

NoteWeaver 2.1 User's Manual

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Introduction

Thank you very very much for purchasing a NoteWeaver license. Your interest is extremely appreciated and I hope you are very happy with the possibilities that open up for you.

The program has taken 16 years of intense part-time, full-time, daytime, evening, and weekend work to produce. It's been a labor of every emotion under the Sun! Sometimes the simplest bug took weeks to uncover. Other times there was tremendous excitement when things quickly starting working.

For you techies, some of the program was originally written in Forth. Then, with the welcome help of a Forth to C conversion program written by a fellow engineer, Mike Yantis, it was converted to C. I hereby would like to thank Mike for this help. I would also like to thank another engineer Nick Turner for his programming help, in particular his suggestions on how to make the file routines much more reliable. Nick also helped a lot with program source code organization.

I'd also like to thank my sister Vivian for proofreading the manual and my dear friend Darrell Witkowski for also proofreading the manual and for countless hikes and brainstorming sessions on the various aspects of where the business could go and the best ways bring it to the public. Also, I'd like to thank Benjamin Joel Friend for the NoteSpeed logo quality and 3D effects that were so eloquently added.

And of course, I'd like to extremely thank Colleen Meeks Bastys for her continued support and for putting up with my highs and lows throughout all the years.

The design philosophy was to do everything possible from scratch, because of the multitude of differences in the Mac and PC operating system calls. A major complexity was learning the Mac and PC operating systems that operate completely differently.

On to the program:

At its heart NoteWeaver contains a method of playing music where notes effectively move by selectable intervals while being played. We're all used to notes that stand still, however these notes produce jumps that ongoingly move a musical focal point called the Reference. As this Reference pitch shifts each subsequent note plays relative to the Reference and updates the Reference to the new pitch. This occurs on a note-by-note basis.

The technique produces the foundation of a new kind of playing where gorgeous sounding interrelated note sequences are almost effortless. Even if you're a beginner you can quickly start playing music you could have just dreamed of before.

You do play each note, it's just that the notes can also generate musical jumps rather than remaining stationary. Since you play each note the music doesn't end up sounding computer generated but instead maintains full human emotional content.

With NoteWeaver you freely, strategically arrange interval producing events along your MIDI input devices. This creates unique sounding note sequences and arpeggios that are almost effortlessly played.

You can also assign other functions to your instruments that make use of the moving interval-producing Reference. Using the function "Last Interval" you can repeat the last played interval whatever it was. Using "Parallel" you can play notes that move up and down by playing in parallel to the moving reference.

This is similar to the traditional method of changing the musical Key of notes except they shift dynamically as the Interval producing notes move up and down as an integral part of the playing process. Using notes set to "Contrary" does exactly the opposite. Here as interval producing notes move up the Contrary notes move down and visa-versa. This is all described in detail in the KG (Keyboard/Guitar) Function Description.

When the idea was first invented the placement of the functions was fixed. Quickly thereafter it became obvious that much more flexibility was needed so that the functions could be freely placed along the instrument playing surfaces. This is because musicians would ultimately need and desire to have full, wide open, control of these function placements.

It was unpredictable the direction musicians would want to take. So large, flexible, quick and easy to edit tables turned out to be a powerful solution. In the beginning a single table was planned and then the idea of having many tables turned out to be a far more flexible idea. Don't worry the tables are really quite easy and intuitive to use and you can use as many or few as you desire.

So the internal tables are used to assign a large variety of functions (called events) along your MIDI input devices and turn on a dime as you play by selecting new placement groupings called KG (Keyboard / Guitar) Maps.

You can dynamically weave in and out of these tables as an inherent part of your playing style. By pressing one note you instantly switch to entire whole mapping of notes, functions, chords, and synths.

The table driven design gives you maximum flexibility in setting up hundreds of placements of notes, chords, and functions so your instruments become far more dynamic and fun to play with. As a small analogy many professional guitar players use different tunings to simplify their playing. In a much greater way you are fully free to instantly update hundreds of variables with a single keystroke to simplify playing complex music -- then keep updating them as a natural part of your playing.

NoteWeaver is an environment for playing MIDI songs in real time and creating, recording, editing, and playing songs from an internal multi-track recorder called a sequencer. This sequencer operates similarly to a multi-track tape deck. With it you can record and edit musical material similar to the form of MIDI instrument notes and controller information.

The internal recorded format is not quite the same as standard MIDI information and that's ok since the generated output files are standard. This sequencer philosophy is similar to most other music software on the market. The final outputs of NoteWeaver are standard MIDI data files that can be used with any other standard MIDI sequencer or MIDI player on the market.

NoteWeaver contains a colorful output music score (notation) viewer that gives you powerful ease of selecting and viewing the final output notes of your sequences.

The program also gives you a rich opportunity to quickly select and choose hundreds of new synth voices and settings to 64 synths at once with a single musical keystroke.

How Help Works

To scroll help text click anywhere inside the text with the left mouse button and move mouse.

The help system instantly switches you to information pertinent to the Last screen you were viewing. For instance if you're using the Piano Roll (PRoll) screen and click "Help" you will instantly switch to the Piano Roll main description.

In order to see a complete list of help topics press the "List Help Topics" button. To view the text for one of the items simply click it.

You will see two vertical lists:

Left list of topics:

This list duplicates the above-mentioned effect of first viewing a screen and then pressing the "Help" menu selection. It is needed to quickly perform the same function without having to exit the Help screen then reentering it.

Right list of topics:

This lists topics not covered by first being in a screen and clicking "Help."

Text Searching

If you want to search for phrases enter the text in the search box then use the Prev(ious) and Next buttons to search for your text phrases. Search is NOT case sensitive and finds all occurrences of the text.

Note: Since this is the only keyboard text entering function used in this screen you don't need to position the mouse in the box to enter text -- just start typing with the mouse pointing anywhere.

Also after text is entered you can more quickly use the Enter and Backspace keys or up and down arrows to go to Next or Prev(ious) locations.

How the Help File is Structured

The help system, hence the manual, is structured to give you a deeper and deeper understanding of how NoteWeaver operates. It's designed to make playing with the program as quick and fun as possible.

Many of the features will become obvious to those already in the field so the manual is designed so that it doesn't all need to be read in order for you to get started.

Here's a list of how the information is presented:

1. Quick list of editing features
2. Overview of NoteWeaver
3. Deeper list of features
4. Screen list describing the operation of the various screens
5. Detailed screen operation list

Since screens operate fairly intuitively the detailed screen operation list will probably only be used for reference for even a beginner.

Quick List of Non-Obvious Editing Features

- "Screens" operate in a full view manner, filling the whole screen at once, except for the Keys window.
- Repeated clicking on a screen selection item toggles between the current and previous screens -- valuable for quick peeks at screens.
- Space Bar swaps between current and last screen or rolls backwards through short screen lists. Mode set inside Setup screen. For Space Bar rolling clicking in unused data area resets list. Comma rolls forward.
- Scrolling help text is accomplished by grabbing the text anywhere inside the Help screen and moving the mouse.
- To type text or numbers simply position mouse and start typing without clicking mouse button. Moving mouse or Enter key enters text.
- Quickly swap between Tracks and Piano Roll views by clicking inside Track Names section and Piano Roll top strip.
- "X" and "Y" change X and Y magnifications -- for Tracks screen sliding mouse after clicking X is necessary.
- Most table cells allow you to slide the mouse up and down AND left and right to adjust values -- or use keyboard.
- "Dest" copies shown data to a new Map on various screens -- click mouse slide then let up to copy.
- The starting location on Piano Roll or Tracks screens is adjusted using the left hand Marker grid.
- To adjust colors in the Colors screen click inside the left, middle, or right sections of each colored rectangle. You can also position the mouse in any of the 3 sections and type numbers.
- Offset screen number values are in base 12: 0 - 9 a b 10 11, etc. when showing notes or intervals.
- Score notes can not be edited since they represent the final output from a song after KG table translation. Instead, edit the song, itself.
- Keyboard shortcuts Control-C,X,Z,A, and V are best to use in favor of the Edit

menu since often the mouse must be placed inside a data area for editing.

- o To insert Key or Time Signature updates on even measure boundaries (after first adjusting values) hold down the Shift or Control (Mac Command) keys during a mouse Place operation. This is on the Piano Roll screen.
- o Offset and Scale screens Skew: All and Update: Col shifts notes relative to original values -- very helpful.

What Makes NoteWeaver Unique?

There are a number of things that differentiate NoteWeaver from other products on the market. These will all be described in much more detail later.

First of all it contains interval-producing events that produce moving notes in addition to notes that remain stationary. It also contains a host of supporting Functions that can be used for this purpose.

Second, it contains 200 table sets that support remapping and individual control of how each of your synthesizer notes operates. These tables allow you to quickly edit each individual note and let you define complex chords that will be directed to your output synthesizers or combinations of synthesizers.

There are hundreds of these table mappings available to edit and use and you can instantly switch in and out of the mappings after your song is recorded. In this way the entire nature of a recorded song can be completely altered by changing just one event. All the chords the synths the chords use the functionality of the notes etc. can all instantly change with one number change.

The above mentioned tables evolved from necessity to support the wide variety of possibilities of placements of the interval producing functions along with various supporting functions. The idea was to blow wide open the freedom to quickly place functions then fully rearrange the playing surface operation and make it integral to the production of songs.

The indexes (pointers) into the tables are recorded in the song and not actual notes. Which table (KG Map) is being used is also stored in the song and changing this KG Map instantly switches to a new remapping of all the note operations and chords. Each KG

map contains K1, K2, and G tables. K1 stands for Keyboard 1, K2 stands for Keyboard 2, and G stands for Guitar. NoteWeaver is designed to support 6 string MIDI guitar formats.

A third feature that differentiates the program is that there are also 200 other tables that control how other information is sent to the synthesizers. They are called Synths tables, or Synths Maps. They allow you to set up, record, then instantly switch to entire remappings of your synth voice selections (called Programs), volumes, controller setting, and controller filtering. You set these up ahead of time. They completely update all your synth MIDI settings.

The Synth Maps contain the entire setups of all your MIDI synths. So if you're doing a real-time performance for a large concert or playing back a recorded song with one Synth Map update you can instantly change 64 synths of information. This is accomplished by hitting one note on a MIDI instrument or the update can be recorded into a song.

A fourth feature that differentiates NoteWeaver is the Piano Roll and Tracks editing view orientation. In order to maintain consistency between the horizontal table layout and keyboard or guitar instrument layout the note events maintain a horizontal old time paper piano roll layout. Time goes down instead of across.

Note events may or may not produce higher or lower pitches so there isn't usually a one-to-one relationship between keyboard placement and pitch. Guitar notes are also viewed horizontally, the same way a guitar is held. The final notation orientation is traditional, with time going across, from left to right.

A fifth feature that differentiates NoteWeaver is the inclusion of many simplified, quick, and powerful program navigation features. The first feature is single click full screen program navigation. If you've used the Internet you're familiar with this navigation philosophy.

It operates similarly to popular Internet navigation with the enhanced improvement of the Space bar operating like the Back button. The Comma key operates the same as the Forward button. Short screen lists are first reset by clicking with the mouse inside a screen in a blank unused area. Then you click on any number of screen menu items to select the list. The program quickly rolls forwards or backwards through screen views using this technique.

Menu Item Selection

To conserve screen space and to maximize your navigation speed many of the top screen menu items are single click selections and not pull-down menus. You'll quickly notice this as you select from the top row of menus. It was important to use as much of the space as possible to give you the quickest access to program locations. By laying more menu items out horizontally fewer pull-down menus are used. This way a click-drag-select becomes a click.

Also many of the screens containing smaller grids of data provide a right-hand vertical list of screens to choose from. This list gives a more thorough explanation of the screen you're selecting and gives you more area for each screen to click in. It also eliminates the pull-down time and inconvenience of pull-down menus for Keyboard 1, Keyboard 2, and Guitar screens compared to their upper menu counterparts.

Large Single View Philosophy

NoteWeaver operates using full screen views where each often contains large tables of information. Instead of having many small screen views that show small amounts of information NoteWeaver has lots of information packed into each view, one at a time.

This single-view methodology provides the following benefits:

- Virtually eliminates the wasted time and the nerve racking hassle of grabbing, resizing, moving, and rearranging multiple smaller windows.
- Gives you an instant full screen view of your work so you'll find much less need to scroll around.
- The data doesn't need to be scrunched up into the upper left hand corner of the screen as it is when using smaller screens. The layout can be relaxed and the data cell areas can be made larger, friendlier, and hence easier to edit.

Fast "Space Bar" Program Navigation

Inside the Setup screen at the bottom you can adjust how the space bar operates. You can select either "Last Screen" or "Roll Screens". Last Screen simply swaps between the current and last screen views, which can be very handy most of the time. However if you want you can switch to Roll Screens mode. Here the space bar acts kind of like the Back button on an Internet browser. It rolls through various screens - lightning fast. With the mouse you can select any number of screens to switch between by clicking them one after another. Then the space bar will immediately roll back through them. If you hold down the space bar the screens will roll quite fast. The program remembers consecutively selected screens in any range of 1 - 200.

Usually it's convenient to switch quickly between 2 - 4 screen views and any number up to 200 will work.

Here's the process to set up a selection:

1. Click inside the current screen somewhere in a blank, unused area outside a data entry box. This resets the process.
2. Click various menu items - thus filling the list with screens.
3. Roll backwards through them using the space bar and roll forward using the "comma" key or back and forth by alternating between these two.

You can freely edit inside screens, cycling with the Space Bar or "comma" key, and the first time you again click the mouse in a blank unused portion of a screen the process is reset.

Suppose you're working with: Scales, Piano Roll, and Tracks. First click inside the currently selected screen on a blank, unused area to reset the screen acquisition process then click each of these menu selections with the mouse. Then you can roll backwards through them with the space bar or jump forward using the "comma" key.

Thus as you're working you quickly create short screen lists to cycle through on the fly. Creating a list usually a second or two and cycling is immediate. The large space bar is quick and easy to hit.

The Last screen menu heading operates with only 2 screens so you can use a combination of this and the Space Bar / Comma key to navigate screens. It will always switch between the last two screens viewed.

As already mentioned, the most commonly used screens are selected with a single click of the mouse using the top menu bar items.

Inside the Names screen if you move the mouse anywhere inside the names text area the space bar generates spaces. If you click on a new screen using the top menu from within the Names screen you can switch back using the space bar. Also if you are inside another screen and click on the Names screen menu item you will switch to the Names screen, then if you don't move the mouse into the text area, you will back up to the last screen viewed upon the next press of the space bar.

Nutshell Overview of NoteWeaver

Here is a quick bullet overview of the features of NoteWeaver:

- o 8 MIDI input channels:

K1 = Keyboard 1

Permanently set to channel 1

128 MIDI notes, creating events,
plus continuous controllers

K2 = Keyboard 1

Permanently set to channel 2

128 MIDI notes, creating events,
plus continuous controllers

G = Guitar

6 channels, 11 - 16 or 16 - 11

6 groups of 24 notes each, creating events,
plus continuous controllers

Any MIDI instruments, like drum pads, can be directed into any of the input channel locations.

- o 64 MIDI output channels that can feed up to 64 independent synths

- 200 sets called "KG Maps" of K1, K2, and G data. You weave in and out of these KG Maps as you play by selecting new maps on the fly. This way you can entirely alter how your playing is interpreted and translated.
- 40 different functions assignable to each keyboard or guitar input note event. A note event is a MIDI input note that triggers a Function. An event may play a note or trigger a host of other functions. They may generate intervals, trigger elaborate chords, switch various maps, and a host of other things.
- Individual offsets applied to each function. These offsets are usually in number base 12 since there are 12 semitones per scale:

... -3 -2 -1 0 1 2 3 4 5 6 7 8 9 a b 10 11 12 13 ...

This also helps you vertically line up digits during editing. For example, a note of 46 will be 2 octaves below a note of 66. An offset of -30 will produce a -3 octave offset as an interval offset choice.

Numbers are sometimes in base 10 depending upon the corresponding function as is the case with Chord and Chord Synths selections. The numbering ranges from 0 - 199 decimal.

- 200 programmable chords:

Chords can contain up to 32 individual notes and are edited using a quick, intuitive editing grid. The Chord Notes environment lets you choose the note output sequence. The chord note order is the same as they are entered on the grid. The Chord Notes environment lets you place notes on the grid in any musical Key you're comfortable with, and NoteWeaver makes the relative translation.

- 200 programmable chord synth assignments:

Using the Chord Synths screen each chord can be sent to 16 synths that are selectable from the group of 64. You custom prioritize each note by synth to speed up chord output.

By playing 1 note you can produce up to 512 total notes sent to 16 synths. The event that creates 512 notes is recorded in a song file as only 6 bytes. However the final industry standard MIDI compatible file that is generated contains all 512 notes of information. The reason for the difference in size is that the internal song feeds the KG and chord tables to produce the final output.

- o 200 sets of 64 channels of output synth configuration. The top grid contains settings sent to your synths containing:

Patch	The sound the synth makes
Hi Bank	High bank of patches, if your synth supports them -- see your synth manuals
Lo Bank	Low bank of patches, if your synth supports them
Hi Note	To filter out undesirable high MIDI notes sent to synths
Lo Note	To filter out undesirable low MIDI notes sent to synths
Volume	Standard MIDI volume
Pan	The relative stereo output volume of your synth outputs

The bottom grid contains Keyboard 1, Keyboard 2, and Guitar controller routing. It provides settings that filter controller inputs coming from your input sources, or recorded song. They are used to filter out these controller events since moving MIDI controllers produces so much MIDI data. If you're moving the Pitch Bend control, you probably want it to only effect 1 or just a few output synths not all 64 at a time. This would completely clog the MIDI output stream.

The following controllers are filtered:

Sustain
Pitch Bend
Modulation
Channel After Touch
Volume

...and 3 other selectable controllers: X, Y, and Z.

You set the three X, Y, and Z controllers in the Setup screen and then can select <cont xyz # # # > messages from within the Names screen to change XYZ controllers on the fly during a performance or song. You trigger these by using "mid" Functions in the KG tables.

- o 200 programmable scales that map all 128 MIDI final output notes ranging from 0 - 127 into 128 selectable notes.
- o Sequencer made up of the Piano Roll and Tracks screens. The sequencer helps you record and edit multiple tracks of NoteWeaver events. The events take up little data since during playback they feed back through the arrays of NoteWeaver tables.

- Score screen that displays music notation for 20 groups of 6 synths, each of final output.
- Quick, intuitive ability to maneuver in and out of various working screens. The Space Bar is used for most screen switching or rolling, and hence program navigation. Most screens give you a list of screen menu items on the right side, and there is also a "Last" screen selection that switches between the last two screens.
- NoteWeaver itself - that is the system of playing in this interval producing manner - A new type of arpeggio creation environment.

Simplified Screen Descriptions

Keyboard 1 MIDI input:

- K1 Functions 12 x 11 grid of selectable Keyboard 1 Functions that decode input notes events
- K1 Offsets 12 x 11 grid of selectable Keyboard 1 Offsets that contain data used by above Functions
- K1 Output Type 12 x 11 grid of selectable Keyboard 1 Output Type -- notes, chords, and Chord Synths selection
- K1 Chords 12 x 11 grid of selectable Keyboard 1 Chords
- K1 Chord Synths 12 x 11 grid of selectable Keyboard 1 Chord Synth destinations. These select which synths to send the chords to.

Keyboard 2 MIDI input:

- K2 Functions 12 x 11 grid of selectable Keyboard 2 Functions
- K2 Offsets 12 x 11 grid of selectable Keyboard 2 Offsets that contain data used by above Functions

K2 Output Type	12 x 11 grid of selectable Keyboard 2 Output Type -- notes, chords, and chord types
K2 Chords	12 x 11 grid of selectable Keyboard 2 Chords
K2 Chord Synths	12 x 11 grid of selectable Keyboard 2 Chord Synth destinations

Guitar MIDI input: Separated into 6 sets of 24 notes, each having it's own MIDI input channel.

G Functions	12 x 12 grid of selectable Guitar Functions
G Offsets	12 x 12 grid of selectable Guitar Offsets that contain data used by above Functions
G Output Type	12 x 12 grid of selectable Guitar Output Type -- notes, chords, chord types
G Chords	12 x 12 grid of selectable Guitar Chords
G Chord Synths	12 x 12 grid of selectable Guitar Chord Synth destinations

KG Keyboard 1, Keyboard 2, and Guitar tables displayed simultaneously and are exactly the same as above three sets, but are organized in multiple horizontal rows.

Plus edit selection and copying controls

Synths 6 x 64 grid of the following Synthesizer configuration top grid information:

- Patch
- Hi Bank
- Lo Bank
- High note played
- Low note played
- Volume
- Pan

The Synths maps top grid settings are sent to the synths when you:

1. Trigger a Synths Map function
2. Manually select a new patch on your K1, K2, or G synth
3. At the beginning of all songs it's set to 0

For the bottom grid:

8 x 64 grid of the following Synthesizer controller filter information so hundreds of streaming controller events won't be sent out to all synths at once as MIDI controllers are moved.

- Sustain
- Pitch Bend
- Modulation
- After Touch
- Volume
- X selectable controller (selected inside the Setup screen)
- Y selectable controller
- Z selectable controller

Chord Notes

11 x 12 grid of selectable notes, plus edit selection and copying controls. You can select up to 32 notes total per chord. During output the notes play in the order selected. There are also provisions for choosing different Original Notes, Patch, and Synth used during editing, only.

Chord Synths

32 x 16 grid for sending notes to selectable synths that are selected using right hand 1 x 16 grid of synths. The screen also contains editing and copying controls. These settings are only used in "C h" or "C v" Output Type modes when chords are produced. C h means the chord notes are output to the synths, one horizontal row at a time. C v means the chord notes are output to the synths, in a vertical fashion with all "0" notes output first to all appropriate synths then proceeding to "1" notes, etc. The chord notes thus scan from left to right interspersing the notes to the various synths in sequence. There are also provisions for selecting various Original Notes and Chord used during editing.

Piano Roll

This is a single track of input note events, tempo, key signature, and controller events. The horizontal position of events placed in the large bottom area correspond to indexes into the Keyboard 1, Keyboard 2, or Guitar tables. Using the top right grids you can select then edit two simultaneous views of controller type events that include a wide variety of variables.

Tracks

The Tracks screen lists multiple tracks of a song. Time goes downward. For speed it displays only the beginning location of input note events, whereas the Piano Roll shows the complete duration. You can switch views to discriminate between Function inputs and controller updates.

Score

The Score screen displays the final output music notation for the songs. This displays the final output of the KG tables, unlike the Piano Roll and Tracks screens that show the input indexes into the KG tables. You can view any of the 64 synth output channels and send them to the selectable programmable staffs. It gives you 20 snapshots of these synth and programmable staff selections. Depending upon your screen resolution you can view up to 6 simultaneous channels on the screen.

Names

Names is the one common location where names used throughout the program are edited and maintained. It's designed to give you easy-to-edit equally spaced fields. The Names section also is where System Exclusive Messages are created as well as more controller routing and custom MIDI messages are written. System Exclusive Messages are synth specific data messages that you may send to your synths.

Colors

Colors is used to adjust the colors of various elements of the program. There are so many colored elements it would be impractical to adjust all of them. The color philosophy has been optimized to use darker backgrounds and lighter text and note events.

Setup

This screen is used to adjust your overall settings for your hardware and other various internal preferences. It's also where you quickly copy selected portions of your song and data tables from your current to your (last) files.

Help

Pressing the screen Help menu heading instantly displays help information pertaining to the previously shown screen. It essentially vectors into the

appropriate position of the Help file of information. Thereafter you can
scroll up or down in this file or vector to new positions using the top
controls.

Last

Switches back and forth between current and last screen shown.

Kb (Keyboards)

Shows an upper input keyboard and a lower output result keyboard. This is useful for
seeing the results of interval producing functions, as well as chords that are produced.

Keys (selected from upper right corner of screens)

This creates an actual window, not filling the whole screen. It uses 12 spokes and
incoming notes fill a circle on the outer ring, then they move in towards the middle,
showing an interval history. This is useful for seeing the relationships of the incoming
intervals.

Files

There are 3 total user file types.

- | | |
|------------------------|---|
| 1. Song files | Current and (last) |
| 2. Data Table files | Current and (last) |
| 3. Standard MIDI files | Standard MIDI imported and exported files |

At any given time you can work with up to a total of 5 files:

- 2 song files
- 2 data table files
- 1 standard MIDI file

The Song files contain tracks of your song in a somewhat non-MIDI file format.

The Data Tables files contain all the data in the various tables including the Names tables.

Standard MIDI files can be imported into NoteWeaver songs and NoteWeaver songs can be exported to generate standard MIDI files, both from within the Tracks screen.

The standard MIDI files are generated after your song is recorded and can be imported into any other music application that accepts standard MIDI files. The standard MIDI files are usually created as a last step after your song is produced. They're built by intercepting the final output MIDI stream instead of the MIDI being routed to the output MIDI port(s).

See the Tracks help section for a complete description of how standard MIDI files import and export.

At the top of the screen above the menu items you will see something that looks like this:

NoteWeaver song: Song1 (Song2) tables: Data1 (Data2)

The file names after the colons are the CURRENT files in use and the file names in parenthesis are the (last) files in use.

The File menu gives you various options for working with files.

IMPORTANT: Many of the file commands move the current file to the (last) file position.

File menu command	Function	Move current to (last)?
Last Song (or Data Tables)	Swaps current and (last) files	Swaps both
New Song	Creates new file with new name	Yes
Open Song	Opens an existing file	Yes
Save Song	Simply saves the current file	No
SaveAs Song	Saves current file with new name	Yes
Revert	Loads the original current file data, overwriting editing changes	No

After a SaveAs... command, both files will be identical, with different names. Changes can then be made to the current file. This is an easy way to keep copies of previous work.

Note: Any time the current file has been saved Revert will reflect these saved values. The program automatically saves the current file whether it be Data Tables or Song whenever any kind of copying occurs between the current file and the (last) file.

For speed, when NoteWeaver closes it automatically saves the current song and data files that are in use.

In the event that you don't want a current file saved, first select Revert from within the Files menu before closing the program.

Copying data between current and (last) files

Song File:

You can copy and paste Piano Roll events to your (last) Song file using Copy and Paste by selecting Last Song before you paste. This way you can swap back and forth between songs. Do this from within the Piano Roll screen.

The only way to copy events from multiple tracks of your current song to the (last) song is from within the Setup screen. Here you select a range of tracks and press the "--> " button to copy. There is no need to move in and out of files using the Last Song menu command. The copied tracks replace the (last) song tracks.

See Setup description if this isn't clear.

Data Tables File:

To copy individual portions of your Data Tables to your (last) Data Tables file also use the selection boxes from within the Setup screen. See Setup if this isn't clear.

Note: When you copy portions of your data to the (last) file the corresponding names also get copied.

You can also use the Last Data menu command to copy various Names into your (last) Data Tables file from your current Data Tables file.

Having problems loading or saving files?

If for any reason there are any problems loading Song or Data files, perhaps the file that saves their names is corrupted.

The simple file that stores the names is called NWFiles.txt

The NWFiles.txt file stores the complete paths for the current and last song and data files so the program can remember them during program operation and launch.

The complete file path and name for this file is:

C:\Program Files\NoteWeaver\NWFiles.txt PC

Macintosh HD/Applications/NoteWeaver/NWFiles.txt Mac

You can modify this text file from scratch by using the following format:

SongPath&Name|LastSongPath&Name|DataPath&Name|LastDataPath&Name|

where, for instance SongPath&Name would be something like this:

C:\Folder\Song1 or C:\Program Files\NoteWeaver\Songs\Song1 PC

/Folder/Folder/Song1 or /Applications/NoteWeaver/Songs/Song1 Mac

Notice in the above NWFiles.txt file the 4 "|" characters that **Must** be placed between the files **and at the end** of the string.

If you place "||||" in the file and save it, then the program will fill in the files as necessary when you create New files when using the Files menu.

Map Nomenclature

NoteWeaver contains various groupings of data. Two particular types of data are organized into what are called "Maps." There are 2 types of data that are specifically called Maps: KG Maps and Synths Maps:

KG Maps

200 entire groups of Keyboard 1, Keyboard 2, and Guitar data that remap MIDI inputs into more complex MIDI outputs and a host of other functions. Depending upon an individual note's assigned function they usually produce output notes through the output synths. A KG Map update which can be triggered by a single input note event will choose a new KG Map that will be used by K1, K2, and G. This is useful during real time performances where all three instruments are simultaneously being played.

You edit the KG tables at the Keyboard 1, Keyboard 2, Guitar, or KG screens.

Synth Maps

200 groups of Synthesizer configuration data for all 64 synths. These apply various sound, volume, and controller settings to the output synths. You edit these on the Synths screen. The term mapping is specifically appropriate when considering the lower portion of this data. In this case the MIDI controller changes are mapped into various synths.

Chord Notes are usually called chords, and the menu item is labeled Chord Notes because it's where the actual chord notes are selected and to distinguish between Keyboard 1, Keyboard 2, and Guitar Chords menu items. Chord Synths are called Chord Synths 3, etc. Also Scales are called Scale 1, Scale 88, etc. These all have names applied using the Names screen.

Editing Grid Cells In General

All the areas you can click in and change values are called "Cells." A "Grid" is a group of multiple cells. Many cells allow you to change a value:

Clicking in the top portion of a cell usually increases it's value by one and clicking in the lower portion decreases it's value by one.

The X magnification cells magnify a view sideways and operate the same except you click on the left or right portion of the cell instead of the top or bottom.

After clicking in a cell sliding the mouse up or down and, for that matter, left and right changes it's value and often engages some sort of pop-up list of items from which to select. These pop-up lists are placed to the top or side so your surrounding data won't be blocked.

Many times operations or the selection of the value(s) won't occur until you release the mouse button.

Many screens support multiple cell editing from a single cell. Often you can edit by row, column, or the entire grid. Experimentation and should quickly clear up this editing process. This will be described in detail in each screen description. See the Keyboard 1, Keyboard 2, and Guitar screen descriptions.

Also you can usually enter numbers and change values by simply positioning the mouse over a grid cell and typing in a value using the keyboard. See Entering Text below.

Entering Text

To enter text you move the mouse to a location and start typing.

You don't need to click the mouse button to start; you just start typing. When you're done typing move the mouse, or press Enter.

There are two text formats to remember that enter and edit text differently:

1. Fixed character spacing used for names in the Names screen.
2. Variable character spacing used for Piano Roll labels and entering cell numbers.

Each format is entered and edited differently:

1. Names screen Names

Names characters are individually entered. Point the mouse to any location within a name and start typing.

In the Names screen characters are edited largely the same way you're used to:

Operation	How To...	Action
Select	Press mouse button and select text by dragging mouse over text	
Copy selected text	Edit menu: Copy or Ctrl C	copy to internal copy buffer
Cut selected text	Edit menu: Cut or Ctrl X	cut to internal copy buffer
Paste selected text	Edit menu: Paste or Ctrl V	paste from internal copy buffer
Delete selected text	Edit menu: Delete, Delete key	delete or Backspace key

However during the selection process the first axis of mouse movement (horizontal or vertical) locks in this axis throughout the duration of the editing operation. For instance, if you start a horizontal selection within a name, you can slide back and forth without worrying about accidentally moving to another name. So you select horizontally or vertically, drag, then cut or copy, then move the mouse to another location to paste. Subsequent pastings of complete name(s) will be located under the characters or lines just pasted.

The arrow keys move the cursor to new locations within the current name or to different names inside the same column. The Enter key effectively performs a carriage return and points to the next name in that column.

2. Piano Roll Labels and Cell Numbers

Entering these names or numbers always starts the editing process from scratch. Typing continues until the mouse is moved, the Enter key is pressed, or an arrow key is pressed in the case of cell numbers. The Backspace key can be pressed to back up and delete

the previously typed character. The Delete key cannot be used because there are no characters to edit to the right and the process starts from scratch each time.

The Piano Roll screen labels, once entered, are moved, cut, copied, and pasted, just like any other Piano Roll event by first selecting them with a rectangle. In order to change a label cut it then retype it. You can't directly edit the characters in the existing Piano Roll labels.

Cell numbers are usually short and retyping the numbers from scratch ends up being fast and easy. There is no need for precision cursor placement no sliding the mouse to select characters and no cutting and pasting -- just point the mouse type a new number and the original one is replaced. Or you can change up to 144 of them instantly if All type editing is enabled.

Numbering Conventions and Groupings

Most numbering throughout NoteWeaver starts at 0. This aims toward consistency and for lining up groupings of data in the grids:

KG Maps	0 - 199
Synth Maps	0 - 199
Chords	0 - 199
Chord Synths	0 - 199
Chord Notes	0 - 31
Scales	0 - 199
MIDI Notes	0 - 127
MIDI Volume	0 - 127

MIDI input and output channel numbering is an exception as they traditionally start at 1.

Beat numbers in the sequencer are also exceptions since they traditionally start at 1.

Also the keyboard controllers are called Keyboard 1 and Keyboard 2.

When you view the tables of data there is often a number of 0, 1, 2, 3, 4, etc. to the left of each row of numbers. This indicates which octave they're in on the table starting at the bottom. The numbers also map onto the horizontal octaves viewed on the Piano Roll screen. The octaves may or may not correspond to the final output produced by the tables since the tables generate the final output.

An Important MIDI Input / Output Distinction

NoteWeaver contains many tables that remap, redirect, filter, and enhance MIDI input and output.

Generally you can think of the MIDI input from your instruments as pointing into or indexing into your tables producing an output corresponding to how you set up the tables.

When you play and aren't using the sequencer your MIDI note inputs act as pointers from 0 - 127 into the Keyboard 1 or Keyboard 2 tables. Or in the case of the Guitar each of the 6 guitar MIDI input channels points into the corresponding table entry for the corresponding string of 24 notes.

Then the tables themselves dictate which MIDI output notes to play and the notes may have nothing at all to do with the MIDI input that triggered them.

When you record using the sequencer a slightly modified version of standard MIDI input is being recorded which corresponds to the indexes into these tables. The MIDI output is not recorded. Instead during Playback the events in each track then index into the tables to produce the final output.

So during sequencer playback the tables are effectively placed in the path AFTER the sequencer. See the Help Block Diagram.

Always remember this:

The MIDI Input events come from your instruments or the recorded tracks.
They always point or index into the tables.

The MIDI Output is generated by the table Functions and Chords.

The lower portion of the Synths screen is also placed in the final output path. These tables filter the input MIDI information by selectively directing it to make sure the MIDI stream doesn't clog up with too much data. In this case the MIDI controller inputs from Keyboard 1, Keyboard 2, or Guitar are selectively sent to any of 64 synths.

The scale remapping occurs just before the final output to the synths. A selected K1, K2, or G scale remaps all 128 MIDI notes to 128 selectable notes.

After a song is recorded it's easy to change a single Offset number that updates that track's KG Map during playback. This new map can use a completely different set of other Functions, notes, and chords that creates an entirely different song. -- Just by changing one single number the entire song completely changes.

K1, K2, G, and KG Screens

K1 means Keyboard 1, K2 means Keyboard 2, and G means Guitar.

K1 Functions	K2 Functions
K1 Offsets	K2 Offsets
K1 Output Type	K2 Output Type
K1 Chords	K2 Chords
K1 Chord Synths	K2 Chord Synths

- G Functions
- G Offsets
- G Output Type
- G Chords
- G Chord Synths

These operate as follows:

Keyboard 1, Keyboard 2, and Guitar "Functions"

A very powerful aspect of NoteWeaver is that the function of the operation of each note can be altered in many different ways. An input note can be thought of as a trigger that does some function. This function may be as simple as playing a note or it may be as powerful as completely switching into another mapping of how all the notes operate. It may stop the sequencer, it may start recording, it may send a System Exclusive command to the synthesizers, etc. A complete description of all the functions is given in the following section.

Keyboard 1, Keyboard 2, and Guitar "Offsets"

These are special purpose offsets or data that's used in conjunction with the above functions. If a function is "S" that stands for Still, then the offset becomes the note that gets played. If the function is "I" which stands for Interval, then the offset is an actual offset from the current Reference note that gets played. A note played with an offset of -1 will produce a 1 semitone lower pitch than the previous one. The next note played will further produce a 1 semitone lower pitch than the previous one. If the Function is set to +M, which means Increment KG Map, and the Offset is set to 5, then pressing this key will bump the currently played KG Map up by 5. Usually the offsets are listed in base 12, however in some cases they're listed in base 10, depending upon which Function is being used. For a Function of "M," which means set KG Map, an offset of 120 will set the map to decimal 120.

Keyboard 1, Keyboard 2, and Guitar "Output Type"

This group of data assigns where your MIDI output is going to be sent when being played, assuming the above Functions are set to produce final MIDI output. On a note-by-note basis you can direct the output to be sent to any one of the following types:

N = Notes

N events are sent as single notes to a given synth, N1 - N64.

C = Chords

C events are sent as chords using the corresponding K1, K2, or G Chords table value. They range from C1 - C64, meaning the entire chord is sent to one output synth 1 - 64.

C h = Chords Horizontal

Using this setting kicks in the use of the Chord Synths table settings. This setting switches from sending all the chord notes out to a single synth to sending them out to selectable synths as set up in the corresponding Chord Synths map.

When this output type is selected in the K1, K2, or G Output Type tables the Chord Synths maps set in the K1, K2, or G Chord Synths tables are used. The chord that a note produces then is sent through one of these Chord Synths tables to distribute the notes to various selectable synths. This Chord Synths type is used only when C h or C v output types are selected.

The h in C h means the individual notes are sent out horizontally one line at a time starting at the top of the 16 x 32 grid and working their way down. This means that each synth will be sent its chord one synth at a time.

This the fastest way to send synth notes over the output MIDI port since the output channel doesn't change as often. This speeds the MIDI flow since 2 bytes are sent instead of the standard 3 used when the MIDI channel changes.

C v = Chords Vertical

Using this setting kicks in the use of the Chord Synths table settings. Like the C h setting this setting switches from sending all the chord notes out to a single synth to sending them out to selectable synths as set up in the corresponding Chord Synths map.

When this output type is selected in the K1, K2, or G Output Type tables the Chord Synths maps set in the K1, K2, or G Chord Synths tables are used. The chord that a note produces then is sent through one of these Chord Synths tables to fan the notes out to various selectable synths. This Chord Synths type is used only when C h or C v output types are selected.

The v in C v means the individual notes are sent out vertically one note at a time starting at the top of the 16 x 32 grid and working their way down then across to the next note and so-on.

This is a slower way to send synth notes over the output MIDI port since the output channel needs to be updated on each note. This slows the MIDI flow compared to C h because 3 bytes are sent instead 2 since the synth channels keep changing and need to be sent. However the blended chords may end up sounding better and less choppy then when C h is used.

Keyboard 1, Keyboard 2, and Guitar "Chords"

The Chords table is used to select the chord that a given Function for a given input note may trigger. There are 200 chords to select from and the individual chords associated with each input note are assigned here. The actual chords themselves are edited in the Chord Notes screen. The chords are played relative to the initial note generated so that the "Orig" note in the chord is the actual note that would have been produced by the single note even if the chord weren't being used. The collection of notes in the Chord Notes screen are placed so they produce pitches relative to this note depending upon how they were entered on this screen.

For a chord to be produced when the table is played through by instruments or the sequencer the corresponding Function and Output Type must be set beforehand to settings that would allow chords to be output. The Chord Synths tables below are used in conjunction with the chords when the Output Type is set to C h (Chord Horizontal) or C v (Chord Vertical).

Keyboard 1, Keyboard 2, and Guitar "Chord Synths"

The Chord Synths table is used to select Chord Synths routing of the chords if the corresponding Output Type is set to C h or C v. If C h or C v are selected as an Output Type, these table values will be used. There are 200 sets of Chord Synth mappings from which to choose and the Chord Synths themselves are edited on the Chord Synths screen. These are used if you want to send chords to multiple synths. A chord can be sent to up to 16 synthesizers at once usually sending a few notes here and a few notes there to the various synths.

Operation of the Grids

The Keyboard 1 and Keyboard 2 groups of screens show a grid of values. They represent 128 notes of data starting from the bottom left-hand corner corresponding to input MIDI note 0 and the top right G corresponding to input MIDI note 127. The data locations actually correspond to input events, not necessarily one-to-one MIDI notes. However if

you happen to map them one-to-one using a Function of S(till) you can think of them as being identical.

The keyboard grids have colored indicators at the top and bottom that represent the black notes on a piano. It's helpful to think of these as extending down vertically through each horizontal octave.

This grid is divided up into 11 rows of 12 columns. The bottom row of the "Keyboard 1" is called 0. The next row up is called 1, and so on until you hit the top. These represent input octaves of MIDI notes and are labeled at the left edge of the table. As input notes octaves go up so do the rows.

When you play MIDI instruments the notes that come out of your instrument(s) index into these tables, starting with the bottom left hand corner as being input note 0. When recording on a track using the Piano Roll the notes that are recorded are actually these MIDI inputs that directly correspond to these indexes, or pointers, into the tables. It's important to understand that when you use the Piano Roll these horizontal rows correspond to 0, 1, 2, etc. groupings of events shown on the top colored horizontal strip above the Piano Roll events. So the bottom row is layed out or mapped onto the left edge of the Piano Roll and the bottom left hand "C" cell corresponds to the left edge "C" vertical strip in the Piano Roll event area.

It's always important to remember the distinction between the MIDI input and the MIDI output. The MIDI input always gets remapped using the Keyboard 1, Keyboard 2, or Guitar tables and the MIDI output is sent to the synths and also generates the standard music notation. The MIDI input can often end up being small amounts of data and the MIDI output can be much richer since it can contain vast chords of data sent to multiple synths. These chord notes show up on the standard music Score screen and not inside the recorded songs themselves.

For the guitar the notes are split into 6 sets of 24 notes with the 0 note being the bottom left-hand corner of each string and note 23, shown as 1b Base 12, being the top right corner of each string. This is indicated at the top of the grid. So each string contains 2 octaves of input notes.

With the Setup screen you are free to map your 6 guitar strings into these 6 groups of 24 input notes any way you choose. When viewing with the Piano Roll with the "G" setting you will see these 6 groups of 24 input notes instead of the octaves used in the "K1" or "K2" settings. The notes are mapped from left to right on the Piano Roll screen

corresponding to bottom to top on the Guitar grids. From within the Piano Roll screen you need to select the G setting (and not K1) at the top right to see the guitar edit area.

KG Function Description

You can set the Functions to operate many different ways. Often the Functions operate in conjunction with the other 4 types of data and often only use the corresponding Offset or no other data at all. The 5 sets of menu groupings are the same for the Keyboard 1, Keyboard 2, and Guitar. Each note has a Function assigned to it and you can think of the other 4 sets of information as being data that may be used with this Function.

The Offset is a value usually used in conjunction with a Function. It's often, literally, an offset. It's a value or variable quantity the Function uses.

Below is a table that indicates the various note functions and how the corresponding data is associated with it. Sometimes the corresponding data isn't needed. Also the base of the Offset, being base 12 or base 10, changes depending upon what makes the most sense for the Function used. The table also shows the Functions that alter the moving Reference(s) . Also note the Interval Zone and Toggle Zone functions use the Offset to set the beginning note of a zone range and the associated Chords number to set the width of the range of each zone.

KG Function Table

Function Cell Symbol	Function	----- Data Used -----				Offset Base	Updates Reference
S	Still	Offset	OutType	Chords	ChSynths	12	No
I	Interval	Offset	OutType	Chords	ChSynths	12	Yes
P	Parallel (motion)	Offset	OutType	Chords	ChSynths	12	No
C	Contrary (motion)	Offset	OutType	Chords	ChSynths	12	No
LI	Repeat Last Interval	-	OutType	Chords	ChSynths	-	Yes
QI	Quiet Interval	Offset	-	-	-	12	Yes
R	Reference	Offset	OutType	Chords	ChSynths	12	Yes
QR	Quiet Reference	Offset	-	-	-	12	Yes
Iz	Interval Zone	Offset	-	Width base 10	-	12	No
I. thru Iz.	Same as I thru Iz above, but uses a second, independent Reference, for counterpoint						
I' thru Iz'	Same as I thru Iz above, but uses a third, independent Reference, for an additional counterpoint						
Tz Tz. Tz'	Interval Zones	Offset	-	Width base 10	-	12	No
M	KG Map	Offset	-	-	-	10	-
+M	Increment KG Map	Offset	-	-	-	10	-
Sy	Synths Map	Offset	-	-	-	10	-
+Sy	Increment Synths Map	Offset	-	-	-	10	-
sca	Global KG Scale setting	Offset	-	-	-	10	-
sk1	Keyboard 1 Scale	Offset	-	-	-	10	-
sk2	Keyboard 2 Scale	Offset	-	-	-	10	-
sg	Guitar Scale	Offset	-	-	-	10	-
<<	Rewind Sequencer	-	-	-	-	-	-
stp	Stop Sequencer	-	-	-	-	-	-
pla	Play Sequencer	-	-	-	-	-	-
rec	Record Sequencer	-	-	-	-	-	-
mid	More MIDI	Offset	-	-	-	10	-

Note: Counterpoint is where there are two or more independent melodies, or musical phrases that play off each other in a composition. NoteWeaver provides 3 independent sets of functions that produce simultaneous counterpoint phrases. The sequencer also uses completely independent sets of functions for each track. So each track gives you independent control of each of the three sets of interval producing functions.

The functions I - Iz that use each of 3 references are selected using the function letter then either nothing, a period, or an appostrophy after the letter. For instance, I I. I'

Also, there are 3 independent Toggle Zones: Tz Tz. Tz' that toggle groups of notes on and off.

The descriptions below only mainly describe the 1st goup of functions, but also apply to the ones that contain the period and appostrophy.

S, Still (notes or chords)

This is the traditional type function of keys on a keyboard or notes on a guitar. Still notes effectively stand still when played. Each time they're played they produce the same note, over and over, just like a piano. The notes are determined directly by the Offset value. If the output type is set to produce a chord, then the corresponding Chords screen chord will sound with the chord Orig note being the offset note. If the output type is set to produce C h or C v chords, then the corresponding chord synths settings will also be used from the Chord Synths table. The note or chord position will also get remapped by the corresponding K1, K2, or G scale. The same is true of all note or chord producing functions.

I, Interval (notes or chords)

NoteWeaver incorporates a new system where played notes produce jumps, or musical intervals relative to the last note that got played. By using this technique notes and chords can be played in a different way than the traditional manner. Playing a note (or hence chord) repeatedly creates steps or jumps up or down from the last note location. These steps, or musical intervals, represent quantities of semitones and are determined by the settings of the Offset tables.

An easy and powerful way to set up these interval producing notes is to create balanced, mirror image layouts. One organization of these interval producing notes is centered about a D on a keyboard. You can adjust the offsets so they count up by ones starting at the D and go upward to the next D an octave higher on the keyboard. Then count down by ones from this original D, downward to the D an octave lower on the keyboard.

The term used to describe the current pitch generated by the previous note is Reference.

As you play the Reference changes and subsequent notes are played relative to this Reference.

The following table shows some of the possible intervals that are produced using varying quantities of semitones:

Offset Value, Base 12	Musical Interval
Semitone Step Qty	
0	none, play the same note or chord
-1 or 1	m2, minor 2nd, or a semitone
-2 or 2	M2, Major 2nd, or a whole step
-3 or 3	m3, minor 3rd
-4 or 4	M3, Major 3rd
-5 or 5	P4, Perfect 4th, or just 4th
-6 or 6	A4, Augmented 4th, or tritone
-7 or 7	P5, Perfect 5th, or just 5th
-8 or 8	m6, minor 6th
-9 or 9	M6, Major 6th
-a or a	m7, minor 7th
-b or b	M7, Major 7th
-10 or 10	P8, Perfect octave
-11 or 11	m9, minor 9th
-12 or 12	M9, Major 9th
-13 or 13	m10, minor 10th
-14 or 14	M10, Major 10th
-20 or 20	P16, Perfect 2 octaves
	...etc.

On the Synths screen in the top section there are two data types that can be adjusted:

Hi Note This is the top MIDI note sent to each synth.
Lo Note This is the bottom MIDI note sent to each synth.

One consequence of NoteWeaver Interval producing functions is that at first it's easy for the produced notes to run away from you. They will tend to go off the high end and off the low end as you play. Playing requires an overall balance of the plus and minus offsets over time. If an interval producing note is programmed to be -20, then every time that key is pressed the note played, and hence Reference, jumps down by 2 octaves. It doesn't take long to hit some really low notes and it was found that synths often produce some really bizarre sounds. The same thing for the high end. So these settings keep these upper and lower notes from being sent to the synths.

If chords are applied to the notes these Hi Note and Lo Note values will also set limits on the chord notes. They are applied as a last step before the notes are sent to the synths.

P, Parallel (motion, notes or chords)

The Parallel function plays notes or chords relative to the current Reference. If the Parallel function is selected for a note and its offset is set to 5, then every time this note is played a pitch 5 semitones higher than the current Reference produced by the previous Interval function will sound. If the offset is set to -10 (base 12), then the note that is played will be 1 octave below the Reference, every time it's played. As the Reference changes by other functions the subsequently played Parallel functions follow these Reference changes. Functions that change the Reference effectively change the musical Key of the Parallel notes. So ranges of Parallel notes can easily be defined that shift up and down depending upon the moving Reference.

One good way to use this function is to set a range of notes starting with an upper C on the keyboard. Suppose you set 2 keyboard octaves worth of Parallel notes to higher and higher values, spanning a 0 - 1b note range, with all the keyboard black and white notes used. Then, suppose another range of balanced Interval producing keys are set up in a lower section of the keyboard. The above Parallel portion can then be used to create multiple note chords with the right hand while the left hand can be moving the Reference up and down with the Interval notes.

C, Contrary (motion, notes or chords)

The Contrary function also plays notes or chords relative to the current Reference. However they work the opposite of the Parallel functions. As the Reference moves up these notes move down. As the Reference moves down these notes move up. Unlike the Parallel functions where everything tracks, these Contrary functions criss-cross back and forth with the Interval producing stream, dynamically. Internally the software uses a

number such that when the Offset of one of these events is set to 0 and the Reference is Middle C, then the note produced by the Contrary event is also Middle C. By setting the Offsets of a range of Contrary notes higher or lower you can shift the total overall pitch of the Interval and Contrary events and where they criss-cross. Using these events is more of a challenge since they don't track the shifting musical Key of the Reference. However many very musically interesting and beautiful possibilities quickly emerge.

LI, Repeat Last Interval (notes or chords)

This repeats the last Interval played, whatever it was. It plays a note or chord and adjusts the Reference to the new value of the note just played. It was first invented to be placed into the "D" location in a balanced Interval layout that is centered around the "D" on a keyboard. Instead of using an Interval value of 0 and repeating the last note without shifting the Reference it was discovered that it would be far more valuable to be able to repeat the last Interval played. This way toggling 2 fingers back and forth between an Interval producing note and this D quickly produces a quick glissando. It's a way of instantly repeating any of the predefined Interval notes and cycling through them much faster.

For instance, suppose you press an interval producing +1 using D#. Then if you quickly alternate your fingers between D and D#, you will play an upward chromatic scale. This is much faster than pressing the D# with one or two fingers, quickly.

With the open ended table capability you are free to experiment and place them anywhere you want to produce any kind of song you want with maximum ease.

QI, Quiet Interval

QI increments or decrements (if the Offset is negative) the current Reference, and doesn't play any notes.

R, Reference (notes or chords)

R sets the Reference to its corresponding Offset location and also produces a note or chord using the new location.

QR, Quiet Reference

QR operates exactly the same as above, and does not sound a note or chord.

Iz, Interval Zone

Interval zones provide a unique pattern generation capability that can produce some great sounds with a minimum of work. With just 2 fingers one can cycle through some awesome note sequences without having to keep balancing the positive and negative intervals. Choosing widths like 11, for instance produce rich effects since they cycle through many various musical Key flavors.

Interval zones confine the notes generated by the various interval producing or updating functions. The functions effected are: Interval, Last Interval, Quiet Interval, Reference, and Quiet Reference. Interval zones are groups of notes that start using the base 12 Offset number and end using the Offset + the associated base 10 Chords number that acts as a width, or range value.

For instance, suppose you want an interval zone to start at middle C and span 2 octaves. First set the Function to Iz, then the Offset to 50, then the Chords value to 24. (50 is middle C base 12)

Interval zones wrap symmetrically. If a note is chosen 3 notes above the top note range of the zone it will wrap around and add 3 to the bottom of the table and play that note. If a note is chosen 3 notes below the start of the zone then the note produced will be 3 notes below the zone top note.

Parallel and Contrary notes still play relative to the interval zone notes by whatever they are set to play to. In this way the Parallel and Contrary notes can span much higher and lower than the interval zones.

There are 3 possible interval zones Iz Iz. Iz' that can independently be used at a time. They utilize the 3 sets of interval generating note References. The zones can be set using K1, K2, or G controllers.

Disabling a zone returns to the standard full range non-wrapping interval process. To disable a zone simply trigger that zone with a negative Offset. For instance: Iz -1

For maximum convenience zones remain in effect even though KG Maps are changed. This way they can be utilized in a fluid manner across map changes. They are, however, cleared at the beginning of a sequencer song.

Each recorded song track keeps track of its own 3 zones on a track-by-track basis during song playback.

Tz, Toggle Zone

Toggle zones are groups of notes that can be toggled on and off. For instance suppose you have a drum machine that repeats a drum pattern when a note is on, then these notes can toggle on and off these patterns. Or suppose you want a section of strings to turn on and off, slowly.

Toggle zones are set with a Tz Tz. or Tz' function, then Offset sets the beginning note, and Chords value sets the range of notes in the zone. For instance a 4 note Toggle zone starting at middle C would be Funct = Tz, Offset = 50 (base 12), Chords = 4.

Setting the Offset of a toggle zone to a negative number turns all notes off and disables the zone.

Unlike interval zones toggle zones set ranges of incoming, played notes, and not interval note ranges. They apply to the actual instrument playing surface note ranges.

There are 3 sets for consistency only and use the same Tz Tz. Tz' nomenclature, and are not related to the 3 groups of interval producing notes.

M, KG Map

M instantly switches to a new KG map depending upon the base 10 Offset number used. During real time playing or sequencer playback if this is selected the entire mapping of K1, K2, and G Functions, Offsets, Output Type, Chords, and Chord Synths instantly switches to a new group (KG Map).

It's an Extremely powerful way to change the entire sound of a song. By simply changing the Offset associated with a KG map, the whole song will change either during real time performance or recorded song playback.

+M, Increment KG Map

+M is the same as M except that instead of instantly switching you into a new KG map, it increments or decrements (if the Offset is negative) the current KG Map by the Offset amount. If Offset is 1 and you are currently playing KG Map 34, then the new map will be Map 35.

Sy, Synths Map

Sy is used to switch into a new Synths mapping. When this occurs all the new data used in the Synths screen is switched to a new value. Only the Patch, Volume, and Pan values that are different from the settings of the last Synths map are sent to the appropriate synths. This makes the process as quick and clean as possible. The internal Hi Note and Lo Note settings appropriately change and nothing needs to be sent to the synths. All the lower MIDI section MIDI filtering gets updated to be used inside NoteWeaver.

+Sy, Increment Synths Map

+Sy is the same as Sy except that instead of instantly switching you into a new Synths map, it increments or decrements (if the Offset is negative) the current Synths Map by the Offset amount. So if Offset is -4 and you are currently playing Synths Map 94, then the new synths map will be 90.

|<<, stp, pla, rec Rewind, Stop, Play, and Record

These all control the sequencer the same as pressing the sequencer control buttons inside the Piano Roll or Tracks screens.

mid, More MIDI

Three types of additional midi commands can be created from scratch inside the Names screen in the More MIDI column to the far right. Using the mid command you can trigger one line (of 200) of these midi commands. They consist of System Exclusive, More Controller routing, and Custom MIDI commands.

Viewing, Copying, and Editing Controls

The KG Map controls are designed for high speed viewing, copying, editing, shifting, rotating, and reversing of data. Other screens containing large tables of data often include a few of the same types of operations.

Viewing and Copying KG Data Tables

There are 2 small grids for viewing and copying map portions:

- Map Dest = Instantly copies a portion of the current KG map to the destination KG map when the left mouse button is released.
- Map View = Selects a map for editing or playing and to be the source for KG map copying.

For instance if you're viewing K1 Functions map 5 and you click down, slide the mouse, and let the mouse button up on Map Dest 33, map 33 will now contain the data inside K1 Functions map 5, and you will still be viewing map 5.

You can copy various KG map portions using the Copy portion selection at the very top. For instance suppose you're in the Keyboard 1 Function screen. You can choose the following copy types:

Copy	Dest Copies:
Current	Only the large grid that's showing
K1 All	The entire Keyboard 1 information: Functions, Offsets, Output Types, Chords, and Chord Synths
K1 -> K2 Current	For quick copying from the K1 to K2 portion of the map
K1 -> K2 All	Same as above, but copies all the K1 data to K2
Entire KG Map	The entire KG map consisting of Keyboard 1, Keyboard 2, and Guitar data.

This works the same for Keyboard 1 and Keyboard 2 map portions.

The Guitar is similar, but doesn't have K1 -> K2, or K2 -> K1 copying ability.

When you change screens, the Copy always switches to Current so you won't be as inclined to accidentally copy over valuable data.

Note: You can also copy data by holding down the Shift key and sliding the mouse across a section of data. You can then point the mouse and paste it.

The selections are more varied for the KG screen that shows all A, B, and G data at once:

Copy Selection	Dest Copies
Entire KG Map	The entire screen of K1, K2, and G data to the new Dest map.
K1 Functions	Only the K1 Functions line of data to the new Dest map
K1 Offsets	Only the K1 Offsets line of data to the new Dest map
K1 Output Type	etc.
K1 Chords	etc.
K1 Chord Synths	etc.
K1 All	The entire 5 K1 lines of data to the new Dest map
K2 Functions	Only the K2 Functions line of data to the new Dest map
K2 Offsets	Only the K2 Offsets line of data to the new Dest map
K2 Output Type	etc.
K2 Chords	etc.
K2 Chord Synths	etc.
K2 All	The entire 5 K2 lines of data to the new Dest map
G Functions	Only the G Functions line of data to the new Dest map
G Offsets	Only the G Offsets line of data to the new Dest map
G Output Type	etc.
G Chords	etc.
G Chord Synths	etc.
G All	The entire 5 G lines of data to the new Dest map

When you change screens the copy portion always switches to Current screen. Be careful.

Editing Data

Each of the 15 K1, K2, and G screens contains an Update grid. The Offsets screens also contain a Skew grid. They help you edit data quickly. Skewing is needed so often that an automatic skewing function was added.

As an example on the Keyboard 1 Offset screen

Update: Cell Only change one cell at a time

Row	Edit an entire row unless Skew Dn or Up is selected, then skew up or down from that physical point.
Col	Edit a column at a time. Skewing is disabled since it doesn't make sense.
All	Edit the entire grid.
Fun	Edit the current function data, usually shown in a distinct color. This is very helpful for editing only specific groups of data.

Skew:	No	Don't skew numbers at all.
	All	Skew all numbers that apply according to Update.
	<<	Skew down (left) from current position.
	>>	Skew up (right) from current position.
Up/Dn		Count by +1 or -1 per cell

At the upper right of the K1, K2, G, and Scales screens there are also controls for shifting data. The top and bottom values are actually rotated off the top end into the bottom end, and visa-versa. For the keyboards you can shift by 1 cell at a time, or octaves, and for the guitar you can shift by octaves or strings. You can also reverse the keyboard and individual guitar strings. And you can slide the mouse up/down or left/right to repeat these actions, except for the reversing action.

Templates

On the Keyboard 1 and 2 screens you can select from a variety of starting templates. They are set up for a 61 note keyboard. The settings can be adusted using the shift and reverse editing controls to accomodate other keyboard sizes. Playing with the options should be quite obvious, as they will display instant results.

Synths, Chord Notes, Chord Synths, and Scales Screen Controls

All the screens that include various large tables (except the Names screen) use some variation of the above mentioned viewing, copying, and sometimes editing selections. Once the KG controls are understood, you should find the other screens operate intuitively.

Synths

The Configure Synths screen includes upper and lower data tables. The upper table generally sets synth specific MIDI values that are updated upon Synths map changes. The lower table acts as a controller filter, or router. It only routes the incoming K1, K2, and G MIDI controller streams of data to those synths that need it. Most lower table items will usually be disabled. The lower table also routes track controller events to the selected output synths.

At any given time only one Synths map is in use.

The upper left hand corner Update Top and Update Bot labels refer to editing the top and bottom tables. It makes sense to edit the top large grid across the whole line and the bottom grid vertically.

For speed, upon a Synths map update only those upper table values that are different from the current synth settings are sent.

The upper table contains the following information:

Each cell ranges from 0 - 127.

Patch	This is the MIDI output sound the synth plays -- currently 128 are supported.
Hi Bank	A high bank select value, if needed, or used -- see synth manuals
Lo Bank	A low bank select value, if needed, or used
Hi Note	The high note sent to each synth. This was discovered to be a necessity when NoteWeaver played notes out of the range of the standard synth keyboard inputs, however they often produced bizarre sounds.
Lo Note	Same as above but low limit
Volume	MIDI volume sent to synths
Pan	This is the stereo relative output volume of two outputs of each synth. Negative = Left, 0 = Middle, Positive = Right

The lower table routes the following incoming MIDI events:

Sustain	Sustain foot pedal
Pitch Bend	Pitch bend -- usually a wheel
Modulation	Modulation -- usually a wheel
After Touch	One pressure sensitive strip that traverses underneath keys of entire keyboard or other MIDI controller physical input notes

Volume MIDI volume controller -- usually a slider
 X, Y, & Z 3 user defined controllers, selectable from the Setup screen

You can change these X, Y, and Z controllers during a performance by triggering a <cont xyz ... > function. These are edited at the far right column of the Names screen. See the "More Controller Routing" section for the an explanation of the format.

The lower table options are:

Selection	Input Controller Source
-	None
K1	Keyboard 1
K2	Keyboard 2
K	Keyboards 1 or 2
S1 - S6	Individual Strings
G	Guitar
KG	Any keyboard or guitar string

Suppose you're playing a song and want to do a pitch bend. You're playing through K1 and someone else is playing through K2. You only want your bend changes to go to synths 4, 6, and 14. The other person wants their bend changes to go to synths 2, 8, and 17. You set your synth bend locations to K1, and the other person's synth locations are set to K2.

S1 through S6 are available because sometimes it's helpful to send individual pitch bends to the different guitar string MIDI channels.

Chord Notes

The Chord Notes screen is used to create the chords. There are 200 total chords. Each chord can contain up to 32 notes, with the first "Orig" note corresponding to the note that a KG Function triggers. Each subsequent note is output in numerical sequence according to it's position relative to this Original 0 note.

You are free to position the notes in any fashion you desire on the grid. This is helpful if you are used to thinking in musical Keys other than the Key of C. You can also put notes

on top of each other, often times creating a richer synth sound. Remember the notes play relative to each other on the grid.

Chances are you will want to position them starting on the left C column since this will most intuitively show the sharps and flats that are in a chord.

The K1, K2, and G Output Type tables determine if a played event is sent as a note a chord sent to a given single synth or a chord that is sent to multiple synths. The Chord Notes tables are where you create the actual chords that are used in the last two categories.

Chord copying occurs every time the left mouse button is let up after adjusting the Dest grid.

You can Clear a given chord, or Back up one note at a time, using the upper left grid as they're being created.

At the bottom of the screen you can select various settings to help hear differences in the chords using different Synths, Patches, and Original Notes.

Chord Synths

The Chord Synths screen directs the chord notes to any of 16 synths from a selection of 64. These notes are the notes selected using the Chord Notes screen and will play through the currently selected synth patches using the current Chord Synths map.

Chords and Chord Synths are distinctly different and are only associated with each other when C h or C v are selected in an KG map.

Each of the chords can be sent to different chord synths maps. If the chord synths settings are set up to handle 12 notes and your chord only has 5, then only 5 will be sent.

There are 2 main tables on this screen. The large table sets which notes get sent to which synth and the small vertical table sets the synths. Using the right hand table you're free to order the synth output channels any way you choose starting from the top entry.

Note: The first horizontal line of boxes in the large grid, going down, that doesn't contain any selected notes ends the chord. The software doesn't check lower rows. This speeds up chord output. The synths listed to the right are then irrelevant.

These notes are applied to chords you select in the Output Type portion of the A, B, G, and KG screens.

There are 3 distinct types of note/chord selections you can make from these screens:

N1 - N64 Output that event as a single note to 1 synth: Chan 1 - Chan 64.
In this case no chords are used at all.

C1 - C64 Output that event as a chord containing all the chord notes selected
using the Chord Notes screen to one synth only: Chan 1 - Chan 64

C h "Chord Synths, Horizontal"

Output chord notes based upon note and synth selections in the Chord Synths screen. The h means output each chord a horizontal row at a time starting at the top. All enabled notes in the first line are output first to the top synth then the notes in the next row are output to the next synth and so forth going down.

C v = "Chord Synths, Vertical"

Output chord notes based upon note and synth selections in the Chord Synths screen in a vertical fashion starting with the left edge of the Chord Synths main grid and moving to the right. The notes are output one synth at a time moving from the top to bottom for each individual note.

C h will produce the fastest overall chord since chord output uses MIDI running status format. C v will produce a more blended sounding chord because all the synth notes are continually switched between synths vertically as they are played. The chords will be slightly slower since MIDI running status is not used. In this case each note is sent to a different synth so 3 MIDI bytes are sent instead of 2.

Once any type of chord MIDI output has started all the chord notes are sent to all the selected synths before any other subsequent notes are played.

Scales

There are 200 scale tables that remap all 128 MIDI notes sent to your output synths.

They are called Scales because you can change the notes to reflect specific musical scales. They're initially all set to be chromatic scales.

In each table (scale) you can remap all 128 notes any way you like:

Output MIDI Note #	Value
Instead of: 0 - 127	= 0 - 127
Each scale allows: 0 - 127	= Anything to anything with anything in between where anything = 0 - 127

There are three total specific scales used at a time: K1 Scale, K2 Scale, and G Scale. All Keyboard 1 events flow through the K1 Scale, Keyboard 2 through K2 Scale, and Guitar through G Scale.

The KG Functions sca, sk1, sk2, and sg are used to change the current scales during a performance. Sca sets them all to be equal to the Offset, and sk1, sk2, and sg are used to independently assign them on the fly to K1, K2, and G.

The K1, K2, and G scales are inserted as a final step in the chain of all MIDI note outputs, including the outputs of the chords. The notes and chord values generated by the Functions themselves index or point into the appropriate scales.

You can completely change the sound of a recorded song in many interesting ways after the fact by selecting a couple of different scales throughout the song.

If you want to absolutely insure that the notes in a certain Major scale are produced you can set a scale to contain only those notes.

Using the upper right editing grid you can also reverse scales which produces some interesting effects.

Or you could make every other note an octave apart for a certain range, etc, etc...

Remember however, if your chords are set up to produce one type of chord, and your scales are changed, you may get an entirely different chord out. For that matter, playing a chord at one location on an instrument may not always get the same chord when played from another location. This may or may not be desirable.

Copying scales works the same way as any other screen. The values inside the Viewed scale grid copy into the Dest scale location every time you click and let up the mouse button inside the Dest box.

You can edit columns in two ways, depending upon if Skew All is selected or not. If it is selected during Col editing each vertical octave of notes will change relative to their previous value, which can be very helpful when shifting chromatic notes up and down. If not, they will all be set to one value. If Skew All is used, for instance, you could shift every other note in all octaves by 2 octaves: 50 71 52 73 54 75, etc.

One more thing, at the bottom of the screen you can easily select many various scale Templates.

Piano Roll

First of all you can quickly switch back and forth between this screen and the Tracks screen track by clicking on the horizontal colored strip then on the horizontal Names section inside one of the individual Tracks on the Tracks screen.

One of the first things you'll notice when you enter this screen is the keyboard (or guitar, when viewed) is layed out horizontally. Also increasing time flows down.

It's organized naturally, like a player piano, with the left hand playing things to the left and the right hand playing things to the right. NoteWeaver internally uses functions that often have no direct one-to-one relation to higher and lower MIDI output notes. So a horizontal view was chosen to be convenient for keyboard and guitar orientations.

The Piano Roll Purpose

The Piano Roll screen is used to record, playback, view, and edit various NoteWeaver Function and controller Input events. Also it records tempo changes, key signature, and time signature events.

It's important to understand that the piano roll screen displays the recorded input of K1, K2, G, and controller events and not the possibly complex playback caused by the K1, K2, G, and controller events. To display the final MIDI output that you hear coming from the output of the NoteWeaver tables, use the Score screen.

Piano Roll Controls

Here's a list of top functional editable boxes as you view the piano roll screen from left to right:

Marker

Displays the current song location in Bars, Beats, and Ticks, where a Tick = 1/480th of a beat. When viewed shows the current Record or Playback location. When adjusted with the mouse, sets the current bar, beat, and tick. It is also used to vertically position songs.

Time (beats)

Displays the quantity of beats per bar used in the song during playback.

Also the Time Signature numbers need to be adjusted prior to inserting a new Time Signature event into one of the two right hand controller editing areas.

See: Time Signatures and Key Signatures, below

Sig(nature)

Displays the type of note or rest that represents a beat in the song during playback. Also may be adjusted prior to inserting a new Time Signature event into one of the two right hand controller editing areas. When inserting time signature events, both the top and bottom numbers get added to the song and both update together during playback.

Sets note or rest duration that equals a single beat:

1 = whole, 2 = half, 4 = quarter, 8 = eighth, 16 = sixteenth, etc.

Tempo Offset

This is a number that gets added to the current playback tempo to create the resulting final tempo displayed in red above the box. You insert original tempo changes using the Tempo selection of one of the two upper right hand controller edit boxes (see Controllers below). The Tempo Offset speeds up or slows down your song during recording or playback.

Transport Control

|<< = Jump to Beginning of song

Stop = Stops Record or Play

Play = Begin playing selected play tracks from current marker position

Record = Begin recording selected record track from current marker position
(currently selected "Play" tracks will play simultaneously)

Use the Marker to move to various locations in the song.

Key Signature

(not labeled)

Displays the current Key Signature. And is also adjusted prior to inserting right hand controller list events.

See: Time Signatures and Key Signatures, below

Mouse Sets various mouse pointer operations:

Select:

In the left piano roll section use this to drag a rectangle across events. See "Editing Piano Roll Events" below for how to use the selected rectangle sections. For right hand controller events this selects a vertical area of events that can be subsequently Cut, Copied, and Pasted. A Paste always places what's pasted at the top of the screen where the current marker is located when the sequencer is stopped.

Place:

In the piano roll section place individual function event. The Length grid is adjusted to select event length. During controller and tempo editing click or draw in events. An average of the last 4 events is used in the software to help you smooth out unwanted fluctuations.

Note: In all these placing and drawing operations the resolution used will depend upon the current Y magnification which is set using Y. To increase time resolution slide the mouse down after clicking inside the Y magnification button.

Ramp:

In the controller edit grids you can ramp a range of events and it will replace the current events. Hold down the left mouse button and slide. During a ramp the software is designed to insert events only when there is at least 1 horizontal count of controller or tempo change. This means fairly vertical ramps will tend to have gaps in them and highly angled ramps will be quite filled in.

Delete:

During controller, tempo, mixer, key, and time signature editing using one of the two upper right controller selections, drag over events and they will be deleted. Also selecting a rectangle of note events in the main lower left section will delete them instantly without your having to perform a Ctrl X operation when Delete is selected.

-Time & +Time:

These are used to add time or subtract time (ticks) from a single Piano Roll track.

After one of these is selected the Length grid will display " 1 0 0 " indicating one bar (measure) will be deleted or inserted. You can adjust the length grid to any value to add or subtract time in the track. After you've set the length to the amount you want, click the mouse anywhere in the song multiple times to add or subtract time at those locations. If you want exact bar locations, be sure to adjust the Y magnification to a high level and click on a bar line. You have the ultimate freedom to insert or delete any amount from anywhere.

If you're going to be importing songs into other sequencers you will find it important to use exact bar boundaries.

Text (color)

Clicking inside this box brings up a color selection box that offers 64 color selections for entering text on the piano roll screen. Click on a color then position the mouse inside the piano roll area and start entering text to add a text label.

Labels can currently be added from within the Piano Roll screen, only.

Note: When transferring generated Standard MIDI files into other sequencers, only those text labels (also called Markers) in track 0 may show up. Also, the note axis positioning and color information is always lost.

Start

Displays the current mouse location in Bar, Beat, & Ticks. This item is not editable. It changes as you move the mouse around. If there are Time Signature updates within the shown page, these values may be incorrect.

Length

Is adjusted to determine the length of placed note events. It also adjusts the quantity of Bar, Beats, and Ticks to delete or add to a track using -Time and +Time.

Show

Sets the piano roll screen to view Keyboard 1 inputs, Keyboard 2 inputs, or Guitar inputs. It rolls through them.

Labels

Displays Functions, Offsets, Output Type, Chords, and Chord Synths associated with each KG event. Off, 0, 5, 10, 15, 20, 25, 30 are the options. The ascending numbers display more and more characters of the names associated with the data.

On Vel

When events are placed manually, using mouse clicks, this is the on velocity used

Off Vel

When events are placed manually, using mouse clicks, this is the off velocity used

X

Adjusts X axis magnification -- sliding or clicking this box left and right

increases and decreases the X size. Note: magnifications are powers of two.

Y

Adjusts Y axis magnification -- sliding or clicking this box up and down lets you see more or less of your data in time. Note: magnifications are powers of two.

< >

Shifts data to left or right so you can view other (blown up) portions of your information

Track

Sets the current track view to a given track. By sliding the mouse, you can quickly cycle through and view many tracks of music events.

Repeat

Repeating selected notes is very easy. First set the quantity of time(s), then set the quantity of bars between repetitions with the right control. If you click down on this it will change to "Len" (ticks), and you can set the distance between repeated groups using the Length Grid. Then drag a rectangle around a group of notes and click the "Repeat:" label.

Controllers

These two boxes, initially marked --- None ---, select various MIDI controllers for editing and also let you edit Time Signature, Key Signature, and Tempo changes. You can have any two items listed at once. They work identically and are colored differently for easy identification. They operate in conjunction with the Mouse grid to select and edit events.

Piano Roll Operation

The Piano Roll screen is probably the main location you'll be viewing NoteWeaver events. It provides the ability to view, record, play back, and edit various events, including controller events. It displays the color coded events and gives you the opportunity to edit the events.

To start a new song, select "New Song" from the File menu.

The NoteWeaver sequencer uses multiple tracks starting with track 0 and counting up from there.

The Piano Roll works with one track of the sequence at a time.

The events that can be added to a song are:

NoteWeaver events (usually notes or chord triggers)
Controller events

Time Signature
Key Signature
Tempo changes

As a song plays tempo changes occur that affect the current tempo of the entire song. These can be located anywhere in time down to the tick level where a quarter note equals 480 ticks.

For ease of use, and so you can get your bearings the following defaults are used at the start of each song:

Tempo	=	120 bpm
Key Signature	=	C Major
Time Signature	=	4/4
Tracks 0 - 199	=	KG Maps 0 - 199 they map 1 to 1
Synths Map	=	0
K1, K2, and G Scales	=	0

You can immediately override these by inserting your appropriate changes at the start of your song then modify them as the song progresses.

The top three items can be updated using one of the two upper right hand controller selectors and placing appropriate events.

The bottom three items can be changed by inserting KG Map 0 Function updates near the beginning of the song.

For instance you can use the whole 1st measure to add these events. Inside KG Map 0 you can use notes outside the active range of one of the Keyboard controllers to trigger these events and place them manually to the far left or right of the Piano Roll editing area.

Time Signatures and Key Signatures

Time and Key Signature events are always placed on Song Track 0. This is necessary for correct program operation.

The steps required to insert a new Time or Key Signature are:

1. Goto Piano Roll Track 0
2. Select Time Signature or Key Signature from one of the top right Piano Roll controller lists

3. Adjust the large left hand Time Signature numbers, or Key Signature
4. Select mouse: Place
5. Click inside the right hand controller editing area to insert the event

Because of internal program operation, for Time Signatures it's important to first adjust both left hand numerator and denominator numbers before Placing a time signature event. This is because the numbers serve a dual purpose.

By default Time and Key Signature events are free form and inserted anywhere vertically, even though the mouse pointer is not on a bar boundary. This can generate some interesting timing song effects.

Holding down the Shift or Control (Mac Command) key forces the events to be placed on even bar boundaries.

If you're importing the songs to other sequencers, they may not support the finer resolution, or they may shift the Time and Key signature events so they land on bar boundaries.

If it's a requirement for all of the Key and Time Signature updates to be on bar boundaries then they should be placed in sequence, starting from the beginning of the song and proceeding to the end. The program currently doesn't do any time shifting of the events so if you want to place a different length Time Signature in the middle somewhere you will need to first delete the ones after that. Or you can also use -Time and +Time to add or delete time.

A note about -Time and +Time:

On the Tracks Screen the default is that -Time and +Time (with a subsequent mouse click in the data area) shift all tracks 0 - 199 by the Length amount.

However, by also holding down the Shift or Control (Mac Command) keys during a mouse click, track 0 remains untouched during the -Time or +Time shift.

This way slight time (tick) shifts can be easily accomplished on the notes, but not on the Time/Key Signature changes, if so desired.

If need be, don't record any notes on track 0. This way you can shift your entire song independently of the Time and Key Signature updates.

On the Piano Roll Screen -Time and +Time shift everything.

If you're adding or deleting full measures, there should be no concern whatsoever, as long as you position the part you're shifting up near the top of the screen, since "Length" uses the beginning Time Signature for it's internal calculations.

Recording

To record and play a track perform the following operations:

1. Make sure you've correctly set up the large table portions of NoteWeaver so that sounds are produced when you record.
2. From within the Tracks screen set the track you want to record onto to Rec(ord).
3. Select that track on the Piano Roll screen using the Track box
4. Press the Record button from the Piano Roll transport grid.
5. Start playing -- when done press Stop on the transport grid.
6. Press |<< (Rewind to beginning) to move the marker to the beginning of the song and press Play to hear what you've recorded

After you've recorded one or more tracks you can use the Track Editor to enable or disable playback:

Play = Playback: Plays one or more tracks simultaneously
Solo = Solo: Plays only this track even though other tracks are labeled "Play"

Then use the Piano Roll transport buttons to keep playing, rewinding, recording, etc.

Editing Piano Roll Events

There are two main methods of editing Piano Roll events:

1. Drag a rectangle across events to select them, then use the traditional:

Cut, Copy, and Paste from the Edit Menu, or preferably for speed, Ctrl-X, Ctrl-C, or Ctrl-V keys from the keyboard.

After events are selected and cut or copied, they can be pasted by either moving the mouse to new vertical locations within the notes section and using Ctrl-V, or adjusting the Marker grid and performing a paste using Ctrl-V or Paste in the edit menu.

2. You'll notice that when you drag a rectangle across Piano Roll events there are 5 sections showing. You can then click inside the various sections to perform the following operations:

Left Mouse Button

Top: Move Vertical

Left: Move Horizontal	Middle: Move any direction	Right: Move Horizontal
--------------------------	-------------------------------	---------------------------

Bottom: Stretch Vertical

On the PC, Right Mouse Button, or on the Mac, left button and Control (Mac Command) Key

Top: Copy Vertical

Left: Copy Horizontal	Middle: Copy any direction	Right: Copy Horizontal
--------------------------	-------------------------------	---------------------------

Bottom: Stretch Vertical

Editing Piano Roll Controller Events:

There are 5 types of controller information that can be edited from the Piano Roll screen:

1. MIDI On and Off Velocity
2. MIDI Controllers like Pitch Bend, Modulation, etc.
3. Time Signature
4. Key Signature
5. Tempo

Using the two top right violet and blue selection boxes you can edit any of the 5 types of events. There are two boxes for your convenience -- one would have done fine in most cases.

Use the Mouse Edit grid to first select the type of edit operation to use.

The following chart outlines the various possibilities for editing the events:

Type	Is Note Required First?	Does Place Work?	Does Ramp Work?
MIDI On and Off Vel	Yes	Yes, you can	Yes, draw a contour
Controllers	No	Yes, first mouse click	Yes, first mouse click
Time Signature	No	Yes, first mouse click	No, use "Place" only
Key Signature	No	Yes, first mouse click	No, use "Place" only
Tempo	No	Yes	Yes

Mouse "Select" and "Delete" work on all types of events and you can Cut, Copy, and Paste using standard editing techniques.

After controller events are selected and cut or copied, they can be pasted by either moving the mouse to new vertical locations within the controller section and using Ctrl-V, or adjusting the Marker grid and performing pastes.

While Placing (drawing) controller events there's a running average of the last 4 samples to help you smooth out your stroke. If you want to make really abrupt changes to the data slow down in this area and sharp changes can be easily accomplished. Also for abrupt changes you can always let up on the mouse button and click individual events. All in all averaging every 4 values seemed to get the best overall compromise between smoothness and controllability.

Labeling a Portion of your Song

Labels can be placed anywhere in the main Piano Roll event area. Labels can serve a variety of purposes including:

- General naming of parts of the song
- Telling where various instruments come in
- Labeling where various changes occur
- Showing where controller changes happen
- Indicating where tempo changes occur
- etc.

To enter text you can first click inside the small Text Color box, which will select a color. This will automatically reset the Mouse grid to "Select." Then position the mouse anywhere on the main Piano Roll screen and start entering text. There's no need to click the mouse button. A vertical line will show up indicating the text entering position. This uses an easy type, back-space, text editing approach that should serve you well.

After you have entered the text moving the mouse or pressing Enter will enter it into the song with that color and location. If you need to change the color you need to delete the old label by selecting it with a rectangle and pressing Ctrl-X, and inserting a new one with the new color.

You can also move, copy, paste, etc. labels.

Tracks

You can quickly switch back and forth between the Tracks screen and the Piano Roll screen by clicking inside the horizontal Names section for a track, then on the colored horizontal strip on the Piano Roll screen. It will update the selected track for the Piano Roll.

As explained in the Piano Roll section there are default values applied to a song when a New Song is first created from within the File menu.

Here they are again:

Tempo	=	120 bpm
Key Signature	=	C Major
Time Signature	=	4/4

Tracks 0 - 199	=	KG Maps 0 - 199	they map 1 to 1
Synths Map	=	0	
K1, K2, and G Scales	=	0	

So Tracks 0 - 199 default to KG maps 0 - 199, track by track. The internal References used during the Interval process are all separate. Internally, when the program needs to reposition to a point in a song it starts with default Reference values of Middle C, then silently, quickly fast forwards to a given point so all the Interval References are all correct when the song is then played.

The Track Editor is used to perform the following operations:

- Work with your songs from the highest level
- View and manipulate multiple tracks of your song data at once
- View various types of selectable song data
- Import standard MIDI files into NoteWeaver songs
or export standard MIDI files to use in other applications

The Track Editor can selectively display all the events entered or recorded using the Piano Roll.

The Tracks screen contains the following controls:

Marker

Displays the current song location in Bar, Beat, and Ticks, where a Tick = 1/480th of a beat. When viewed, shows the current Record or Playback location. When adjusted with the mouse, it sets the current bar, beat, tick to be song top starting location.

Edit

1, 2, 4, or 8, The 8 is also adjustable.

Sets how many individual track width items are adjusted at a time with the mouse. Also sets how many individual track Play, Mute, Solo, or Record enable items are set.

Tempo

This number, shown in red, is the current tempo in Beats per minute.

Offset

This is a number that gets added to the current playback tempo to create the resulting final tempo displayed in red above this box.

Transport Control

- | << = Jump to Beginning of song
- Stop** = Stops Record or Play
- Play** = Begin playing selected play tracks from current marker position
- Record** = Begin recording selected record track from current marker position.
(currently selected 'Play' tracks will play simultaneously)

Use the Marker to move to preset locations in the song.

Start

Displays the current mouse location in Bars, Beats, and Ticks. Start is not editable. It changes as you move the mouse vertically in the lower area.

Length

This adjusts the quantity of bar, beats, and ticks to insert into all the tracks using mouse +Time, or to delete from all the tracks using mouse -Time.

Mouse

Sets various mouse pointer operations possible:

Select:

Is used to select and move track events. Track events are selected by pressing the left mouse button then dragging the mouse diagonally across track areas. The center of each vertical track must be crossed with the mouse for the selection process to occur.

You can select multiple tracks of data. After the events are selected you can move them to any new location on the screen using the various portions

of the selection rectangle.

-Time & +Time:

These are used to add time to, or subtract time from, the entire song at the location pointed to using left mouse clicks. Technically they insert or delete bar(s), beat(s), and/or ticks instead of time.

After one of these is selected the Length grid will display " 1 0 0 " indicating one bar (measure) will be deleted or inserted. You can adjust the length grid to any value to add or subtract time in the tracks. After you've set the length to the amount you want click the mouse anywhere in the song multiple times to add or subtract time at those locations. If you want exact bar locations be sure to adjust the Y magnification to a higher level and click on a bar line.

The default is that -Time and +Time (with a subsequent mouse click in the data area) shift all tracks 0 - 199 by the Length amount.

However, by also holding down the Shift or Control (Mac Control) keys during a mouse click, track 0 remains untouched during the -Time or +Time shift.

This way slight time (tick) shifts can be easily accomplished on the notes, but not on the Time/Key Signature changes, if so desired.

If need be, don't record any notes on track 0. This way you can shift your entire song independently of the Time and Key Signature updates.

If you're adding or deleting full measures, there should be no concern whatsoever, as long as you position the part you're shifting up near the top of the screen, since "Length" uses the beginning Time Signature for it's internal calculations.

X

Adjusts X axis size of all tracks. -- You must slide the mouse on this screen.

Y

Adjusts Y axis size of track recorded data. Sliding the mouse or clicking this box up and down lets you see more or less of your data in time by factors of two.

View

Enables viewing various portions of the song data. They are:

All: Shows all track events.

Funct: This displays the track Function events and labels.

Contr: Displays the track controller type events including tempo and key signature type events

Labels: Only displays the track labels.

Note: Track labels are always displayed.

Remember not to forget that you've changed this or else there may be much more in your song that you're not seeing.

< >

Shifts tracks to the left or right so you can view other portions of your song.

Standard MIDI File Import

The default folder for standard MIDI files is:

C:\Program Files\NoteWeaver\Standard MIDI Files PC

Macintosh HD/Applications/NoteWeaver/Standard MIDI Files Mac

So it's best to first move any standard MIDI files you're going to use to that location. Clicking this button first brings up a file dialog box so you can select a .mid file. Once you choose a file the following process occurs:

1. The .mid song is checked for compatibility, if not compatible, say so and quit.
2. The current song file is saved and it's name is shifted to the Last song name.
3. Memory for a new song is cleared and all song variables are reset.
4. The current NoteWeaver song name is set to the new .mid file name

----- This Next Section Is Very Important To Understand -----

5. Beginning at NoteWeaver track 0 the standard MIDI file is translated into a multi-track NoteWeaver song. For each standard MIDI file track each channel of MIDI data is individually split out into individual tracks of the NoteWeaver song. For instance, if an incoming track contains 3 channels of MIDI data, this track is split into 3 sequential NoteWeaver song tracks, even though in the original song it was only 1 track.

However, usually each standard MIDI file track uses its own MIDI channel throughout.

All the MIDI data in each NoteWeaver track is set to channel 1, thus making them Keyboard 1 events. Then, during playback each track 0 - 199 uses Keyboard 1 tables 0 - 199 for extremely flexible note function, chord, and output synth translation. The entire flexibility offered by the Keyboard 1 tables is applied to each track of each song.

For a song to sound identical to the original, Keyboard 1 maps 0 - 64 contain default values when a new Data file is created:

Tracks and Keyboard 1 Maps	Functions	Offsets	Output Type
0	Still	0 - 127	N1
1 - 64	Still	0 - 127	N1 - N64

This way tracks 1 - 64 each use output synths 1 - 64, also track 0 uses synths 1 and since all notes are set to still they sound just like the original.

Unlike most other sequencers where the track patch, volume, pan, etc. is physically located at the beginning of each track, NoteWeaver uses the Synths tables. When a standard MIDI file is imported the first occurrence of values like patch, volume, pan, etc. are all placed in Synths Map 0. Other events will still be retained in the tracks, but won't update the Synths map. During a song performance Synths maps can be changed by triggering Synths map functions, in the standard way, either by K1, K2, G, or song track functions, but only 1 Synths map is in use at a time.

It's usually helpful to pass all individual song track controller events straight through without any Synths table controller filtering, just like the original standard MIDI file did. If you want this you need to clear each corresponding vertical column of the lower Synths map 0 tables. When all vertical cells are clear, all controller events in that track feed straight out to the corresponding MIDI channel and port for that column.

The Synths maps and KG tables simultaneously accommodate two types of operation. The first type is during a performance where a high degree of flexibility and controller filtering needs to be produced by K1, K2, and G controller inputs. The other type of operation is importing various songs that were initially designed using other sequencers.

Lastly, when a standard MIDI file is imported the track names are placed in the NoteWeaver tracks and duplicated in the Names screen for fast editing. Editing in either location always changes the names in both locations.

As you import songs you can watch the track notes, controller events, track names, and Synths map 0 patches and volumes all get updated.

Standard MIDI File Export

This first brings up a file dialog box so you can name the file then it generates a standard MIDI file of the final output of your song. It accomplishes this by first decoding the song using the internal tables. After you have this file you can import it into your favorite other MIDI sequencer programs that may give you expanded capability.

The individual track controls are organized from the top to bottom rows:

Width

The top row of track numbers is always sequential and can't be changed. They are used to indicate the track number and also to adjust the track width. Click inside this area and slide the mouse left and right to adjust the width of the track. You can adjust many at once by selecting different settings besides "1" for Edit. Note: Do not click on a vertical dividing line to adjust the width as is usually the case. This would limit the right hand most track width that could be adjusted. With the method described above, you can widen the end track way past the right edge and see many of it's left hand expanded events.

Also the width of each track superimposes with the X setting, and decreasing the X setting all the way narrows all tracks to their minimum amount.

Name (and Jump To Piano Roll View of this track)

This displays the track name. Important: Unlike most names, these are edited in the corresponding track name's positions OR are edited in the Names screen. Either way when a new song is loaded into memory the individual song track names are copied onto the Names screen tracks. If you want to edit many of them at once it's probably easiest to edit them inside the Names screen. A whole name has to be edited at once if you edit it from within the Tracks screen. When a song is saved the track names are stored inside

the song. You can think of the track names as being independent of the "Data" tables that most Names screen names are a part of.

Enable

The selections are: Play, Solo, and Rec(ord).

The various functions are:

Play:

Play Track during record or playback. You can select multiple tracks to play.

Solo:

Only play this Track while possibly recording another track. When you toggle a track on and off Solo mode the other Played tracks all toggle on and off, too, and they are remembered, accordingly.

Rec(ord):

Record this track only while possibly playing back other tracks

Editing Track Editor Regions

There are two main methods of editing Track Editor Regions:

1. Drag a rectangle across events to select them, then use the traditional:

Copy, or Paste from the Edit Menu, or

or, the corresponding keys:

Ctrl-C, or Ctrl-V keys from the keyboard.

After you have copied the selected track data, there are 3 possible scenarios for pasting:

- o Paste to the same horizontal relative track location using a different starting time.

This occurs when you only adjust the starting time by adjusting the marker position. The data will be placed starting at the current marker

location.

- o Paste to a different relative track location, using the same starting time.

This occurs when you adjust the starting track number using < >. The pasted track events will be shifted horizontally maintaining the current selected relative starting time of the events.

- o Paste to a different relative track location and a different starting time.

This allows you to position your selected track data anywhere in time or to any other starting track. This mode is enabled by adjusting both the marker and the < > settings. For instance if you want to perform the following move:

From:	Tracks:	2 - 4	Marker:	6.3.200
To:	Tracks:	5 - 7	Marker:	40.2.180

you need to adjust both < > and Marker settings and the pasted data will be placed in the upper left most corner of the tracks area.

Important:

Using the above method you cannot currently perform multiple track Cutting and Pasting only multiple track Copying and Pasting. This is because internally only one buffer track is currently used in the editing process to save memory. You will need to perform a copy and paste then delete the original data.

2. The second editing method is to drag a rectangle across events to select them then click inside one of the following enclosed regions to accomplish the following actions:

Left Mouse Button

Top third: Move Vertical

Middle third: Move any direction

Bottom third (either side of vertical line): Move Horizontal

Right Mouse Button

Top third: Copy Vertical

Middle third: Copy any direction

Bottom third (either side of vertical line): Copy Horizontal

There is no lower rectangle "stretch" on Track events like there is on the Piano Roll.

Score

The Score screen is used to view the final output notation of songs. You cannot edit the events here since they represent the final output of the various tables.

If your display is vertically large enough you can view up to 6 horizontal staves of music at a time. It's designed to give you a flexible choice of 64 output synths and 6 music notation staff types.

Each of the 6 horizontal staves can display any of the 64 synths by using any of the music notation staff types. There are 20 "Views" that store groups of 6 output views and staff types. These views are stored inside the songs and get updated as new songs are loaded.

The top editing controls operate as follows:

Marker

Displays the current song location in Bars, Beats, and Ticks, where a Tick = 1/480th of a beat. When viewed, shows the current playback location. When adjusted with the mouse, sets the current bar, beat, tick to be positioned to the left hand edge of the staff note area.

Tempo

This number, shown in red, is the current tempo in Beats per minute.

Offset

This gets added to the current playback tempo to create the resulting final tempo displayed in red above this box.

Transport Control

| << = Jump to Beginning of song

Stop = Stops record or playback

Play = Begin displaying selected output channels from current marker position

Notice there is no Record selection in this screen.

Time (beats)

Displays the quantity of beats per bar currently used in the song during playback.

Sig(nature)

Displays the type of note or rest that represents a beat in the song during playback.

A Note or rest duration equals a single beat:

1 = whole, 2 = half, 4 = quarter, 8 = eighth, 16 = sixteenth, etc.

Key Signature

Displays the current key signature. The "Key Signature" label is not displayed.

Display: or Printer:

Clicking here swaps between Display: and Printer: settings. Each of the two groups provides a different set of variables for displaying to the screen and printing to the printer. There is no Print menu selection and all the Print options are selected here before Printing.

Synth (6 each)

Displays the output synth channel used in the 1st - 6th horizontal staff music line.

Staff (type x 6)

Displays the staff type to display. There are 8 possibilities:

- Displays nothing
- Treb Treble staff only
- TrBa Treble and bass stoffs
- Base Base staff only
- Alto Alto staff only
- Ten Tenor staff only
- Tr-8 Treble staff lowered an octave
- Perc Percussion staff, used for drums

View

Selects one of 20 views of the above two sets of synth and staff information.

Beat Width

Determines the width of each beat.

Names

Names are an important aspect of NoteWeaver. As you create rich musical environments, it's helpful to keep track of various names of your tables, synths, and tracks.

Names can be entered in two ways:

1. By placing the mouse pointer over a name used in the program and typing in a new name. In this case the backspace backs up a character and a mouse movement or pressing the enter key enters the name replacing the old name.

2. From within the Names screen using column editing techniques:

In the Names screen the names area has horizontal dividing lines that divide names into groups of 10 each. The tens digit then becomes a grouping indicator so that names 0 - 9 are the first group 10 - 19 are the second group etc.

However this numbering doesn't work with the Synths column numbers that start with 1.

NoteWeaver helps you remember what things are by giving you the following name types:

Item	Length in characters
○ 200 KG Maps	30
○ 200 Synths Maps	30
○ 200 Chord Notes	30
○ 200 Chord Synths	30
○ 200 Scales	30
○ 200 Tracks	30
○ 64 Synths	30
○ 64 Synths x 128 patches	30
○ 200 More MIDI Messages	200 (not names, but MIDI type data)

The names and More MIDI Messages are organized and edited in a column fashion. You can apply the following editing operations to the data:

Operation	How To	Action
-----------	--------	--------

Select	Drag mouse over text	Select text
Copy selected text	Edit menu: Copy or Ctrl C	Copy to internal copy buffer
Cut selected text	Edit menu: Cut or Ctrl X	Cut to internal copy buffer
Paste selected text	Edit menu: Paste or Ctrl V	Paste from internal copy buffer
Delete selected text	Edit menu: Delete, Delete key, or Backspace key	Delete to oblivion

Note: During the selection process the first axis of mouse movement (horizontal or vertical) locks in this axis throughout the duration of the editing operation. For instance if you start a horizontal selection within a name you can slide back and forth without worrying about accidentally moving to another name. You can select many rows of names by sliding the mouse vertically. While pasting multiple rows of names successive times the names are placed under each other each time.

More MIDI

To create MIDI messages enter the Names screen then using the < > control scroll to the far right column.

There are 3 kinds of "MIDI Messages" that can be written and then triggered from an instrument during a performance:

1. System Exclusive (Sysex) Messages
2. More Controller routing
3. Custom MIDI events

System Exclusive Messages are synth specific messages that are documented in your original synth manuals. Each synthesizer and manufacturer has different codes that their synths use for various sysex functions.

More Controller routing allows you to assign additional mappings of MIDI controllers using an easy intuitive approach.

Custom MIDI events are standard Note On, Note Off, Pitch Bend, Controller, etc. type events that you can write from scratch.

The syntax for the commands is very straightforward.

On one line you can place any of the 3 types of commands as long as they are in the correct formats.

Lower case must be used throughout, except for the hex digits can be upper case. Also, at least one space must be placed between portions of commands.

For your convenience there are different data formats used in the 3 types of commands:

The formats for the 3 types begin with <sysex, <cont, or <midi, and always end with > and one type of command can not be embedded within another. You can follow complete commands with others on a line. For instance: <midi bla bla bla > <sysex bla bla bla > <cont bla bla bla > can all be placed on one line and sent as one event.

You may also place comments like this: (this is a comment) anywhere in the command, or on a line, and they are ignored.

Triggering a complete line is accomplished during a performance when the K1, K2, or G Function for that event is set to "mid", the Offset is set to the line number, and an event for that input note is played or triggered from the sequencer.

The data formats for the 3 types of commands are as follows:

Type	Data Format
System Exclusive commands	hex or decimal f0 38 6a or 10. 200. 100.
More Controller routing	decimal only 100 90 70
Custom MIDI events	hex or decimal 90 20 c0 or 10. 200. 100.

Notice the More Controller routing uses no decimal point to save space.

The reason More Controller routing above is decimal only is that controllers are usually listed as decimal and adding a decimal point to the potentially long lists of controller pairs you assign would unnecessarily take up too much room. It's cleaner and shorter.

Next the 3 types of commands will be discussed:

System Exclusive Message Encoding

NoteWeaver is a MIDI performance oriented environment and hence doesn't support synth data input commands like wave or sample dumps. You can't currently import any information into NoteWeaver from your synths so any sysex commands that do this type

of inputting action aren't applicable. You can only send sysex data to your synths using the sysex commands.

Here's an example sysex command:

```
<sysex port2 f0 7b 60 100. 20. 7b f7 >
```

(port 2 = channels 33 - 48, remember, all lower case)

Remember to always place a space before the ending >.

This command creates a sysex message sent to MIDI port 2. It begins with f0 and uses hex and decimal numbers then ends with f7.

You are responsible for coding the complete sysex command from scratch.

More Controller Routing

Additional controllers may be routed besides XYZ controllers. The way these work is that first an output synth is selected: synth1 - synth64. Then pairs of controller numbers are listed that connect an input controller to an output controller. Also you can clear (clr) the list of More controllers that are routed.

When More Controllers are routed any controller input from any source be it Keyboard 1, Keyboard 2, or any Guitar string will send controller updates to the selected output controllers using the selected synth.

This is completely different than XYZ controllers where much tighter input source / output routing is accomplished.

Also each input controller number can be assigned to only one output controller and synth. When the controller list is cleared controller inputs do nothing until they're routed to output controllers and synths (unless they are assigned to XYZ controllers).

You can update the current XYZ controllers on the fly by using an xyz command then following it with 3 numbers.

The following are some examples:

```
<cont clr synth3 30 40 50 60 70 80 >
```

Here again, remember to place at least 1 space before the ending >, but Not after the beginning <.

Above we clear the controllers list then assign controller inputs 30, 50, and 70 to feed 40, 60, and 80, respectively.

The controller list starts out cleared, then controller mappings can be added at any time, then the list may be cleared at any time.

```
<cont synth46 10 20 xyz 30 31 32 >
```

Here we set the output synth destination to 46, then assign input controller 10 to output data to controller 20 of channel 46. Also we update the XYZ controllers to be 30, 31, and 32.

Remember everything is in decimal showing no decimal point when doing controller routing.

Custom MIDI Commands

Custom MIDI commands enable you to send other standard MIDI commands out to the synths. They use a port number then the actual MIDI channel number is encoded in the data itself. Standard MIDI commands like: Note On, Note Off, Pitch Bend, Control Change, Program Changes, etc. can be sent.

As an example:

```
<midi port0 93 40 7f port1 b0 20. 80. >
```

Here we select port 0 then send a note on to channel 3, then select port 1 and send a control change of 80 decimal to controller 20 decimal.

Setup

Before the actual Setup screen controls are described it's important to understand how to connect your synthesizers and controllers. This is described here:

Connecting MIDI Controllers and Synths

If you're not proficient in MIDI terminology, connections, and device driver installation, please study a few internet web sites that explain them. www.Wikipedia.com is a great place to start. Search for something like MIDI, MIDI Interfaces, etc.

Before you can play any music through NoteWeaver it's necessary to have at least 1 MIDI input port or device and 1 MIDI output port or device connected to your computer.

Often synthesizers these days have a built-in USB connector that can connect directly to the computer.

They ultimately end up sending MIDI encoded data to the computer and the computer sends modified MIDI encoded data back to the internal synth.

In this case, using the documentation that came with the synth, install the appropriate USB MIDI driver on your Mac or PC.

Another very common interface technique is to have an external MIDI interface connected to the computer through a USB port. Here the external MIDI interface provides 2 or more serial 31,250 bits per second 5 pin MIDI connections.

NoteWeaver supports a total of 8 MIDI input channels and 64 MIDI output channels. These may be implemented using ports or devices.

If you have multiple input ports and input devices connected to your computer they will all be utilized to obtain MIDI input data on input channels 1, 2, and 11-16 for guitar. All that's important is that input is coming from those MIDI channels.

In any case, if you're using an external MIDI interface, use the documentation that came with the interface to install the device driver from the disk that was included.

Also, if you're using an external MIDI interface you will need to connect external MIDI cables by connecting MIDI Out of your controller(s) to MIDI In of your MIDI interface, and

MIDI Out of your MIDI interface to MIDI In of your synths or sound modules. You can also daisy-chain MIDI output synthesizers using MIDI Thru and MIDI In connectors (for highest speed), or MIDI Out and MIDI In connections.

The Setup screen accomplishes two functions:

1. Adjusting initial global settings
2. Bulk data copying between current and (last) Song and Data files

The global categories are:

View Active Input Port	For Keyboard 1, Keyboard 2, and Guitar channels
Output Ports	For channels 1 - 16, 17 - 32, 33 - 48, & 49 - 64
Input Channels	K1 & K2 are fixed to 1 & 2, Guitar strings are 11 - 16 or 16 - 11
Guitar String Values	These are the starting values of the strings
Additional Controllers	To specify X Y Z controller numbers
Synth Program	For selecting between used number ranges of 0 - 127 or 1 - 128 ranges
Keyboard Outlines / Size	Set to None, 25, 37, 49, 61, 76, or 88 note controllers
Metronome Settings	Note, velocity, and synth settings during sequencer operation

The bulk data copying will be described in detail at the end of the Setup help description.

Below you'll find a description of the various global categories:

View Active Input Ports and Devices

K1 K2 G (0 - n)

All 8 possible MIDI input channels can be divided between multiple input ports. The ports are viewed here.

Some MIDI interfaces contain multiple ports.

IMPORTANT:

If you can't get MIDI communication working properly chances are you're having MIDI driver conflicts.

This can cause untold misery!!! Even if the program recognizes your input and output port names correctly the MIDI may not be operating well.

Sometimes it's easiest and quickest to just uninstall your MIDI drivers and reinstall the latest versions for each interface off the web sites that support them.

Channels	Select Output Ports and Devices
1 - 16	(0 - n)
17 - 32	(0 - n)
33 - 48	(0 - n)
49 - 64	(0 - n)

There are 4 output ports in use at any time. They correspond to the 4 output channel groups.

Note: Sometimes the name is blank if a controller or synth isn't turned on, but it's driver is internally enabled and it's still recognized by the program as a port.

The following grid swaps the 6 guitar input channels, if necessary or desired.

If you notice all your strings operate backwards, clicking this grid should solve it.

MIDI Input Channels (K1 & K2 Fixed)

K1	K2	Guitar
1	2	(11 - 16, or 16 - 11)

The Keyboard 1 and Keyboard 2 input channels are set to 1 and 2, always.

For the Guitar each string of 24 notes has it's own input starting note. They are the lowest notes each string channel transmits when played without pressing in between any frets. This is useful in the event that your guitar is tuned to a different set of notes than standard.

Also, if you're not using a Guitar, you can use the Guitar Map to apply other instruments, like drum pads, or pedals, and you can adjust these accordingly to fit the MIDI output ranges of your other controllers.

Guitar String Lowest (open) Note Values

6	5	4	3	2	1	Default
34	39	42	47	4b	54	<<
Thick			Thin			

Clicking << (Default) sets the values to the Base 12 starting numbers shown.

Note: Internally the sequencer uses 8 bits to remember a note instead of the typical 7. This way 144 possibilities (6 x 24) fit into one byte. When the 6 guitar string MIDI values enter the program the shown values are subtracted from the incoming notes yielding 6 sets of numbers that range from 0 - 23. Limit checking is also done. Then for each string the results are appropriately offset to yield the desired 0 - 143 final input note value. The 144 values also act as indexes, or pointers, into the Guitar maps to trigger an event. After table Guitar map decoding the output MIDI stream is standard 7 bit MIDI data.

Additional Controllers

X	(0 - 127)
Y	(0 - 127)
Z	(0 - 127)

X, Y, and Z controllers are assigned using this table. The Synths maps operate in a way that gives you the high flexibility of sending selectable X, Y, and Z controller events out to you synths. When the program loads, these values are used.

Using the <cont xyz ... > commands edited at the far right column of the Names screen these can change, on the fly, by triggering the midi Function events during a performance.

Synths Program Range Selections

Controller or Synth	Program Range
Keyboard 1	1 - 128

The bottom line shows Keyboard 1, and it can be switched to Keyboard 2, Guitar, or Synths 1 - 64.

Over the years manufacturers haven't been completely consistent with the displayed ranges of the Program changes. Internally, digitally, 0 - 127 is always used and the displayed Programs can be 0 - 127, or 1 - 128.

This table gives you full flexibility to match the ranges the manufacturers use

Keyboard Outlines / Size

Keyboard 1	61 Note
Keyboard 2	88 Note

The above table is used to set the current keyboard size that corresponds to Keyboard 1 and Keyboard 2.

As a visual aid the outlines will show up when you're editing any of the Keyboard 1 or Keyboard 2 tables.

Also the bottom colored keyboard shown when editing the individual K1 or K2 tables reflect these settings.

Metronome: Note Vel Synth

Bars	70	100	1
Beats	80	80	1

The metronome is usually used during song recording. It provides an audio clicking off of bars and beats within a song. You can creatively choose the specific note, velocity, and output synth to produce the desired sound.

The metronome is enabled and disabled at the top of the Piano Roll, Tracks, or Score screens.

Space Bar Navigation

Last Screen or Roll Screens

"Last Screen" sets the space bar to swap between the current and last screens viewed.

"Roll Screens" sets the space bar (and comma keys) to roll back and forth through short screen lists that are selected on the fly using mouse menu selections. The process is reset by clicking the mouse inside some non-data area in a screen.

Copy Items from Current to (Last) File

Items	Start	End	Click to Copy
Song Tracks	0	199	>>

KG Maps	44	60	>>
Synths Maps	0	199	>>
Chord Notes	8	20	>>
Chord Synths	0	199	>>
Scales	0	199	>>
All Names			>>
Setup			>>
Colors			>>

The above table is used for quick and direct information transfer between the currently selected song or data tables and the (last) versions of these. At the top of the program screen near the menus is the list of the current and last song and data files:

song: current song (last song) data: current data (last data)

In the Files menu there are commands for opening, saving, and swapping the songs and data files as only one of each are use at a time.

While you can copy and paste from the current song to the last song or the current data file to the last data file this is far quicker.

Note that the corresponding names of the various items are transferred correctly as various groups are copied.

To copy tracks or various data items adjust the Start and End ranges and click the associated >> button.

Synth Port / Channel Reference Tables

NoteWeaver uses MIDI output "Synths" that range from 1 - 64. This is effectively a combined number that includes the port and channel. It's done because it's easier than always having to call out a port and a channel while using the various NoteWeaver tables. These are broken up into 4 ports of 16 MIDI channels each. The ports are physical devices that attach to the computer that are used to interface to your synthesizers. They may also be internal to the computer itself, driving an internal synthesizer built using dedicated internal synth circuitry.

The following table is provided for your convenience when you set up your own external synth channels. During this process you will be dealing with an external synth channel range of 1 - 16, and NoteWeaver uses 1 - 64.

The top row of each of the following 4 port groupings shows the channels that you connect to using your synths. The bottom row shows the corresponding internal NoteWeaver synth number.

Port 0

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Port 1

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32

Port 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48

Port 3

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64

Once the synths are connected they can be named in the Names screen. Then it should be a snap to select a synth from within the KG Output Type, Chord Notes, or Chord Synths screens.

Colors

The Colors screen is used to edit and store various custom color arrangements. It contains 3 columns of RGB editing grids. Each vertical grid contains colored rectangles that show the current color of each particular element.

The 3 columns are:

Misc	Piano Roll Notes	Score
Misc. Program Colors	These repeat for each octave	Various Notation colors

Each color is broken into R (red), G (green), and B (blue) components and each color editing rectangle has 3 horizontal areas used to adjust the RGB colors.

Editing is accomplished by either clicking inside an area then sliding the mouse, or moving the mouse pointer over an area and typing a number. For keyboard entry a value is entered upon the first movement of the mouse.

You can individually set each of the three columns of colors to their defaults, or set them all to their defaults using the Set Defaults grid.

You can also easily store 4 custom color schemes by clicking on the >> buttons in the Custom Color Sets grid and you can retrieve them using the A, B, C, and D buttons.

The program will boot using the colors that were used the last time the program was closed.

Last

The Last menu selection toggles between the Last and current screens being viewed.

Another way to accomplish the same thing is to repeatedly click on a screen menu item. This will swap you back and forth between looking at the current screen and a new screen.

Kb, Keyboard Screen

This is the Keyboard Input/Output screen. The top keyboard displays the input notes from Keyboard 1. The bottom keyboard represents the final output after being decoded by all the internal Keyboard 1 KG Map, Synths Map, Chords, Chord Synths, and Scale tables.

This screen is most useful for training and learning purposes where it's valuable to see the input notes played and then the final output notes or chords produced from a performance point of view.

The size control sets the size and the < > control shifts the keys left and right as needed.

The Set K1 Span control adjusts the top input keyboard representation to fill the screen, horizontally, based upon the currently selected Keyboard 1 Size selected from within the

Setup screen. It can't be adjusted inside the Kb screen and is used to set the range to the current size.

The top two green dots represent the selected range.

The software internally sends all incoming MIDI note data from all input controllers and the sequencer to the top keyboard and then all output notes that result are sent to the bottom keyboard.

All the colors are selected based upon the current Keyboard 1 map Function Colors. Therefore it's best to only use this screen while playing through Keyboard 1, and/or the sequencer, having recorded a Keyboard 1 track.

The note function colors for the resultant lower keyboard output notes are set on-the-fly by the upper keyboard notes that triggered them.

Map Update Foot Controllers

6 MIDI controller numbers have been programmed into the software to implement map changes using foot controllers. 3 are used for KG Map updates and 3 are used for Synth Map changes as follows:

Controller Number	Pedal Down	Pedal Up
16	Increment KG Map	Return KG Map to previous value
17	Increment KG Map	Does Nothing
18	Decrement KG Map	Does Nothing
80	Increment Synths Map	Return Synths Map to previous value
81	Increment Synths Map	Does Nothing
82	Decrement Synths Map	Does Nothing

During a real-time performance it may be convenient to use foot controllers to navigate through KG and Synth maps. Controller numbers 6 and 80 can be used for quick up, and then back changes and 17, 18, 81, and 82 can be used to traverse up and down using multiple pedal presses. These pedal changes are also recorded into songs.

Also, you can override these channels and send the data out to synths, instead, if you select them for X, Y, and Z controller inputs on the Setup Screen.

Modern day MIDI pedals usually support flexible output controller number assignments.

