combined in several ways: for instance you could cut completely the volume at the right side or left side or both sides of the keyboard to simulate a split. You can also set small slopes to pass progressively from one PARTIAL to another accross the keyboard, or for attenuating high pitched notes and thus simulate acoustic sounds, etc...

From this window you can adjust the OVERALL PARTIAL VOLUME by pointing on the dedicated numerical cell, or by pointing the mouse in the curve field and dragging the curve up and down.

The parameter below the volume setting represents how velocity affects the volume (it is therefore a very important parameter for expressiveness).

Here again you can pass from PARTIAL to PARTIAL without closing the window, as described for the filter curve.

5. STRUCTURES

As we explained above, two PARTIALS are combined through a "STRUCTURE". There are 13 available STRUCTURES. A STRUCTURE sets:

- The PCM or SYNTH mode for each PARTIAL
- The RING MODULATOR On/Off state
- The OUTPUTS of the PARTIALS

- If you look at all the available STRUCTURES in your synth manual, you will find "sub groups". STRUCTURES differ from each other only by the PCM / SYNTH mode of the PARTIALS. Instead of scrolling through the different STRUCTURES with the aim of changing the PCM / SYNTH mode of one PARTIAL you can simply click on the PARTIAL SYNTH/PCM button: if a STRUCTURE with the PCM/SYNTH mode exists, then it will be selected. For instance, STRUCTURE 1: PARTIAL 1 can change its PCM/SYNTH mode (i.e. clicking on the button labelled "SYNTH" switches from STRUCTURE 1 to 3 and vice versa), and PARTIAL 2 can not (i.e. there is no STRUCTURE with PARTIAL 1 in SYNTH mode and PARTIAL 2 in PCM mode, together with a MIXING of the PARTIALS OUTPUTS).

Note: You can also type in a STRUCTURE number via the Atari's numeric keypad: Press <CONTROL>+<SHIFT> and click on the appropriate number (bottom left of each of the two STRUCTURES. Now you can enter the desired number.

- The RING MODULATOR is ON when there is a BELL icon shown in the middle of the STRUCTURE area. A RING MODULATION between PARTIALS usually provides non natural harmonics (as in Bell sounds).

- The STRUCTURE drawing will also display if the PARTIALS are output in stereo, or mixed together and output in mono, or mixed with the output of the RING MODULATOR.

6. NAME

Click on the TONE name at the right side of the menu bar and a dialogue box will appear. Now you can type in a new name or generate one automatically! This is an exclusive Steinberg utility: a computer analysis of the english language has given us basic rules for creating pronounceable names! Do not expect to find words you already know, it is not a dictionary! But we are sure you will make some use of it as normally after the effort of creating a sound, there is no inspiration left to find a name for it!

7. PARTIAL MUTING

PARTIAL MUTING is not only important for increasing the synth polyphony, but can also be used to hear the PARTIALS individually. You can analyze the make up of a TONE by muting its different PARTIALS one after the other. Try analyzing the factory TONES to understand your synth better.

There are several possibilities:

- If you click at the left side of a PARTIAL header (where there is a small arrow), then you can mute/unmute the PARTIAL.

- If you click on the small box at the right side of a PARTIAL header, then this PARTIAL is activated and all the OTHER PARTIALS are muted. If you click once again, all muted PARTIALS are unmuted. This function is very useful for quick PARTIAL testing. It can be compared with a SOLO switch on a mixing desk.

- If you click anywhere on the PARTIAL header while pressing <CONTROL> on the ATARI, then all PARTIALS are activated.

Note: SYNTHWORKS removes muted PARTIALS from the screen.

D. ENVELOPES

1. PRINCIPLE

Envelopes are extremely important in sound synthesis. This is why we have provided an extremely complete, flexible and fast tool for envelope editing...Click one of the small envelope graphs ...a large window opens displaying the envelope in enlarged format.

Below the envelope curve you will find the numerical values of the curve parameters. You now have the choice between two editing methods:

1. You edit the parameters from their numerical values as you would do with any other parameter (the envelope graph will change its shape accordingly in real time)

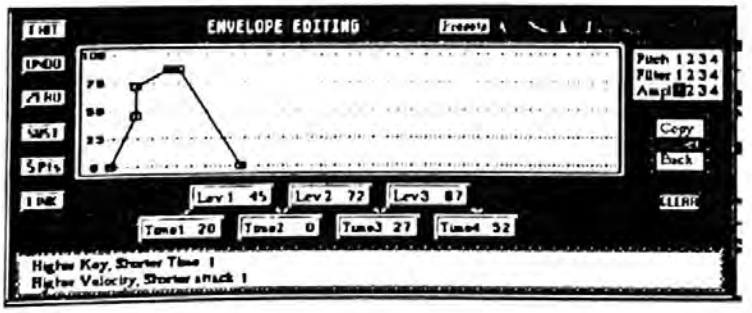
2. You can directly draw the envelope! The envelope consists of small points displayed as small square boxes. If you point to one of these mini square boxes and press the mouse, you can drag the box and thus modify the corresponding part of the envelope. At the same time the numerical values of the envelope parameters will change and the synth buffer is updated so you can have real time feedback. Speed and no flickering graphics!

Please note ...

- the sustain point is symbolized by two adjacent square boxes.
- Some points can be moved only in horizontal or in vertical direction, depending on the parameter they are related to.

2. OPTIONS

At the right of the window, there is a rectangle with the words: "Copy", "Select", "Back".



1. If "Select" is reverse video...

You are in the default mode. You can switch to any other envelope, whatever its type (PITCH, TVF or TVA) of any PARTIAL (1-4). To select the envelope you can:

- Click in the array (upper right side of the window)

- Use the ATARI keyboard: press the horizontal CURSOR keys to pass from PARTIAL to PARTIAL, or the vertical CURSOR keys to scroll through the PITCH, TVF and TVA envelopes of the current PARTIAL. You might also press 1 to 4 on the numeric key pad, to switch from PARTIAL to PARTIAL.

Note: even if "Select" is not inverse video, you can use the ATARI keyboard as described above to switch from an envelope to another.

2. If "Copy" is selected...

If you click on another envelope number in the array, the envelope displayed is copied to the envelope you have clicked on.
If you do the same procedure while pressing <ALTERNATE>, then it is the opposite: the envelope you have clicked on is copied to the current envelope. The currently displayed curve will be redrawn with new values. You can copy TVF and TVA envelopes between each other, but can not utilize PITCH envelopes for such operation, as their envelope format is different.

You can also copy envelopes when the window is closed: click on an envelope mini graph with the RIGHT mouse button: the mini graph turns reverse video, and the mouse cursor changes its form. You can move the cursor towards another envelope and release the button: the first envelope is copied to the second one.

3. If "Back" is selected...

Clicking on the selection array draws the corresponding envelope in the background of the actual curve. This was provided to help you editing an envelope by comparison with other envelopes. To clear the background, simply click on the button labelled "CLEAR" in the lower right side of the window, or select a new envelope.

4. EXIT

At the left side of the window lie several buttons... EXIT is the first one. A click on it closes the window. You can press <Esc> on the ATARI for the same result.

5. UNDO

If you are not happy with the way you have modifyed the envelope, you can click "UNDO" (or use the ATARI key <Undo>) and the envelope will switch back to the form it had before the previous click. If you click "UNDO" once again, the envelope is reset to the form it had when you opened the window ! (or the form it had when you selected it from the selection array).

6. ZERO

This option is a short cut to be used with PITCH envelopes: it resets the envelope to a shape which has no effect on pitch.

7. SUST

If the label is light gray, then the sustain point is ignored by the synth: there is no sustain, whatever the value of the sustain level parameter. This has been designed by Roland for percussion sounds. This parameter is common to all envelopes of all PARTIALS.

8. 5/6 Pts

If you have an MT32 or D110, then this button is always labelled "6Pts" and is of no use. If you have a D10 or D20, you can switch from "5Pts" to "6Pts", i.e. from 5 points envelopes to 6 points envelopes. The D10/20 manuals describe the TVA and TVF envelopes as 5 point envelopes. When you edit from the synth you can thus only edit them as 5 point envelopes. But editing via the SYNTHWORKS software you have the opportunity to create 6 points envelopes. Make your choice.

Note: a PITCH envelope for the MT32 has an adjustable sustain level. This is not the case for D10/20/110 envelopes.

9. LINK

If the Link button is selected (i.e. displayed in inverse video), then when editing an envelope, the 3 other envelopes of the same type will be affected as well, in the SAME PROPORTION. This feature helps to speed up your work because it allows you to work directly on the general envelope of a sound. Espescially interesting for the volume envelope.

For instance if you have a violin sound with an attack that is a bit too slow, go into link mode and edit the attack of any of the 4 TVA envelopes: the overall sound will be modifyed because the TVA envelope of each PARTIAL is modifyed accordingly.

Note:

- In link mode, the envelope that you see is updated in the synth in real time, as normal, but the other 3 envelopes are updated only when you release the mouse button.
- Only one envelope is drawn to keep the graphics clear.
- The shape of the envelopes displayed in the background (if you have selected this option before) will not be updated.
- In LINK mode, the UNDO function will only affect the current envelope.

10. ENVELOPE PRESETS

8 envelope presets are available. Their main purpose is to provide several types of common envelopes that can quickly be selected or adjusted to suit your needs. Click on the micro graphs on the upper right side of the window to select one.

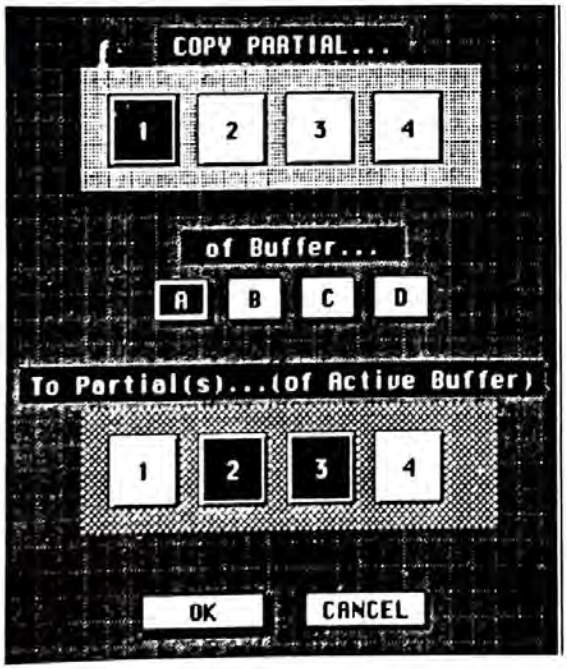
11. ENVELOPE ADDITIONAL PARAMETERS

Apart from the curve parameter, the envelopes have several other parameters (different for PITCH, TVF, and TVA envelopes). You can edit them the same way as any other parameter. You will notice that descriptive names are displayed to identify these parameters (instead of the usual abbreviations generally encountered in synth LCD displays).

E. MISCELLANEOUS

1. PARTIAL COPY

This function allows you to copy any PARTIAL from any TONE buffer A to D over any PARTIAL(S) of the active TONE buffer. Copying a PARTIAL can be useful e.g. when creating TONES made of 4 slightly detuned identical PARTIALS (chorus effect). Also it can be interesting to create new sounds by combining PARTIALS from several other TONES.



Proceed as follows: Click on the "PARTIAL COPY" function in the "EDITION" menu or press the 'Y' key on the ATARI. A dialogue box will appear: select any PARTIAL from any buffer as a source PARTIAL, and 1 to 4 destination PARTIALS in the destination buffer (the active buffer at that time).

There is another quick way of copying one PARTIAL to another of the same TONE on the edit page: click on the header of the source PARTIAL with the RIGHT mouse button, then move towards the destination PARTIAL and release the mouse. That's it!

2. TONE INIT

When creating a TONE from scratch, it is advisable to start from a simple TONE that you know, including "classical" settings.

You can define this init TONE: select the menu option "REDEFINE Init TONE" and the current TONE buffer will be saved on disk.

From that time on, every time you use SYNTHWORKS, you can recall this init TONE: simply select the menu options "INIT TONE". The init TONE will then be put into SYNTHWORKS' active buffer and simultaneously be sent to the synth.

3. GETTING A SYNTH TONE

Selecting the menu option "GET TONE from synth" asks your synth to send one of its 8 internal buffers into SYNTHWORKS active buffer. The number of the buffer which is received is the one specified by the button beside the SYNTHWORKS TONE buffer A-D. A main application for this feature is to load ROM TONES from the synth for modification.

4. PRINTING A TONE

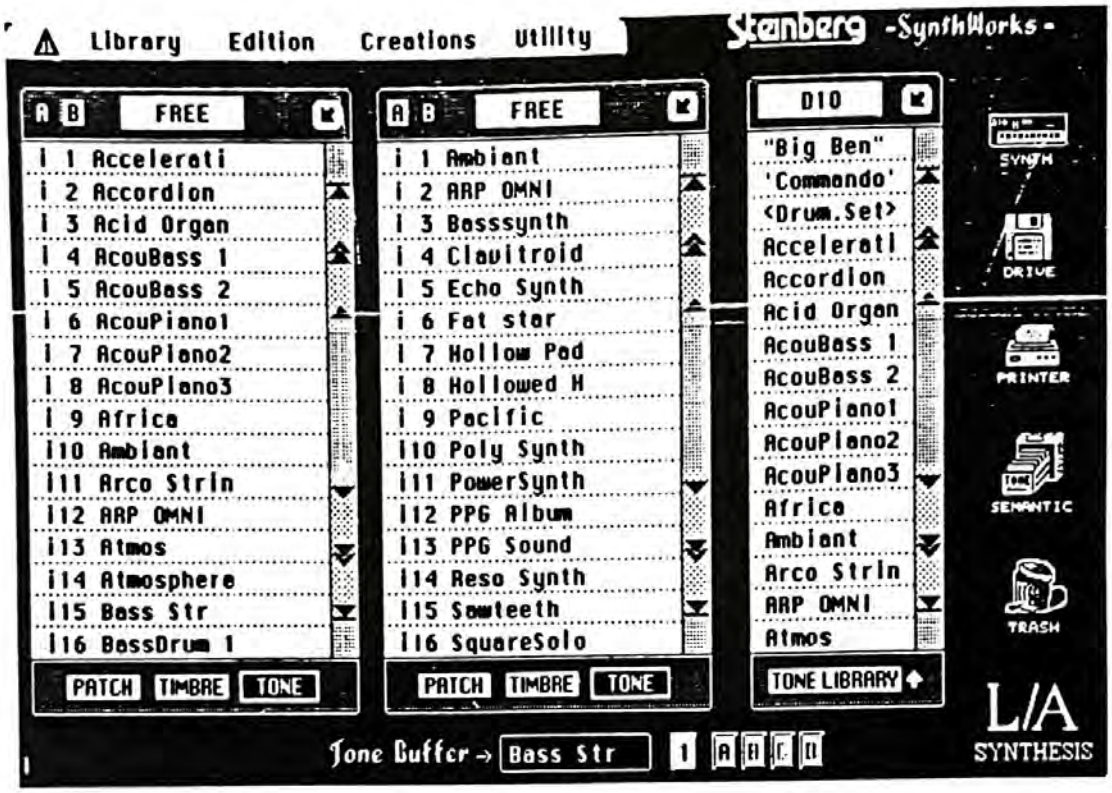
If you own a printer, you can print-out all parameters of a TONE. Simply select the menu options "PRINT TONE".

It can be handy to have your favourite sounds on paper for security purpose. Also you could give some of your sounds to a friend who does not own a computer.

Note: the printout will just fit onto an average 12 inch page.

LIBRARIAN PAGE

A. GENERAL INTRODUCTION



1. PRESENTATION

You can switch to this page by selecting "Access LIBRARIAN" in the menu "Library" or by pressing '3' on the ATARI.

The Librarian page offers several innovative tools to manage your sound memory. It includes the most powerful library ever done on a micro computer so far. This library can include up to 1000 TONES in central memory! These sounds can be accessed through an exclusive STEINBERG concept: DYNAMIC SEMANTIC GROUPING.

Besides this large library, SYNTHWORKS holds two banks of PATCHES, TIMBRES and TONES in memory.

2. PAGE DESCRIPTION

You can see 3 windows and several icons. Contrary to usual GEM windows, these windows are all active at the same time! They also allow scrolling between 20 and 85 times faster that GEM can achieve! Each of these window has got one or two menus.

As we said in a previous chapter, SYNTHWORKS stores PATCH, TIMBRE and TONE memories in one single bank, because of the synth's design. A SYNTHWORKS sound bank contains the same amount of memory as a synth bank (128 TIMBRES, 64 TONES, and 0, 64 or 128 PATCHES). The two windows at the left are designed to display the bank contents. The third window displays the TONE library.

Each bank and the library has a name (at the window's header). This is the same name under which the bank is stored on disk.

B. BANK INTRODUCTION

Each bank window can display any of the two SYNTHWORKS banks (we shall call them bank A and bank B). Banks can be switched to display either the PATCHES, the TIMBRES or the TONES of the bank. This technique has been chosen for its flexibility: you can VERY QUICKLY display any part of any bank on the same screen. For instance the window 1 can display the PATCHES of bank A, and the other window the TONES of bank B. Or both windows can display PATCHES of the SAME bank, sorted in different order.

You can switch the display of a window..

- from bank A to bank B by clicking on the buttons on the left side of the window header,
- from PATCHES to TIMBRES to TONES by clicking on the buttons in the lower part of the window.

To access the bank menu, you have to click on the arrow on the right side of the window header. The appearing menu concerns the bank that is displayed in that window.

PATCHES and TIMBRES are numerated from A11 to A88 and B11 to B88 to use the Roland classification. If you see "A27 VIOLIN" in the window, that means that the PATCH number 7 of bank 2 of group A in the synth memory is called "VIOLIN".

The D110 has only got 64 PATCHES, contrary to the D10/20 which have got 128 (but they are more complete). Also, pleaserecall that the MT32 has got no PATCH, only TIMBRES and TONES (see the chapter "SYNTH INTRODUCTION").

The TONES are numbered from i1 to i64, again same as the Roland classification ("i" standing for "Internal").

C. BANK MENU OPTIONS

Several menu options have a keyboard correspondence, as well as an icon operation correspondence (see the dedicated chapter).

1. LOAD

This function enables you to load a bank from disk and put it in SYNTHWORKS internal bank A or B, or to send it directly to your synth. If you load a D110 bank while D10 or D20 is selected in the setup, or vice versa, then no PATCH will be loaded since they are not compatible (but of course the TIMBRES and the TONES will be loaded).

2. UPDATE

If you have made some changes in a bank that was previously loaded, then this option will save these changes to disk. Please note that no fileselector box will appear !

3. SAVE AS...

Use this option if you want to save the bank with a different name.

4. SEND TO SYNTH

The bank that is displayed in the window will be sent to your synth. SYNTHWORKS utilizes the "Handshake dump" for error free transmission (checksums testing). To transmit a bank, the MIDI IN and OUT of the synth must be connected to the MIDI OUT and IN of the ATARI.

If you have an MT32 or D110, there is nothing to do, but if you have a D10 or D20, then press the following switches before sending the bank:

- DATA TRANSFER
- DISPLAY up
- DISPLAY up again
- UPPER
- DISPLAY up
- LOWER
- ENTER
- WRITE (only if the memory protection is on)
- ENTER

Now the synth display should read "H-shake Load Snd, Waiting".

5. RECEIVE FROM SYNTH

SYNTHWORKS allows you to load the TONES resident in your synth's ROM (these sounds being Roland's "display sounds", it is a good idea to analyze them as it can help you tounderstand the TONES' architecture).

To get the user TONES; if you have an MT32 or D110 you have nothing to do, if you have a D10 or D20 then press the following switches before receiving the bank:

- DATA TRANSFER
- DISPLAY up
- DISPLAY up again
- LOWER
- DISPLAY up
- LOWER
- ENTER

At this point the synth display should read "H-shake Dump Snd, Waiting".

When the bank has been received by SYNTHWORKS, you can put it into bank A or B, or save it on disk.

6. COPY

If "COPY" is selected (i.e. a tick lies in front of the menu line), you can copy any PATCH, TIMBRE or TONE inside the same bank, or to the other bank: click on the source sound with the RIGHT mouse button: the sound name turns inverse video and a "sprite" is created; you can move the sprite anywhere on screen and click on the desired destination memory: it will be overwritten with the source sound.

Of course, you cannot make copies between different types of memory (you can not copy a TIMBRE into a PATCH memory!).

As already mentioned, a PATCH or a TIMBRE is worth nothing without its related TONE(S). Therefore when a bank to bank copy of a PATCH or TIMBRE is done, SYNTHWORKS will automatically copy the TONES that

are used by the PATCH or the TIMBRE. Be aware that these TONES are copied to the same location number in the destination bank that they had in the source bank. For instance if TONE i54 of bank A is copied to bank B, it is copied to location i54. If for any reason you do not want this parallel copy of TONES, then press <ALTERNATE> on the ATARI when clicking on the destination.

For a copy from the bank into the library, refer to the chapter about the library.

Note: GEM usually obliges the user to hold the mouse button down when moving an object. Yet experience proves that unwanted button releases occur sometimes. That's why a safer method is used by SYNTHWORKS.

7. INSERT/ROTATE

Usually Librarians provide COPY and SWAP functions. STEINBERG introduces a new possibility called INSERT/ROTATE. This function works differently depending whether you make a transfer inside the same bank, or between the two banks (BANKS, not WINDOWS!!!).

• Inside the same bank:
If you click on a sound, drag the sound name, and click on another sound of the SAME bank, then the sound is moved and inserted where you click, and all the sounds BETWEEN the source and destination locations are shifted one place to enable the insertion. It is as if there was a rotation of all the memories between the source and the destination memories. Try out and you will see that this function is much more powerfulthan the usual SWAP function to sort a bank in a desired order.

• Between banks
If the destination memory is free (no name), then the source sound is simply copied to this place. If there already is a sound, then all sounds between the destination sound and the first free location of the bank BELOW the destination will be shifted one place to enable the insertion.

If you press <CONTROL> on the ATARI when clicking on the destination, SYNTHWORKS will check for a free location ABOVE the destination

location (therefore the memories above the destination memory will be shifted instead of those below).

Note: The parallel copy of TONES decribed in the previous chapter is also active in this mode !

8. SWAP

The program also provides a SWAP function. You can swap two sound memories inside the same bank or between banks. Simply drag the source sound to the sound you want to swap and click.

Note: it is possible to swap or move TONES, but it is not advisable. When you change the location of a TONE, the TIMBRES and PATCHES that were linked to that TONE are lost (the preset TONES will remain linked). It is useful to move TIMBRES and PATCHES to sort banks, as these are the memories you call when using your synth to make music.

9. LOCK

In this mode, no sound transfer is possible (it was provided to avoid any accident).

Note: a small letter in the low left corner of the screen displays the transfer mode at all times, i.e. COPY, INSERT, SWAP or LOCK.

10. ALPHABETIZE

You can independently sort PATCHES, TIMBRES and TONES: The memory that is selected in the window at that time will be alphabetized. For the reasons outlined above, TONE alphabetizing is not advisable.

11. SWAP BANKS

The content of bank A and B are swapped (banks, not windows!). This can be useful when the bank B has been filled up with TONES by the automatic creation functions (see the relevant chapter).

12. CLEAR

The displayed bank (PATCHES, TIMBRES and TONES) will be cleared.

13. WRITE COMMENTS

When you select this option, a dialogue box appears: you can type in any comment you like. These comments will be stored with the bank when you save it on disk.

14. PRINT

This function enables you to print lists of the PATCHES, TIMBRES and TONES.

15. MT32 <=> D10/20/110

MT32 sounds and D10/20/110 sounds are NOT compatible. They use completely different PCM wave tables! SYNTHWORKS provides a utility which converts the PCM table from one format to another. Some compromises have to be made: an MT32 has half the PCM waves of a D10/20/110, and they are of poorer quality. When converting an MT32 sound to a D10/20/110 sound, you will usualy get very good results. This is less true for the other way round as waves are missing. When calling this function, the whole bank is treated.

Note:

- The conversion process is not accurately reversible: if you convert the bank in one direction and then vice versa, the the sounds will differ from the originals. This is due to the loss of information in the conversion process: The MT32 sounds are based on the 128 waves that the device offers while D10/20/110 sounds are based on 256 waves. So, when converting from D10/20/110 to MT32 half of the possible waves are not available. Nevertheless this is a useful function. Check it out !

- TONES which use no PCM wave are completely compatible at all time.

- As a TONE is usually not compatible with an MT32 AND D10/20/110 AT THE SAME TIME, if you have both synths you should have a separate library related to each instrument.

16. TONES -> LIBRARY

All the TONES of the bank are copied into the library with this single operation (see the chapter about the library).

D. BANK MISCELLANEOUS

1. Selecting a TONE

If you click with the LEFT mouse button on any TONE on screen (in the library or in a bank), then this TONE is at the same time sent to your synth (into PART 1 to 8, as specified by the button left of the 4 buffer buttons). It is also put into buffer A, which becomes active.

At the same time the previous content of buffer A is moved to buffer B, the previous content of B is moved to C, etc... The content of D is lost. This allows you to quickly fill the 4 buffers with different TONES (for instance, to compare them on the editor page).

If you want to overwrite the contents of the active buffer and not to move the 4 buffers' contents, press <ALTERNATE> when clicking on the TONE: all buffers will keep their original contents, and the active buffer will receive the new TONE memory.

Now you can either play the TONE on your keyboard or edit it on the TONE edit page. If the sequencer is playing you will at once hear the TONE you have selected. This is very useful when searching for the right TONE. You can also use the AUTO NOTE feature (see dedicated chapter) !

2. Saving a TONE buffer

The name of the active buffer (A to D) appears in the lower part of the screen. You can click on it and drag it into a bank or the library to save it. Both COPY and INSERT are possible when transferring a TONE buffer.

3. Renaming a memory

Click on any sound with the LEFT mouse button while pressing <CONTROL>. The cell becomes inverse video and you can rename the sound. If you do not type anything and press <RETURN>, the old name is restored.

4. Selecting a PATCH

If you click with the LEFT mouse button on any PATCH of a bank, then this PATCH is sent to your synth. If you have a D110, you can edit this PATCH by switching to the CONFIGURATION page, and if you use a D10 or D20, then you can call the menu option "EDIT D10/20 Patch". Once again, a PATCH does not contain TONES, therefore do remember that the TONES used by a PATCH must be resident in the synth memory!

5. Selecting a TIMBRE

Click with the LEFT mouse button on any TIMBRE and it will be sent to the synth.

6. MIDI transmission errors

SYNTHWORKS 'speaks synth..'. In case the software or the synth receives wrong data, SYNTHWORKS will cancel communication and display an alert message. This is an advantage of Handshake communications: when a transmission has ended you are sure that no wrong data has been received by the software or the synth, otherwise you will be informed.

In case you get a MIDI error transmission:

- Check the MIDI In/Out port correspondence (see the first chapter)
- check your MIDI leads: are they too long ? (5 meters max.)
- Do you use a MIDI patch bay or merger ? (normally the should be okay, but some devices on the market are unhappily allergic to long MIDI exclusive transmissions !)
- Have you set the right mode (D10/20/110/MT32) in the setup ?
- If you try to receive a Bank from the synth that was sent to it by an other software that does not use the MIDI Handshake mode, you might have problems in case wrong data was sent. This remark bases on the fact that some 'public domain' banks contain false data (for instance a single resonance parameter set to 31 - while the maximum value is 30 - can cause trouble.
- It is better not to click the mouse or type on the keyboard....

E. LIBRARY INTRODUCTION

TONES being the most important memories, SYNTHWORKS provides a library where you can store up to 1000 TONES. You can look through your library every time you need sounds to create PATCHES and TIMBRES. Of course there is no TIMBRE or PATCH library since these memories are not independent entities (making sense only in conjunction with a bank).

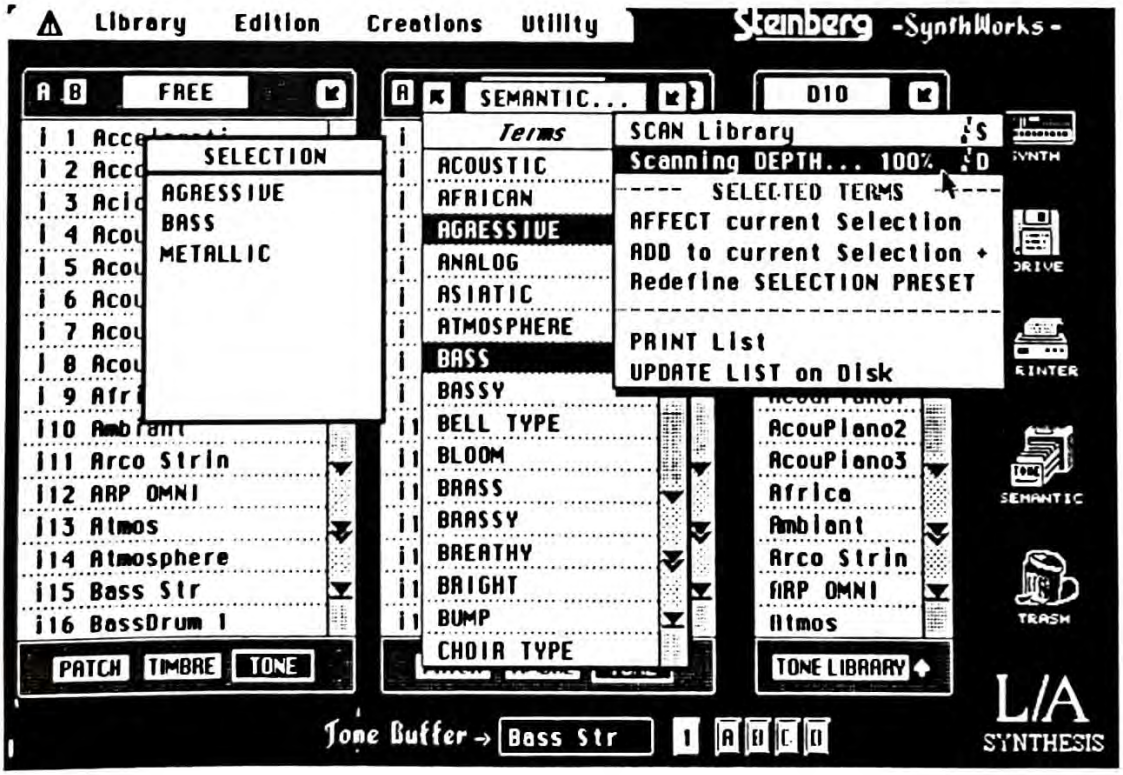
A special feature of the Steinberg library is the way TONES are stored and re-called. Until now we have identified sounds by their names. This becomes more and more difficult when you have hundreds of them. Of course you can classify them in banks ("bank strings"...etc) but that is a single degree classification.

This is why Steinberg has invented an exclusive way of classifying sounds which is more musician-minded...

You can associate each sound with up to 8 terms that describe the sound: we call them "semantic terms". Use them to build up an identity for your TONES.

Let's discuss a general example: You have created a BASS sound with an AGRESSIVE attack and METALLIC resonances. SYNTHWORKS allows you to store your TONE in the library, for instance with terms like BASS, AGRESSIVE and METALLIC.

Now let's imagine that three months later you are looking for an "agressive metallic bass sound"...SYNTHWORKS will check the library and extract the sound you have created three months earlier, as well as any other sound answering to that description!!!



You have to make the effort of describing your new sounds, this can not be done by the computer since it is a subjective matter! But once it is done you will have a usable library of sounds, and not simply a collection of anonymous sounds lost on some disks...

A lot of work has been done to provide lightning fast operations. There is almost no human detectable delay when requesting a sound research in the library.

F. LIBRARY EXTRACTION

Before going further, you should load the library which is furnished with this software package. For this purpose, pull down the first library menu by clicking on the right side of the library window header, and select the menu option "LOAD". Then select a file with the extension ".LIB".

Thanks to the window, it is possible to scroll through all the library sounds or only a selection of them. If the scrolling is too fast (100 lines per second!) you can click with the RIGHT mouse button in order to slow it down.

Important :
A SELECTION of TONES is a sub group of the library, constitued of all TONES answering to a certain description.

For instance if you press <SHIFT>+<S> on the ATARI, then all the TONES with a name beginning by an 'S' will appear in the window. These sounds are extracted from the library, they represent a SELECTION of the library.

We are now going to see all the possibilities of selection:

1. SEMANTIC EXTRACTION

This is the most useful method and also the main originality of the library.

At the right side of the screen you will find an icon called "SEMANTIC". Click on that icon (you can also click on the arrow at the bottom of the library window: the second library menu shows up: select "SEMANTIC Links").

A window opens. If you click in the upper right corner of the window, you will open a menu. If you click in the upper left side of the window, you will close the window (you can also press <Esc> on the ATARI).

In this window you can scroll through all the terms which can be used to describe your sounds. There can be up to 255 terms in that list, and you can of course define your own terms (explained later). You can scroll through the list as in the other windows. You can also use the ATARI cursor keys to move up or down (if besides you press <CONTROL>, then you scroll faster).

This list is always sorted alphabetically. You can jump directly anywhere in the list. If for instance you press <P> on the ATARI, then the window will display a list of those terms that start with the letter "P".

When you click on a term with the LEFT mouse button, it turns reverse video and appears simultaneously in the control box at the left side of the window. If you click on a term which is already inverse video, then it is displayed normally again and disappears from the selection box.

You can select between 1 and 8 terms. These terms will be the "key" that SYNTHWORKS uses to extract all the library sounds that match to the description.

For instance, select the term "PIANO TYPE". Then open the windows menu and select the option "SCAN Library" (or press <ALTERNATE>+<S> on the ATARI). Immediately the semantic window closes by itself and the library window is filled up with all sounds described as "PIANO TYPE" ! Note that the extracted sounds might also answer to other terms, but they respond AT LEAST to "PIANO TYPE".

If you do the same operation again, but this time select "PIANO TYPE" and "ELECTRIC", fewer sounds will be extracted. To be extracted a sound must have labels that match with both terms.

If you do the same operation again, but this time select "PIANO TYPE" and "ELECTRIC" and "STRINGS", then there is a big chance that no sound will appear in the window at all!

You might want to extract sounds whose semantic relations only partially correspond to your research terms. In this case, select the option "SCANNING DEPTH..." from the sub menu, and type in the desired percentage (from 20 to 100% in steps of 10).

Let's take an example: If you ask for sounds answering to "PIANO TYPE", "ELECTRIC" and "STRINGS" semantic, then there is about no chance to extract anything with a scanning depth of 100%. But if you specify a scanning depth of 70% for instance, then any sound answering to 70% of the terms will be extracted. 70% of 3 terms represents 2 terms, thus the sounds responding to:

- PIANO TYPE and ELECTRIC

or
- PIANO TYPE and STRINGS

or
- ELECTRIC and STRINGS

will be extracted!

A few short cuts:

- When the semantic window is open, you can de-select all terms by pressing <UNDO> on the ATARI.

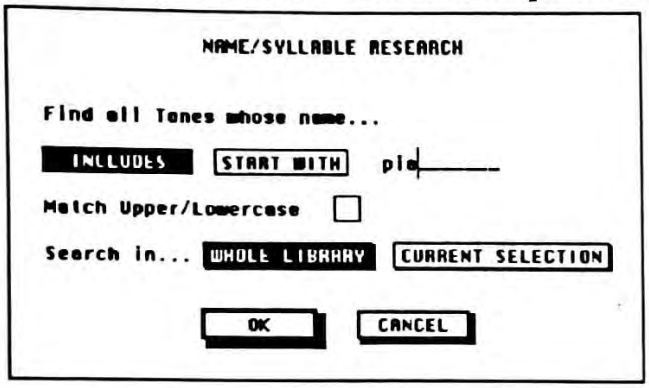
- Instead of scrolling through the whole list press: <TAB> or <BACKSPACE> on the ATARI. All the inverse video terms will

appear one after another (<TAB> lets you move "forward" and <BACKSPACE> "backwards").

- If you click on a term with the RIGHT mouse button, then you select the term (or unselect it), and automatically cause a library extraction.

2. NAME EXTRACTION

Open the lower library menu and select the option "NAME Elements": a dialogue box appears. This method allows you to extract all the sounds whose name matches with certain specifications.



You can specify:

- a string of 1 to 10 letters
- whether you want to find the sounds whose name begins with the specified letters, OR the names which include the specified string of letter Anywhere in them.
- whether you want to make a difference between upper and lower case letters (usually not).
- the research field: whether you want to scan the whole library, or the current selection.

For example you could extract all the sounds whose name includes "pia". A selection of all sounds including "pia" (and therefore certainly Piano sounds) will appear in the window library.

3. FIRST LETTER

This is a short cut to the previous function: if you press <SHIFT> + any letter on the ATARI keyboard, then all the library sounds whose name begin by this letter will be extracted in a flash. In the menu wording ^? is the abbreviation for <SHIFT> + letter.

4. PARTIAL SELECT

This feature allows you to extract all the TONES which have a number of PARTIALS equal or below a number that you specify. The TONES are extracted from the current selection, not from the whole Library (unless you choose the whole Library as current selection). Application: when you make a CONFIGURATION, you might sometimes need some sounds with only few PARTIALS, in order not to run short of polyphony.

5. UNDEFINED TONES

If you select the option "Select UNDEFINED'S" in the library lower menu (or press </> on the ATARI), all sounds that have not been attached to any semantic relation will be selected. This function is useful to check whether all sounds have a semantic description. It helps you to keep your library organized at any time.

6. GENERAL EXTRACTION

If you select the option "Select ALL" in the library lower menu (or press <A> on the ATARI), then all existing sounds of the library are selected.

7. SELECTION PRESET

In the lower library menu, the 10 upper items represent 10 preset selection keys. These are short cuts to the semantic extraction process described previously.

For instance, if you select the first menu line, then all sounds answering to this semantic description will be extracted. You can also press the ATARI function key F1 for the same result.

How to define a selection preset ?
Open the semantic window, select between 1 and 8 terms and select the option "Redefine SELECTION PRESET" in the semantic menu. You are then requested to assign this semantic description to a menu line: type 1 to 10.

From now on, if you select the menu option or press the corresponding function key on the ATARI, all the desired sounds will be extracted in a flash.

The menu option has got the name of the first semantic term selected in the list. If the selection key has more than one term, then the menu line is ended by a "+" sign, as a reminder.

With this feature, you could imagine your library as a group of TONES classified by category which has following advantages:

- categories are freely definable, with much precision. They are not fixed and can be changed at any time. The number of possible categories is huge.
- categories are not size limited (..well, 1000 sounds)
- Sounds can be part of several categories at once and yet they are memorized only once in the library.

When the library is updated on disk, all selection presets are saved with the library so you automatically find them again next time you load the library.

G. TONE IDENTIFICATION

This chapter describes how to attach semantic terms to TONES.

1. IDENTIFY ONE TONE

Click on a library TONE with the RIGHT mouse button, drag it towards the semantic icon and click: the semantic window opens. Instead of dragging the TONE, you can also click on it with the LEFT mouse button while pressing <SHIFT> on the ATARI.

Notice that the TONE name appears below the window header (when you open the window for a scanning, no TONE name appears at that place).

If the sound already had terms attached to it, they appear inverse video in the list. They also appear in the selection box at the right side of the semantic window.

At this point you can select new terms for the sound (maximum 8). When the selection is done, simply close the window and the terms are attached to the sound.

A short cut: clicking on a term with the RIGHT mouse button selects (or deselects) the term and closes the window automatically, attaching the new terms to the sound.

How to create new semantic terms?...
To create a new term, click on a free location in the list while pressing <CONTROL> on the ATARI. Now you can type in a name of up to 16 letters. You can use the same method if you want to modify the spelling of an already defined term (If you press <Return> without having typed anything, the old term is restored).

The list is then automatically sorted in alphabetical order by SYNTHWORKS.

When you have created new terms, select the semantic menu option "UP-DATE LIST on disk" and the semantic list will be updated on disk. Do not forget to do this! It is a good idea to make a regular back-up of the semantic list file.

The number of semantic terms has been limited to 255 to keep speed and memory needs in optimal proportions.

Remember:
If you overwrite a term A with a new term B, and re-create the term A somewhere else in the list, then SYNTHWORKS will not be able to extract the sounds associated with A in the past (these sounds are now associated with B).

When you copy a TONE from the library to a bank, the semantic relations of that TONE are NOT part of the transfer. As a matter of fact, there is no semantic classification in the Roland bank format.

2. IDENTIFY SEVERAL TONES

It is possible to assign new terms to a whole selection of TONES in the library.

Select some TONES; for instance you could select all the TONES with "PIANO" included in the name.

Open the semantic window and select some terms; for instance select "PIANO TYPE".

Open the semantic menu, two possibilies exist:

- "AFFECT current selection"
  If you select this option, then all the sounds selected in the library at that time will be assigned to the new terms. They will LOOSE any old term attached to them.

- "ADD to current selection"
  If you select this option, then the terms selected in the window will be ADDED to those already assigned to each selected sound of the library. If that means more than 8 terms for a sound, the older terms have priority: there will be no erasure of old terms.

Usually, this second option will be used more often since you do not loose old terms.

H. LIBRARY FILLING

1. COPYING ONE TONE

You can INSERT a sound in the library, or OVERWRITE an existing sound. The COPY, INSERT/ROTATE and SWAP options of the bank menus do not apply to the library.

1.1 INSERT

Simply drag a TONE from the bank (or from the TONE buffer) over to the library window and click anywhere (it does not matter if you click on a free location or not). The sound is copied and inserted at the end of the current selection (the sound list is automaticaly shifted to the end so that you can see the recorded TONE). The most important thing is that the newly copied TONE is automaticaly assigned to the semantic terms that were used last to make a library selection.

Let's take an example: you select the "STRING" sounds of the library, then you transfer a TONE from a bank: this TONE will be recorded in the library as a "STRING" sound. This feature makes the inclusion of new TONES in the library very easy and gives them an identity at once.

If you want to avoid an identity for that TONE, you should select the menu option "Select ALL" or "Select UNDEFINED'S" beforehand.

1.2 OVERWRITE

If, when dragging a source TONE over the library window, you click on an existing TONE while pressing <CONTROL> on the ATARI, then this TONE is overwritten with the new TONE. The new TONE will inherit the semantic relations of the previous TONE.

This overwriting possibility has been provided espescially for the case when you want to store a TONE that you had previously taken from the library for editing. Overwriting the old TONE, you only keep the edited version in the library.

2. COPYING SEVERAL TONES

The option "TONES -> LIBRARY" in the banks menu allows you to transfer all the bank TONES into the library in one operation. There is no overwriting: all the sounds are inserted. The newly copied sounds will have no identity. After such a transfer, SYNTHWORKS automatically extracts and displays all undefined TONES of the library (so you can see the new TONES).

I. LIBRARY UPPER MENU

The lower menu has been covered in the chapter "LIBRARY EXTRACTION".

1. LOAD

To load a library. You can have as many libraries as you like. The library file name appears in the library window header.

2. UPDATE

When you have done some changes (new TONES in the library, semantic assignment, alphabetizing, etc...), you should update the library before quitting the program.

3. SAVE AS...

You can save the library with any name you like. This is useful when making backups. One common method for a good backup management is to use 3 disks (single sided is okay). Everytime you make a backup, do it over the oldest version on disk...

4. CREATE

If you want to create an empty library on disk, use this option. The library currently in memory will be cleared.

5. DEFINE AUTO LIBRARY

This option allows you to set a library which will be loaded automatically everytime you start the program. When you select the option, a filesclector box appears. Select the library file you want to define (from any folder on any disk). This function is handy especially if you work with a hard disk.

6. SAVE / IMPORT SELECTION

You can copy any selection of a library into any other library. Use the menu option "SAVE Selection" to save the current selection as a file on disk. Now you can load a new library. Then use the menu option "IMPORT Selection", to choose a selection file from disk. All the TONES will be inserted in the library together with their semantic identities. Twin copies are avoidedautomatically.

7. FREE UPDATING

If a tick lies in front of this menu line, you will have to update the library. Select the menu option "UPDATE" when you have completed your editing, espescially before you quit the program.

8. PARALLEL UPDATING

In this mode, everytime a change is done in the library, SYNTHWORKS updates the library file accordingly, on the library disk. In other words the library on disk will at all times be a replica of what is in memory. Therefore you never need to think of updating the library yourself. In case of power failure, you loose nothing!. The disadvantage is that your work speed is slowed down because of the disk access operations. With a hard disk, this is not a big problem.

This function will only be active if you have loaded a library before as only then SYNTHWORKS knows which file to update.

9. CLOCK UPDATING

In this mode, the library on disk will be updated automatically every 20, 40 or 60 minutes (click on the menu line to select the time span). Use this option if you tend to forget to save your work or if you fear power failure. Of course if you have made some changes after the last automatic update and want to quit the program, you still have to think of updating the library yourself.

10. AUTO TWIN CLEARING

You will certainly find this option very useful: everytime a TONE is copied to the library, it is compared to all the library sounds to find out if it already exists OR not!

SYNTHWORKS will check the sound parameters, not the name; therefore if two sounds have the same name but are in fact different because of their parameter settings, then they will of course not be considered as twin.

Even if the library has got 1000 sounds, STEINBERG technique is so quick that the comparison process is not humanly detectable !

If a tick lies in front of this menu line, then SYNTHWORKS will not copy the TONE and will show a warning message at the top of the screen.

If there is no tick, then an alert message will appear to warn you that this sound is already present in the library. Then you can confirm or cancel the copy.

The function will work both when you copy a single TONE, or a whole bank of TONES. This is very useful when you receive a new bank from a friend for example. When transferring the sounds to the library, only those sounds that you haven't got already will be copied. When copying a whole bank, and in case some twins were encountered, SYNTHWORKS will tell you the real number of copied TONES.

11. ALPHABETIZE

If you alphabetize the library, any selection of sounds that you ask for will appear in alphabetical order.

12. INFOS

Just try out clicking on it...

13. PRINT

The TONES of the current selection will be printed.

14. BANK A <- TONES

You can transfer all the TONES of the current library selection into bank A. The sounds are copied to the free locations of the bank (bank TONES will not be overwritten).

15. BANK B <- TONES

Like the previous function. Both functions are short cuts which prevent that you have to drag the TONES one by one.

J. LIBRARY MISCELLANEOUS

- Click on a sound name while pressing <CONTROL> to rename the sound.

- If you click on a TONE while pressing both <ALTERNATE> and <SHIFT>, then all the sounds which at least have the same semantic relations as the clicked TONE will be selected. The scanning depth parameter also works for this function, therefore you can select all sounds which have a certain percentage of the semantic terms of the clicked sound.

- If you click on a TONE while pressing both <ALTERNATE> and <CONTROL>, then all sounds that have in common at least ONE semantic term with the clicked TONE, will be selected.

- Click on a TONE while pressing both <SHIFT> and <CONTROL>. This sound will then be removed from the current selection (we mean REMOVED, not ERASED from the library!) Example of application: you can remove TONES from a selection in order to print, or copy, or assign new semantic terms to the remaining group of TONES.

K. ICON OPERATIONS

On the Librarian page, many objects can be moved in order to emulate several functions; It can make the page management user friendly and easy to remember. These are the possibilities:

1. MOVING A TIMBRE OR PATCH NAME TO...

- TRASH icon: the memory is erased

2. MOVING A TONE NAME TO...

- SYNTH icon: the TONE is sent to the synth, and put in buffer A (as if you simply click on the sound)

- PRINTER icon: the TONE parameters are printed on paper.

- SEMANTIC icon: the semantic window opens and you can redefine the TONE identity.

- TRASH icon: the TONE is erased

3. MOVING A BANK NAME TO...

- SYNTH icon: the bank is sent to the synth

- DRIVE icon: the bank is saved on disk

- PRINTER icon: the TONES, TIMBRES or PATCHES of the bank are printed.

- TRASH icon: the bank is cleared

- LIBRARY WINDOW: the TONES of the bank are transferred to the library.

- BANK WINDOW: If the windows display different banks, then the source bank is copied over the other bank. This function has no menu equivalence.

4. MOVING THE LIBRARY NAME TO...

- DRIVE icon: the bank is updated on disk

- PRINTER icon: the currently selected sounds are printed

- TRASH icon: the current selection is erased.

5. MOVING THE SYNTH ICON TO...

- DRIVE icon: receive the synth bank (for disk saveguard)

- BANK WINDOW: receive the synth bank (for bank filling)

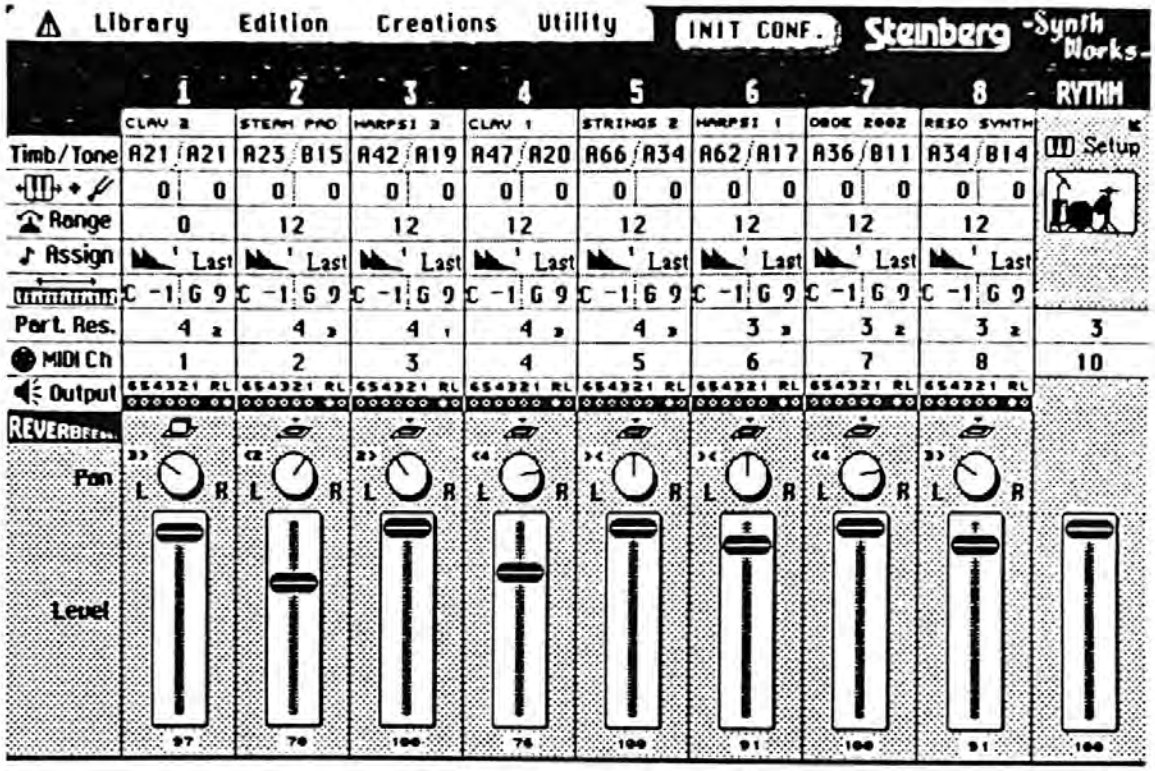
6. MOVING THE DRIVE ICON TO...

- SYNTH icon: load a bank (to send to synth)

- BANK WINDOW: load a bank (for bank filling)

CONFIGURATION PAGE

A. INTRODUCTION



From this page, you are able to configure the 8 SYNTH PARTS and the RHYTHM PART. As you can see from the graphics, this CONFIGURATION editor has the lay-out of a mixing desk, each section representing a SYNTH PART with a fader, a pan knob, and various parameters! We think that this representation allows easiest access to all the sophisticated multi timbral synth capabilities. Besides, this organization recalls today's famous "Music Workstation" concept, espescially in conjunction with a D20.

If you have a D110, then every setting on screen can be saved as a PATCH. The 64 PATCHES of a D110 bank are 64 such CONFIGURATIONS. Each PATCH can be called up by a Program change message, for instance if you use a Sequencer.

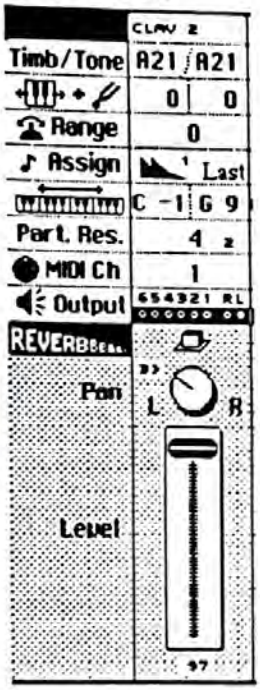
If you have an MT32, D10 or D20, then unfortunately you can not store these important CONFIGURATIONS as your device does not provide any memory to do so. SYNTHWORKS can partially solve this problem: you can save any CONFIGURATION on disk and recall it at any time. Another possibility to solve the problem is to create system exclusive files of small PRO-24 patterns made of system exclusive data describing a CONFIGURATION (which you can insert anywhere in a song).

Besides the other chapters about CONFIGURATIONS, you should read the chapter about "AUTO RE-CHANNELIZING" for complementary information.

If you have a D10 or D20, then switch your synth to MULTI TIMBRAL mode (not to PERFORMANCE mode!).

B. EDITING

We are going to describe the parameters starting from the top of a SYNTH PART area.



- The first parameter is the TONE number. When clicking on the TONE name, you can choose the TONE that you wish to attribute to that PART. The number of the TONE appears in the cell below the name. SYNTHWORKS stores in memory the names of all preset TONES, for the MT32 as well as for the D10/20/110; therefore you will always see the right name. If you click on the TONE number cell, then you select the TONE group: preset A, preset B, user memory, preset Rhythm. The user memory TONE names are related to the TONES of SYNTHWORKS internal bank A. If you wish to see the names of bank B instead, simply swap the bank contents beforehand.

CONFIGURATION PAGE

PLEASE REMEMBER that a CONFIGURATION is based on TIMBRES in your synth ! If you select user TONE memories in some of the PARTS, then these must be present in your synth if you want to hear them!!! The best way is to have the same bank in SYNTHWORKS' internal bank A as in your synth.

As you can assign a "Rhythm sound" to a non-rhythm PART, you can change its tuning, which is not possible from the dedicated RHYTHM PART itself.

- The parameter at the left, under the TONE name, is the TIMBRE number. A CONFIGURATION is made of 8 TIMBRES. A TIMBRE covers all parameters of a PART EXCEPT the level, the panning, the MIDI channel and the partial reserve ! When you edit a TIMBRE number, then you scroll through the TIMBRES of SYNTHWORKS' Bank A. When you release the mouse, the parameters that constitute the TIMBRE are displayed.

  Our opinion is that the TIMBRE concept developped by Roland makes sense when using an MT32 without a computer, but it complicates everything in other cases.
  Our advice : you should create CONFIGURATIONS without thinking about the TIMBRE concept. That will make life much easier.

- The next two parameters are the Key shift (+-24 half tones) and the Fine tuning (+-50 cents). It can be interesting to slightly detune some PARTS in order to get chorus effects. If you want to get a fat mono sound, you can attribute the same TONE to each PART, detune the different PARTS relatively to each other, and set the same MIDI channel for each PART, then open your ears!

- Bender range.
  This can be set independently for each PART.
  Note: if you have two PARTS with the same sound and set to the same MIDI channel, and if the bender range of one PART is 11 and the other is 12, then when bending you will not only get the usual effect, but also a flange between the two PARTS due to the detune introduced by the difference of bender range.

- Assign mode.
  There are 4 types of note assignment. If you play the same key twice, the older note can be cut or not. The icons let you see that. Besides, when playing many notes together and reaching the polyphony limits, a new note can either be ignored (FIRST note priority) or can switch off the oldest note (LAST note priority). This can be set clicking on that icon (LAST or FIRST).

- Keyboard Range.
  This parameter is only available for the D110. It allows to limit any PART to any keyboard area.

- Partial reservation
  The partial reservation concept is fully explained in the chapter "SYNTH INTRODUCTION". Please read it. The synth having 32 PARTIALS all together, the sum of the PARTIAL reservation for the 9 PARTS will never exceed 32. If you edit a PARTIAL reserve and you can not reach the desired number, then you will have to decrease the PARTIAL reservation for another PART.

  The little number at the right side of the main number, is the number of PARTIALS that the currently selected TONE needs to be able to play 1 note. If, for instance, the little number is 3 and the PARTIAL reservation is 6, then there will be at least 2 notes reserved for that PART at all time.If it is set to 4, then 1 note will be reserved for sure at all time (but DO UNDERSTAND that you can play more notes if PARTIALS from other PARTS are free at that time). If it is set to 5, you still have one note reserved for sure at all time, but statistically there's a greater chance that a second note is available.

- MIDI channel.
  This sets the MIDI channel on which the PART will receive note, control change and program change data. This is also the MIDI channel used by SYNTHWORKS for the AUTO RE-CHANNELIZING function. As explained in the MIDI CHANNEL chapter, the D10 and D20 MIDI channels will have to be set from the synth itself.

- Audio Output
  This parameter is available for the D110 only. The picture represents the rear of a D110 rack with its 8 possible audio outputs.

- Reverb switch.
  This parameter is available for the MT32, D10, D20 only.

- Panning and Level parameters are obvious. You might find it interesting to know that the level and panning of each PART can be controlled independently with MIDI control change messages. This allows you to do some automated mixing in conjunction with a sequencer. (Level is MIDI control number 7, and Panning MIDI control number 10).

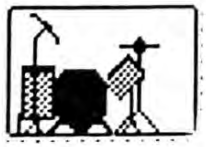
  Note: If you move the fader of a PART while a note is being played on this very PART at the same time (AUTO NOTE case), then the synth updates the volume only when you play a NEW note. If the AUTO NOTE feature is used, then after releasing the mouse button, you will have to press it again to generate a new note. Play short notes on your keyboard to have immediate feedback on the volume.

- CONFIGURATION name.
  If you click on the name field at the right part of the menu bar, then if you have a D110 you can name the CONFIGURATION (remember: a CONFIGURATION is a PATCH for a D110).

  If you have another synth, clicking on this field is the same as calling the menu option "SAVE CONFIGURATION". The name of the CONFIGURATION is the one under which you save it on disk.

- Besides all these parameters, the REVERB setting as set in the dedicated window, is part of a CONFIGURATION.

- Click on the RHYTHM icon in the RHYTHM part, to access the DRUM KIT.



- We did not provide a specific printout for a CONFIGURATION, as a matter of fact using the option "Print SCREEN", you will get a hardcopy of the CONFIGURATION screen which could hardly be clearer for archiving!

C. MISCELLANEOUS

1. LOAD/SAVE CONFIGURATION

As mentioned in the CONFIGURATION chapter, only the D110 synth has the capability of storing a whole CONFIGURATION, as a "PATCH". One of the 3 SYNTHWORKS solutions for the other synths is to simply provide the storage of CONFIGURATIONS on disk. Every setting that you see on screen can be saved and loaded (when it is loaded, it will also automatically be sent to your synth). Of course the REVERB setting, part of a CONFIGURATION (and part of a D110 PATCH), is saved or loaded as well. You can find the LOAD and SAVE options in the menu LIBRARY.

2. SYSTEM EXCLUSIVE PATTERNS

As we said earlier, a whole CONFIGURATION can be memorized only on a D110, hence this function is provided for the other synths. Find it in the LIBRARY menu.

Its purpose is to create a PRO-24 pattern file containing all the necessary system exclusive data for a whole configuration. If you insert it on a PRO-24 track, you can set any CONFIGURATION you like to be installed at any time in a song. The PRO-24 must be set to send out SYSTEM EXCLUSIVE data!!! The SYNTH PARTS will even be set to the memorized MIDI channels, except for the D10 and D20 because of their limitation mentioned earlier in this manual.

If you use a PRO-24 compatible sequencer, it must be able to read system exclusive patterns. The patterns created by SYNTHWORKS will work with the PRO-24.

If the configuration uses some TONES from the user memory, then your synth must have the corresponding sound bank in memory.

If your sequencer is not GEM-based, and if it cannot load system exclusive files, then (apart from our advice to buy a new sequencer) you can still use program and control change messages to install the desired CONFIGURATION (but only partly).

3. SYSTEM EXCLUSIVE FILES

This is another way to memorize a CONFIGURATION and send it to your synth later. Find the function in the LIBRARY menu.

A file is created containing the whole CONFIGURATION, as well as any TONE data and the DRUM KIT that is used in the configuration.

This file consists of "pure" system exclusive data with all necessary headers, and is ready to be sent. That means you can use it in any sequencer which can record system exclusive files.

The main purpose of this option is to work in conjunction with the desk accessory that is provided with SYNTHWORKS (called MIDIDUMP.ACC). Using it, you can load any system exclusive file created by SYNTHWORKS (or any other file not exceeding 3 Kbytes) and send it to your synth. This is very useful in conjunction with a GEM-based sequencer. (although this desk accessory also works without protection key, it is part of the copyright of SYNTHWORKS).

When using the desk accessory with a program such as a sequencer, then you should prevent the sequencer from playing at the time you send the system exclusive file, to avoid any mixture of MIDI data. You must clearly understand the difference between the PRO-24 patterns of the previous chapter and this option. In the patterns, only the CONFIGURATION is memorized and therefore the right sound bank must be resident in the synth. The system exclusive files also memorizes all TONES as well as the DRUM KIT. In other words: when you use a system exclusive file it does not matter which sound bank is in the synth. (To be more exact, it could matter in case you are utilizing user TONES in the DRUM KIT).

A system exclusive file can have a size of about 500 to 2500 bytes, depending on the number of user TONES in the CONFIGURATION. A Pattern file is about 240 bytes only. That means a pattern file is transferred very quickly, unlike a system exclusive file. This is an advantage for a sequencer application if you have to change the CONFIGURATION several times in the course of a song.

With both patterns and system exclusive files, you will never need to worry about any MIDI transmission channel thanks to Roland's UNIT NUMBER system.

4. CONFIGURATION INIT

This is your favourite or standard CONFIGURATION that is sent automatically when you load SYNTHWORKS and that you can recall at any time. Use the menu option "Redefine Conf. Init" to save the desired preset CONFIGURATION on disk, and the option "CONFIGURATION INIT" to call it back.

Note: If you have a D10/20, when saving an INIT CONFIGURATION, you will also save the D10/20 specific PATCH parameters (in other words, this function is also an "INIT PATCH").

5. STORE TIMBRES

The CONFIGURATION page lets you edit 8 TIMBRES simultaneously. Using the menu option "STORE TIMBRES" you can store these 8 TIMBRES that constitute a CONFIGURATION in SYNTHWORKS' internal bank A or B. If, for instance, a PART is assigned to TIMBRE number A25, the parameters of that PART will be stored in location A25 of the bank.

6. STORE D110 PATCH

As we said earlier, CONFIGURATION and PATCH are the same for a D110. The menu option "STORE D110 PATCH" lets you store the whole CONFIGURATION in the last PATCH location you clicked on (or on the

first one if you did not select any PATCH yet). Usually you should proceed as follows...

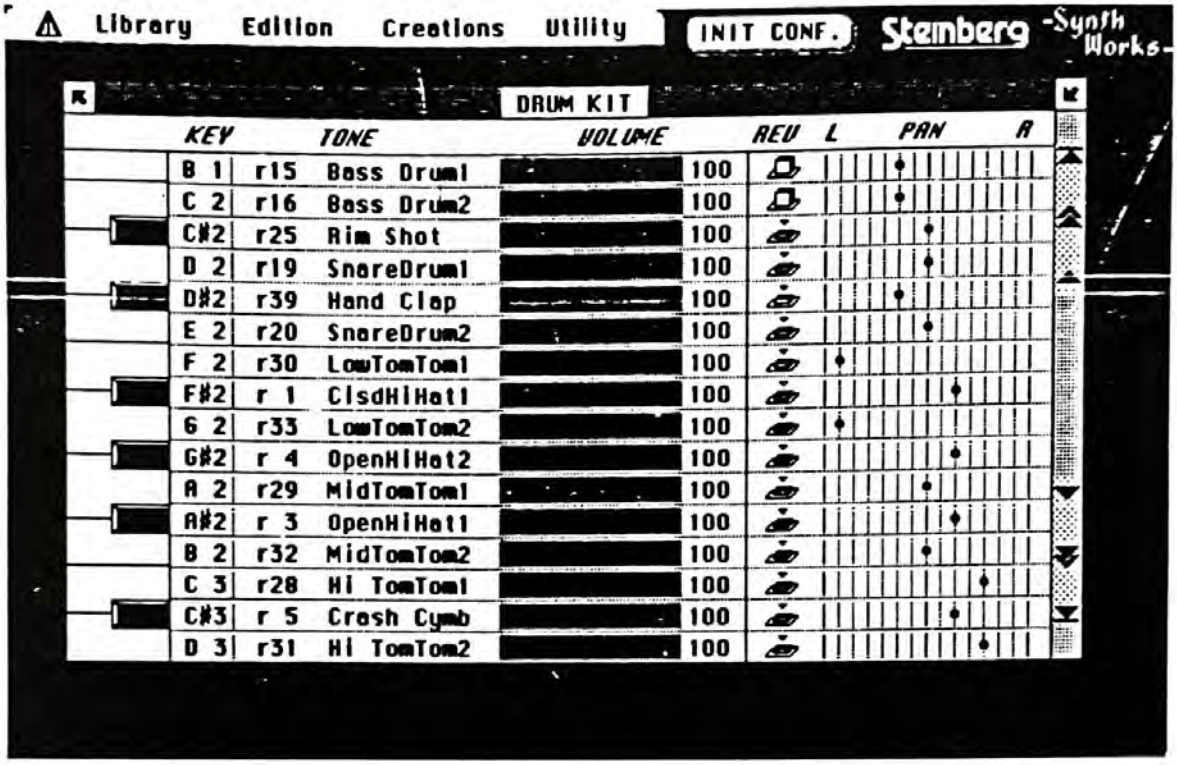
- Click on a PATCH in bank A or B (the PATCH is sent to the D110)
- Access the CONFIGURATION page: the PATCH is displayed, you can edit it.
- Select "STORE D110 Patch" to store the result.

Shortcut: If you press <SHIFT> while clicking on a PATCH in the bank, you automatically switch to the CONFIGURATION page and the PATCH is displayed.

Note: you can store a PATCH only if it has got a name (to name it click on the name field at the right side of the menu bar on the CONFIGURATION page).

DRUM KIT EDITOR

A. INTRODUCTION



You can access the drum kit editor from the EDITION menu. As you certainly know, your synth has got 8 SYNTH PARTS and 1 RHYTHM PART. The RHYTHM PART is different from the SYNTH PART for the following reasons:

- Each keyboard key is linked to an individual TONE (64 keys for an MT32, and 85 for a D10/20/110 synth). These TONES can be the same ones as those used in the Synth PARTS. This is a very interesting point as it allows you to create your own drums, which is a big advantage over most existing dedicated drum machines.

- Each TONE has got its own memorizable level, panning, reverb switch (for MT32,D10,D20), audio output (D110).

- Each TONE has no sustain point. Even if a TONE is memorized with one, it will be ignored when played.

B. EDITION

- Clicking on a TONE name lets you choose which TONE you want to link to a key. You can choose among the preset Rhythm TONES (30 for a MT32, 63 for D10/20/110) and among the user 64 TONE memories. The user TONE names come from the memories of bank A. If you want to refer to the TONES of bank B, simply swap the bank contents beforehand.

- Click and drag on a horizontal bargraph for setting the drum level.

- Click on the Pan field to set the TONE stereo position. Press the left mouse button to move the sounds to the left and vice versa.

- You can set the audio outout or the reverb switching depending whether you are in D110 mode or other.

- Clicking on a key at the left side of the window lets you play the TONE. When the DRUM KIT window opens, SYNTHWORKS is automatically re-channelized on the Rhythm PART channel as set on the CONFIGURATION page. This lets you test at once the drum sounds from a master keyboard or from the window keys. If you hold the mouse button down the sound is repeated.

- If you click on a TONE name while pressing <ALTERNATE> on the ATARI, the line turns inverse video and the mouse cursor is transformed.

Release the mouse on another line to copy the source key setting to the destination key. By assigning the same user memory TONE to a whole range of "Rhythm" keys, you can create a keyboard map for that TONE in which each key can have its own pan position and reverb on/off (or audio output). The only limitation is that Rhythm TONES have no sustain (but what about a killer Piano sound, where each key is affected to a different TONE which matches exactly the right sound at that keyboard position !?!).

- **Note:** it is a good idea to edit the drum kit with a headphone on, because the AUTO NOTE feature gives an instant accurate feedback of any drum in the stereo field.

C. MENU

There is a menu that you can pull down by clicking on the window's right upper corner.

- **LOAD (and SEND)**
  A Drum kit can be loaded from disk, displayed in the window, and sent to the synth.

- **RECEIVE from Synth.**
  This allows you to receive the Drum kit from the synth and have it displayed it in the window for editing.

- **SAVE to disk.**
  The Drum kit, as set in the window, is saved to disk. Do remember that, as for TIMBRES and PATCHES, the Drum kit can use user TONE memories. In that case, a Drum kit is dependent on a sound bank. If the sound bank in the synth is not the one the Drum kit was based upon, then your Drum kit will of course not respond the same way, as it uses different TONES.

- **STORE in SYNTH**
  This function is for the D10 and D20. Unlike the MT32, those synths have a Drum kit memory that is not erased when you switch off the instrument and which is not affected when you edit the keys (when you edit a key, it is a buffer which is affected). If you call this menu option, then the Drum kit displayed in the window is sent to this memory, not into the buffer (unlike when you load a Drum kit from disk). The D110 hasn't got such a memory.

- **REDEFINE Preset Kit**
  This is the Drum kit that appears in the window by default.

- **PRINT**
  This can be useful if for instance you want to control the RHYTHM PART from a sequencer (you need then to know which key plays what).

AUTOMATIC SOUND CREATIONS

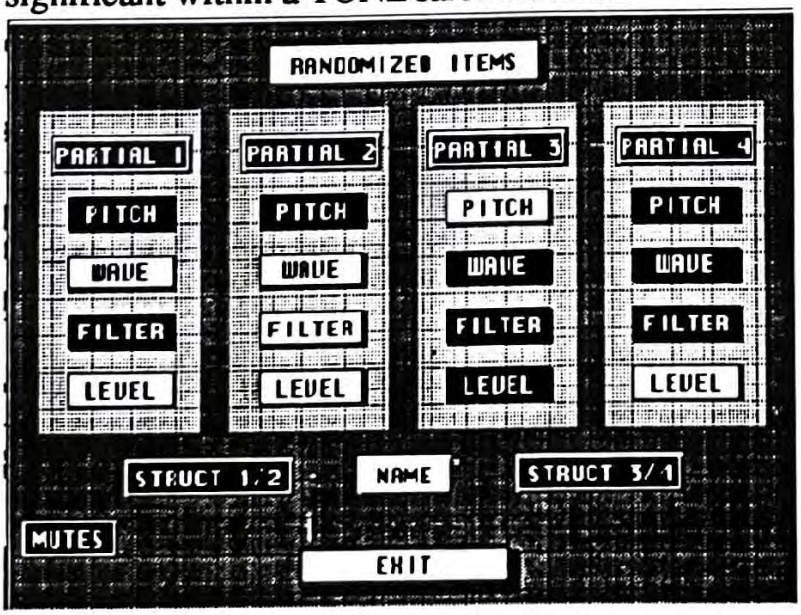
A. INTRODUCTION

SYNTHWORKS provides you with some unique functions that automatically create new sounds from old sounds ("crossbreedings"). Other functions slightly modify existing sounds. These functions have been designed with the synth voice architecture in mind, using many dedicated mathematical non linear randomizing functions (!) that produce a high percentage of usable sounds (in contrast to what usually can be found in other music software).

B. RANDOMIZING MASK

Idea:
Before you select the VARIATIONS or RANDOMIZATION functions (CREATIONS menu) in order to create new versions of TONES you can choose which parameters of the TONES you want to be affected.

Instead of having control over each individual parameter (complicated thus not useful), you have control over the blocks of parameters which are significant within a TONE'sarchitecture.



How it works:
Call the dedicated dialogue box by clicking on REDEFINE MASK in the CREATIONS menu. The different parameter groups plus 4 PARTIAL switches will be displayed. A group will be affected by SYNTHWORKS

treatment if it is selected (i.e. displayed in inverse video). Please note that if the name of a PARTIAL (e.g. "PARTIAL 2") is not selected, then whatever the status of the buttons below it, no parameter of this PARTIAL will be affected.

C. OUTPUT

Each time you select a creation function, you can produce one TONE or 32 TONES.

- In the first case, the resulting TONE will be stored in a SYNTHWORKS TONE buffer and simultaneously be sent to your synth.

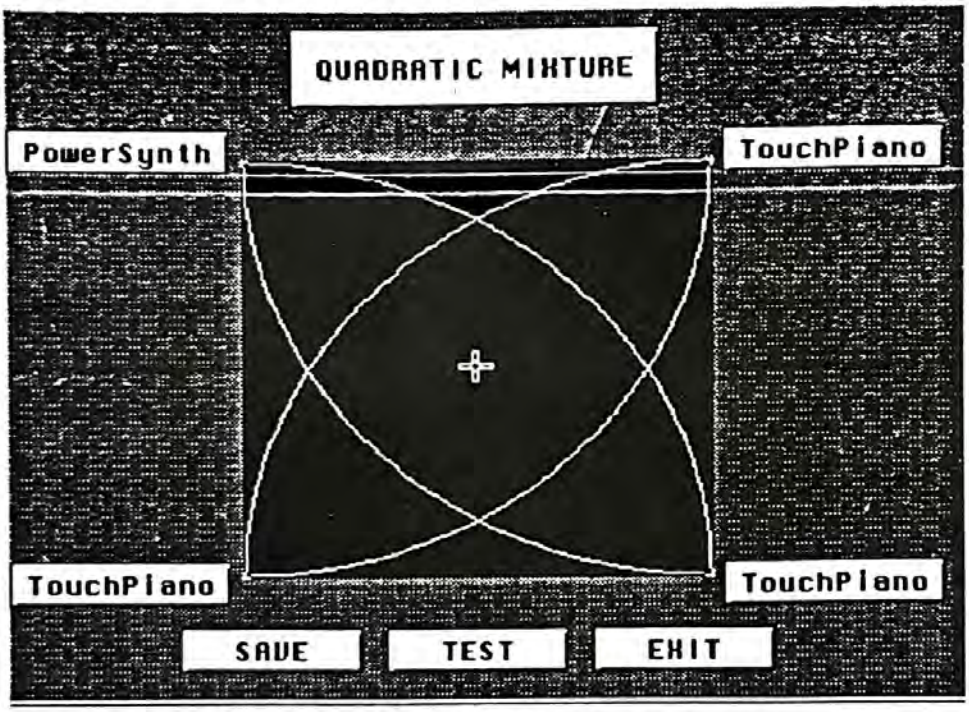
- In the second case, the TONES will be stored in bank B free locations (one of the two windows must be set to display the TONES of bank B beforehand). The new sounds are also sent continuously to the synth (although you don't have much time to play one before a new one is generated).

When SYNTHWORKS is processing 32 TONES, you can stop it at any time by pressing <Esc> on the ATARI.

A tick in front of the appropriate item in the CREATIONS menu defines the number of TONES to be produced.

D. QUADRATIC MIXTURE

This method of creating a sound utilizes from 2 to 4 existing TONES. Fill the TONE buffers with the desired TONES, first. Then call the function.



A window opens and you can see the 4 TONE names in the corner of a square. There is a cross in the middle of this square that you can move with the mouse. When you release the mouse button, a mixture of the 4 TONES is produced according to the cross position, and sent to your synth. If you find the result satisfying, then you can store it in bank B (a random name being automatically created for it).

How is the mixture done ?
SYNTHWORKS mixes parameters. Some parameters can be mixed linearly (like envelopes), some can not (like mixing PCM waves). In order to produce interesting results, SYNTHWORKS mixes each parameter according to its nature.

In which proportion each TONE is mixed ?
You can see on the picture that each square corner is the center of a quarter circle. If the cross is outside a quarter circle, then the TONE associated to the corner will not be part of the mixture. It will be as much representated in the mixture as the cross will be closer to its corner.

3 examples:

- If the cross is exactly in a corner, then the generated TONE will be simply the exact TONE of the corner.

- If the cross is in the middle of the square, then the mixture will contain each TONE in equal proportion.

- If the cross lies on a square side, then the mixture will contain only 2 TONES (in equal proportion if the cross is in the middle of the side).

This creation method works best when mixing same kinds of sounds. For instance you have several string sounds and you would like to obtain intermediary sounds.

Keyboard equivalents:

- Press <RETURN> instead of clicking on "STORE"

- Press <Esc> to exit

- Press the space bar to show the virtual keyboard. Please note that if the sequencer is playing, you can hear the new sound without having to use the virtual keyboard.

E. PARTIAL FANTASY

This function starts from existing TONES that are randomly taken in the current library selection. A new TONE is created by taking parts of these TONES (a bit in a Frankenstein fashion!). Very interesting results can be produced (try combining different types of TONES, contrary to the QUADRATIC mixture).

Note: you can kind of pre-determine the results, for instance select all the string and brass sounds in the library: you will get crossbreedings of brass and string sounds most of the time.

F. SLIGHT AND MEDIUM VARIATIONS

As they imply these functions produce minor or medium variations of sounds. Yet they have a lot of power when used together with the RANDOMIZING MASK option.

We have tried to implement this function as sensibly as possible in order not to erase the original TONE:

1. When selecting SLIGHT VARIATION or MEDIUM VARIATION, always the sound in buffer A is PROCESSED..... WHATEVER BUFFER IS ACTIVE AT THAT TIME.

2.

- If only one TONE is PRODUCED (Creations menu function: '1 TONE'), it is stored in buffer B which will automatically be selected (thus the TONE of buffer A will not be erased).

- When you PRODUCE 32 TONES (Creations menu function: '32 TONES') they are stored in the free locations of bank B.

So you can produce whole series of variations on the source sound and still return to it.

G. BLIND RANDOM

This function also uses the RANDOMIZING MASK. If all parameter groups are selected 1 or 32 totally new TONES will be created. It is called "BLIND" because contrary to the other functions, there is no intelligent control over the randomizing generation. Hence .....

- The percentage of interesting sounds will be much lower.
- some totally incredible sounds might be produced.

This function is very good at producing strange effects!

If you select only few parameters of the RANDOMIZING MASK, SYNTHWORKS will take the current TONE buffer and randomize only the selected parameters, the others remain untouched. The main sound will still be recognizable. This can be useful to increase the percentage of interesting sounds.

UTILITY

A. SEQUENCER

SYNTHWORKS provides a simple but accurate sequencer. Its main purpose is to enable interactive work: You can edit your sounds WHILE the sequencer plays.

FEATURES:

- RECORDS up to 3000 notes with 1/96 ppq accuracy. Records any MIDI data like pitch bend, pressure, but no system exclusive. Besides, there is no limit of polyphony.

- PLAYBACK of a loop pattern.

- TEMPO ADJUSTABLE at any time.

- COMPATIBILITY with PRO-24 patterns: you can load a pattern recorded with PRO-24 and play it back (menu option "LOAD PATTERN"). Reciprocally, you can save a pattern recorded with SYNTHWORKS and later use it with your PRO-24 (if e.g. you had an interesting musical idea during your editing session).
  When you load a pattern, it will automatically be played.

- "TRANSPARENT": you can do anything (..edit,..load or save files,..play the virtual keyboard,..send individual TONES, ..automatically create sounds,...etc.) and the sequencer will continue to play. This really is a useful feature for an all time feedback of ones work.

B. MIDI VIRTUAL KEYBOARD

This is an exclusive Steinberg utility: The virtual keyboard has got 88 notes and you can play it in different ways...

Before clicking on the keyboard, you can choose a velocity by moving the mouse up and down on the screen: the keyboard will follow the mouse cursor...the higher the keyboard on screen, the higher the velocity!

1. When you click on a note with the LEFT mouse button, the note will be played (via the current SYNTHWORKS MIDI channel). If you keep the button down and move the mouse...

- right or left: you generate pitch-bend data
- down: you generate Aftertouch data
- up: you generate modulation wheel data

When you release the button, the note is off.

2. If you click the RIGHT mouse button, you will be able to play arpeggios by moving the mouse right and left. While moving the mouse up or down you can also change the velocity (the on-screen keyboard will not follow you in this case).

3. If you press <ALTERNATE> on the ATARI while you click on the keyboard with any mouse button, then you can play chords. When you release <ALTERNATE>, an "ALL NOTE OFF" message is sent to your synth.

This feature is very useful to quickly test sounds if for instance you work with a synth expander without a master keyboard (or if your keyboard is not in reach).

Press any ATARI key or both mouse buttons to leave the VIRTUAL KEYBOARD. You can also press ATARI keys 'K' or the Space bar to call and leave this function.

C. AUTO NOTE

This feature is provided to give you maximum feedback on your editing work. While editing a TONE parameter or selecting TONES on the Librarian page press <ALTERNATE> on the ATARI keyboard and click on a mouse button. A note will be played.You can achieve the same effect when you set <CAPS LOCK> (being the key that you normally use to switch between small and big letters) and click. In both cases, the note will be sustained as long as you keep <ALTERNATE> down (if you have a non sustained sound and if the Caps lock is set, you do not need to use <ALTERNATE>).

Besides your definable auto note, there are 9 preset auto notes at your disposal: press F1 to F9 on the ATARI, while pressing <CONTROL>, and you will select C1, C3 or C5 with different degrees of velocity (1,64,127). Press F10 and <CONTROL> to select your personal auto note.

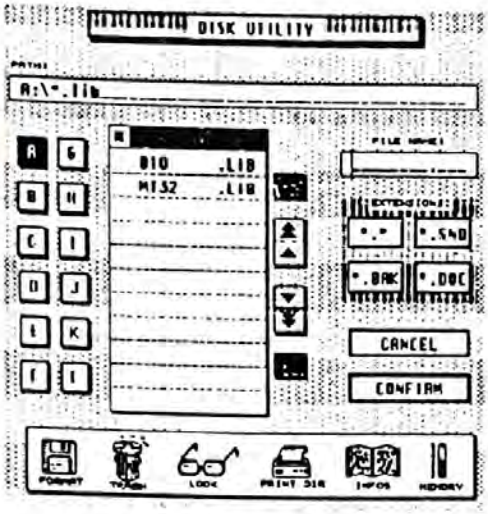
This simple feature is extremely powerful when you get used to it: click, change a value, click again, etc... This step by step method gives you real time feedback of your editing.

This feature works in all mouse modes, and even when you graphically edit the envelopes (very useful when editing an attack time for instance).

On the Librarian page:
You select a TONE by clicking on its name. When at the same time <CAPS LOCK> is set or <ALTERNATE> is pressed, the AUTO NOTE will be played as long as you keep the mouse button pressed. It will take about 1/5th of a second before the TONE is played because of the TONE dump time. You can quickly check the different sounds of a bank.

Note: instead of pressing the Caps lock, you can also select the option "AUTO NOTE" (click on "FLAGS" in the first menu to reach a sub-menu).

D. DISK UTILITY



The Steinberg file selector box is a happy improvement upon the current GEM box. Its features are:

1. Switching from any disk drive to any other at ease. Simply click on the desired DRIVE button A to F. SYNTHWORKS will always keep a backup of the folder path of the different drives (if for example you switch from drive C to D and then switch back from D to C, you will find the original path of C again). If you work with a hard disk, you will enjoy this feature!

2. Pressing on the already selected DRIVE button leads you directly to the top of the drive directory (useful if you were in a folder in a folder...).

3. Setting common file extensions (for file researches) at ease thanks to the 4 dedicated buttons at the right side of the scroll box.

4. Floppy disk formatting.
You can format your single or double sided floppy disk. This operation has an advantage over the usual ones: if you suddenly realize that you are formatting a wrong disk then you can stop the operation by pressing <Esc>. The directory track being the last one to be formatted with SYNTHWORKS method, you have a chance to re-trace your files.

5. Erasing any file: if a disk is full, then you can do some dumping!

6. Possibility to look at the ASCII content of any file. This is useful if you want to consult any documentation.

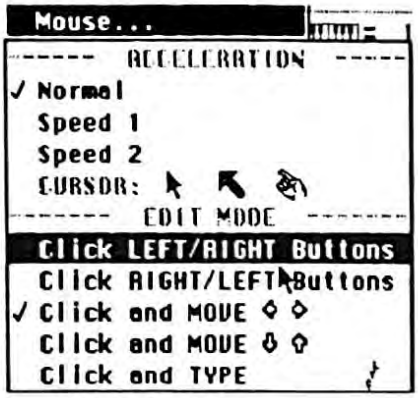
7. Reading and editing the READ/WRITE status and DATE/TIME settings of any file.

8. Printing the current folder contents: interesting if you want to have your disk's contents printed on paper (if you have many disks, you will understand what we mean!)

9. All the previous features are available everytime the file selector is displayed.

MISCELLANEOUS

A. MOUSE MODE



1. MOUSE ACCELERATION

Two scales are available to make the mouse cursor movement dependant on your hand's speed.

- If you move the mouse slowly the cursor on screen moves normally
- if you move faster, the cursor will move EVEN faster than that).

This is useful since it allows you to work faster with the mouse and also because you do not need so much room for the mouse on the table.

2. CURSOR DEFAULT SHAPE

This is the cursor form that the mouse will adopt all through the program.

3. EDIT MODES

A word on editing:
On screen the parameters that constitute a TONE, a PATCH or a CONFIGURATION, are represented by numerical values, graphs or icons. Use the mouse cursor to point and click on these items in order to change (EDIT) them.

The sub-menu EDIT MODE (accessible when you click on "MOUSE..." in the first menu) offers no less than five different approaches to modify a parameter!

3.1 CLICK BUTTON LEFT/RIGHT

- Clicking the right mouse button increases the value; clicking the other button decreases the value.

- If while pressing a button you click the other one, then the value will jump directly to its maximum or minimum value (according to the button pressed first)

- If while pressing a button you press <SHIFT> on the ATARI, the values will change at a higher rate.

3.2 CLICK BUTTON RIGHT/LEFT

- This mode is similar to the previous method with the exception that clicking the right mouse button decreases a value, and vice versa.

3.3 CLICK AND MOVE HORIZONTALLY

- To edit a parameter, click on it and while keeping the button down (any button), move the mouse horizontally. Moving right increases the value, moving left decreases it.

- This method has the advantage of allowing you to scroll quickly through the different values of a parameter, but is less accurate when changing a value in small steps.

There is another advantage to this mode: when you use the AUTO NOTE function you can listen to the note being affected by your edition while you press the mouse button. It can be useful when setting the detune parameter for instance.

It is advisable to use a mouse acceleration setting with this method.

3.4 CLICK AND MOVE VERTICALLY

This works exactly as the previous method, but in the vertical direction: moving upwards has the effect of incrementing the parameter and vice versa.

3.5 CLICK AND TYPE

If you click on a parameter, an empty inverse video field shows up: type in the desired value from the ATARI keyboard and press <RETURN> or <ENTER> to confirm your input.

If you type nothing before pressing <RETURN> or <ENTER>, the old value will be restored.

This mode works with all numerical parameters and even with notes (C-1 / C9). When a parameter can not be edited from the keyboard, then method 1 is automatically set by default for that parameter.

This method is very quick when you want to build a sound published in a magazine for instance.

REMARKS:

While keeping a mouse button down to edit a parameter, the mouse cursor will always disappear so that you can clearly see the numerical value or the icon changing.

When you are in mode 3, 4 or 5, you can temporarily get to mode 1 pressing <CONTROL> on the ATARI. This was provided to allow accurate and quick modification of a parameter by only 1 or 2 units.

If mode 5 is not set you can temporarily get into it by pressing both the <SHIFT> and <CONTROL> keys on the ATARI, and clicking with the left mouse button. Now you can quickly set a parameter to a specific value.

When you press both the <SHIFT> and <CONTROL> keys on the ATARI, and click with the right mouse button onto a TONE parameter, then it will adapt the value that has been set for it in the INIT TONE setting. Let us see the use of this feature through an example: imagine that the 4 PARTIALS are much detuned. With 4 quick mouse clicks you can tune them as the INIT TONE is tuned (usually a common tune). This feature is a kind of short cut.

Being in the "CLICK and MOVE" mode, you can use these key combinations to temporarily access mode 1 or 5, which probably makes this edit mode the most powerful... Make your choice!

- When you edit in modes 1 to 4 and a parameter reaches its minimum or maximum value it will either stop changing or cycle depending on its characteristics.

B. MIDI SETTING

1.MIDI CHANNEL AND UNIT NUMBER

In the past we had MIDI channels...now we also have UNIT numbers! But don't worry, that makes life easier!

1.1 MIDI CHANNEL

Each of the Synth's multi timbral PARTS can receive note, program change and control change messages on a particular channel. This helps to control the instrument from a sequencer for instance. SYNTHWORKS allows you to set a MIDI channel on which the internal sequencer and the MIDI merge function can be re-channelized. The MIDI virtual keyboard sends its notes on this channel as well. Therefore by setting this channel to match the desired SYNTH PART, you can play this PART.

Note: In the D10 and D20 "performance" mode, there is only one MIDI channel to set on your synth (opposed to the "multi timbral" mode where each PART has its own MIDI channel). If you have one of these synths, you should store this MIDI channel in the setup.

If you have an MT32, never forget that everytime you switch it on, the MIDI channel of the first PART is always 2. So you should save this channel in the setup.

For more information about MIDI channels, please read the important chapter about AUTO RE-CHANNELIZING.

1.2 UNIT NUMBER

This is a clever innovation from Roland: understand it as a kind of additionnal MIDI channel reserved for System Exclusive data. Thanks to one unique UNIT number, any multi timbral synth PART can receive system exclusive data independently from its MIDI channel. In other words, the system exclusive communications are always all right, whatever the MIDI channels set on SYNTHWORKS and on the synth.

SYNTHWORKS and your synth must be set to the same UNIT number for communication. This unit number is always 17 when you switch on your synth. Unless you are a MIDI wizard with several Roland expanders, there is no reason to change this number. In most cases you can forget this unit number and everything will work normally!

2. AUTO RE-CHANNELIZING

This is a very important feature of the program: SYNTHWORKS automatically re-channelizes the Sequencer, the MIDI merging and the virtual keyboard everytime you edit a parameter on a particular PART.

For instance if you change the volume on PART 2 and an AUTO NOTE is played, this note will be played automatically on the MIDI channel of that PART. If just after that, you change the panning on PART 7, then the AUTO NOTE will be re-channelized to play the SYNTH PART 7. It is also handy when working with the internal sequencer, or when using an external Master keyboard as they too are also automatically re-channelized.

Note:

- A PART is re-channelized to the MIDI channel that is displayed on the CONFIGURATION page ("Mixing desk").

- You must not necessarily change a parameter to re-channelize a PART. You can simply click anywhere above the PART area on the CONFIGURATION page.

- For unknown reasons Roland's D10 and D20 MIDI specifications do not allow to set the different MIDI channels of the synth's PARTS via MIDI! Therefore everytime you change a MIDI channel on the CONFIGURATION page, you will have to change it "manually" on your synth. A flash message will recall you to do so. In case that you forget it, SYNTHWORKS will re-channelize to a different MIDI channel than the one set in the synth and you will not be able to hear the PART you are editing. You will not have this stupid problem if you own an MT32 or D110.

If you have a D10 and D20, please understand that this feature is a SYNTHWORKS feature: do not expect to play the right PART from the synth keyboard itself. But of course you can hear the PART with an external master keyboard using SYNTHWORKS' MIDI merge function, and thanks to the internal sequencer or the virtual keyboard.

3. MERGE MIDI IN

This feature is much more powerful than a simple THRU function since it mixes the incoming MIDI data (from a master keyboard for instance) with the system exclusive MIDI data generated by SYNTHWORKS (while editing or sending a sound).

In other words, this feature allows you to play on a master keyboard and edit or select sounds from SYNTHWORKS at the same time for maximum feedback.

A tick in front of the menu line shows that the merge function is activated.

If you do not use a master keyboard, do NOT switch this function on, you could create "MIDI loops" (for instance if your setup simply includes an ATARI and D10 or D20, don't use MIDI merge!).

4. MERGE RE-CHANNELIZED

It is possible to force any incoming MIDI data to adopt SYNTHWORKS current MIDI channel. A tick in front of the menu line shows that this feature is activated.

Example of application:
You are using an old DX7 as master keyboard (it transmits MIDI only on channel 1) and your synth is set to Channel 4.

5. SEQUENCER RE-CHANNELIZED

It is possible to force a pattern which is played back, to adopt SYNTH-WORKS current MIDI channel. A tick in front of the menu line shows that this feature is activated.

Example of application:

- You play back a pattern recorded on channel 6 of your PRO-24 while your synth is set to another channel. Use the function to rechannelize the pattern to the synth's MIDI channel.

C. BACKUPS

Click on the option "FLAGS" of the first menu (unfolding from the mini Steinberg Logo)...if there is a tick in front of the sub menu line "Auto Backup '.BAK' Files", then everytime you overwrite a bank on disk, the old file will be renamed with the extension ".BAK".

Therefore if you made a mistake by overwriting a bank, you can find the last bank version again (it has the same file name but the extension ".BAK")

D. SETUP

The setup is a group of parameters that are automatically set when you start up the program.

The setup memorizes the following parameters:

- MOUSE CURSOR SHAPE
- MOUSE ACCELERATION
- MOUSE EDIT MODE
- SYNTHWORKS MIDI channel.
- MERGE On/Off
- MERGE RECHANNELIZED On/Off
- SEQUENCER RECHANNELIZED On/Off
- AUTO NOTE On/Off
- AUTO NOTE Value and Velocity
- BACKUP Files On/Off
- LIBRARY UPDATE MODE
- AUTO LIBRARY PATH and NAME
- AUTO TWIN CLEARING
- COLORS (for the color version only!)

The menu option "SAVE setup" updates the setup on your program disk, so that next time you start up, they will automatically be loaded.

E. DESK ACCESSORIES

If you have any desk accessories you can click on the "ACCESSORIES" option; a new screen will be displayed from which you can call your desk accessories. When switching back to the SYNTHWORKS page, click once on the menu bar to activate it.

F. D10/D20 PATCH

A PATCH for a D10 or D20 is a combination of two TONES. When you select the menu option "EDIT D10/20 PATCH", a dialogue box with all the PATCH parameters shows up. You can then edit these parameters normally. The REVERB setting is also part of a PATCH.

Switch your synth to PERFORMANCE mode (not to MULTI TIMBRAL mode!).

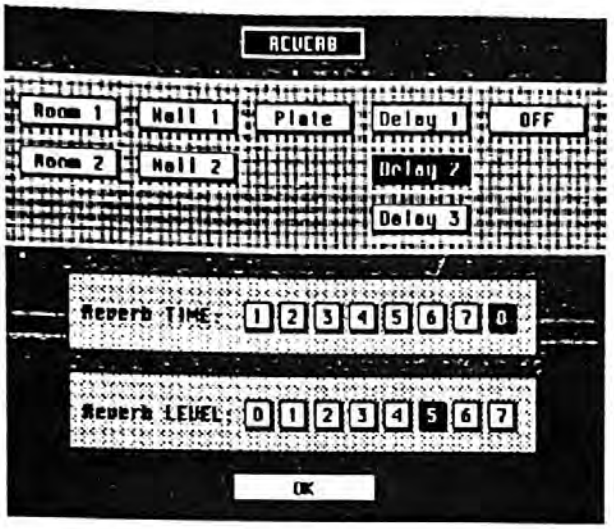
Usually you should proceed as follows...

- Click on a PATCH in bank A or B (the PATCH is sent to the D10/20)
- Select the menu option: the PATCH is displayed, you can edit it.
- Select the STORE button to update the PATCH memory in the bank.

Note: If your PATCH is in DUAL mode, and if both TONES have 4 PARTIALS, the polyphony is limited to 4 (in this special case). This might sound like a disadvantage but on the other hand you usually get very nice sounds.

Shortcut: If you press <SHIFT> while clicking on a PATCH in the bank, then the dialogue box automatically shows up, displaying the PATCH.

G. REVERB



The REVERB is edited from the dialogue box that you access via the menu option "Edit REVERB". The REVERB setting is altered everytime you select a D10/20 or D110 PATCH, or when you load a CONFIGURATION, as these memories include REVERB parameters.

The parameters are not exactly the same for an MT32 and a D10/20/110.

H. D10/D20 RHYTHM MEMORY

The D10 and D20 synths have an integrated drum machine. The RHYTHM MEMORY (32 USER PATTERNS and the RHYTHM TRACK of these synths is part of the DRUM KIT. The two menu options in the LIBRARY menu let you receive and save this RHYTHM MEMORY, or LOAD it from disk and SEND it to the synth. You will have to set your synth similarly to the settings for sound bank transfer in the DATA TRANSFER MODE (refer to the chapter on BANK MENU OPTIONS).

I. D50 SOUND CONVERTOR

The D50 is the "spiritual father" of the MT32, D10/20/110! There are many good sounds available for it. The architecture of these synths is close enough to enable "sound conversions". You should not expect to obtain exact copies, that would be misunderstanding of how these instruments are built: the D50 has a digital equalizer, stereo chorus, more LFOs, a complete synth section, longer PCM waves, etc...

Connect the D50 MIDI OUT to the ATARI MIDI IN and select the menu option "D50 CONVERTOR". You are then requested to send the bank from the D50 (use the method described in the D50 manual under the name of "One way Dump"). When the bank is received, SYNTHWORKS processes it and generates 64 TONES. These sounds are written into bank A. The TONE names are those of the D50 patches truncated to 10 characters.

SYNTHWORKS uses two different algorithms depending whether you are in MT32 or D10/20/110 mode. Since the D10/20/110 synths have many more PCM waves to choose from, the D50 to D10/20/110 conversion gives a much better result than the D50 to MT32 conversion. We think that you should consider this function as a good means of quickly getting some nice new sounds, rather than D50 clones. Espescially for the D10/20/110 we achieved good results.

Note: the word "TONE" in the D50 manual does not mean the same thing in the MT32 and D10/20/110 manuals.

CONCLUSION

CONCLUSION

That's it! You own an extremely flexible and powerful tool to manage your synth and we hope you will put it to full use...and enjoy the results!

Our goal at Steinberg is to create interesting useful tools. You can help by giving us feedback on our programs: do they work for you? How can they be improved? What features would you like to see? What new types of programs would you like us to develop?

Please send your suggestions (preferably in English) to:

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