NoteWeaver

User's Manual

Ver 1.0

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Quick Start

Note:

Always power-on any MIDI equipment that contains MIDI port(s) before launching NoteWeaver, and don't power on or off any MIDI ports during NoteWeaver operation. If there's a USB MIDI port connected to the computer, it will already be powered on, so that's ok.

Then, if need be, click "Refresh", then select your ports from the top lists from within the Setup window.

Windows is known to have issues with the following, or it could just be equipment drivers:

Even though upon Refresh, I (in software) close all open ports, clear all port arrays, get device capabilities, and open the new ports, sometimes NoteWeaver hangs, for no apparent reason, after which a Ctrl-Alt-Delete -- Task Manager -- NoteWeaver -- [End Task] needs to be done...

Also, upon boot, even though the selected input and output port names look correct, a Refresh will often internally number the ports differently, and should be done, if your hardware ports have changed.

Note: Also, I've placed no practical limit on Arp and Echo cycling fast speeds. If you start arpeggiating and/or echoing vast quantities of notes and fill the NoteWeaver, PC, and/or your Synth(s) MIDI buffers too full, any 3 of these can crash. -- After which the above-mentioned Ctrl-Alt-Delete/Task Manager [End Task] and synth or PC reboot may become necessary. -- or it may be the Windows Event Manager buffers filling up. High speed, shorter bursts are fine.

Sequence to begin:

If you're using a single Synth for Input and Output

1. Connect your powered-on synth, MIDI (or USB) cable(s), and interfaces to a PC set to Channel 1.

2. Go into your synth settings and turn Local Control to off. This will keep your synth from playing notes and many controller events, locally, and direct to NoteWeaver. NoteWeaver then reinterprets them and sends notes and controller events back to your synth.

3. Click top "Setup" window menu

4. Near the top, click Input and Output Refresh buttons and select your I/O port from the lists.

5. Lower, to the left, select: Keyboard A, 1.1, your Kb width, and a Velocity curve, if need be.

6. Click the "Play" window menu.

7. At the top of the large synth voice table, set: Vol = 100, Pan = 0, LoN = 0, HiN = a7, MSB = GM (General MIDI), LSB = 0, and Prog = 1.

    Note: In the future, check your synth User's Manual MIDI implementation charts to find which MSB, LSB, and Prog values apply for your synth to access all its voices.

8. Start playing. Your keyboard playing will use Keyboard A map 1 and send notes to Synths output port.chan 1.1. This should work as first shipped.

   If MIDI is working, the inputs and outputs show up at the bottom of the Setup window.

If you're using a separate MIDI controller to control a Synth

1. Connect your powered-on synth, MIDI (or USB) cable(s), and interfaces to a PC set to Channel 1.

2. Click top "Setup" window menu.

3. Near the top, click Input and Output Refresh buttons and select your I/O port from the lists.

4. Lower, to the left, select: Keyboard A, 1.1, your Kb width, and a Velocity curve, if need be.

5. Click the "Play" window menu.

6. At the top of the large synth voice table, set: Vol = 100, Pan = 0, LoN = 0, HiN = a7, MSB = GM (General MIDI), LSB = 0, and Prog = 1.

   Note: In the future, check your synth User's Manual MIDI implementation charts to find which MSB, LSB, and Prog values apply for your synth to access all its voices.

7. Start playing. Your keyboard playing will use Keyboard A map 1 and send notes to Synths output port.chan 1.1. This should work as first shipped.

If MIDI is working, the inputs and outputs show up at the bottom of the Setup window.

Things to keep in mind:

In general, clicking at the top of a cell will increase the number, and conversely with the bottom of a cell, then sliding the mouse up or down, or left and right will update the values.

   ******** Mouse Hover Tips will display at the top of the window ********

Clicking the Help menu instantly vectors you to the description of the last window you were viewing.

Thank you for purchasing a NoteWeaver license.   Your interest is much appreciated.

 First of all, Keyboard A, Keyboard B, and Guitar refer to 3 tables of 1 map (of 256) that decode MIDI input instrument notes. These are all collected into a single map and get updated when the map changes. This is referred to as the KG map.

Each of the 3 map portions contains 8 layers of functions for the incoming notes to decode.

Any of the 3 inputs can decode notes for drum pads, or other MIDI controllers. The Guitar uses 6 input channels, one for each of 6, 24 note strings.

Given the open-ended options of what's being done, I've attempted to make things as simple, intuitive, quick, and easy to navigate, edit, and copy as possible.

A little history and context

Personally, and I don't think I'm alone, I always had, and still have, difficulty with the traditional piano layout. Having to learn 12 sets of scales and 12 sets of chords, I found to be a daunting task.

With the goal of opening playing possibilities in the background, the idea of having notes that jump came to me years ago.

What came of this idea is what I call "The Interval System", an approach designed to help people position the above interval producing functions along MIDI instruments in flexible ways.

As things progressed, pondering the best way to play with different options, easy-to-edit tables appeared to be a good solution.   Selectable scales seemed a good addition. After that, chords would be a good addition. Then, flexible controller decoding followed. Arpeggiators, and Echos followed. Next, instead of just one layer of tables, it was natural to add multiple layers. From the beginning, I figured it would be good to have a recording environment, so I added it.

NoteWeaver's a playground, a platform, a huge, dynamic, weavable, open-ended MIDI mapper, a playing matrix, a mega performance enhancer, and a sequencer.

The program focuses on vastly opening MIDI instrument note and controller playing, performing, and recording possibilities. As these tables were extended, many more possibilities opened up that can be used to create many brand-new styles of play.

If you already know how to play, NoteWeaver starts where your playing leaves off. Even if you play the notes exactly the same as always, now each individual played note can:

o   Be sent independently to any synth voice

o   Apply a chord, or simply various octave notes of the note to various synths

o   Use velocity to choose different synth voices

o   Use velocity to change mappings of synth output voices

o   Start recording or playing a 1-shot or repeating riff

o   Create output note echoing, by octaves, channels, and scales

o   Record into and control arpeggiation by octaves, channels, and scales

o   Be made to toggle the output notes or chords on and off

o   Synchronize multiple players

o   Fluidly pivot into new maps, chords, and scales as part of the playing process

However, if you choose to go beyond the traditional playing paradigm, each played note can do all the above, plus:

o   Trigger a jumping, interval producing notes

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o   Play relative to a moving Key (reference) this above note produced

o   Play inversely relative to the above shifting reference

o   Silently shift this moving reference

o   Apply scales to only the white keys, and chromatically, in many different ways

o   Apply wrapping zones to the above interval functions

o   Step through the next note of a song track, using the full potency of the map layers

o   Update multiple layer scales

o   Transpose multiple layer scales

o   Switch into new synth voice maps

o   Choose scales in any Key, and the notes within the scale can jump up and down within the scale

and much more...

NoteWeaver's designed so you can ease your way into it. Parts of it you may never want to use, and are there, never-the-less, for people who do.

The program first boots using an initial data file called "InitialNewFile". This file loads each time "New Data Tables" is loaded from within the Files menu. It's probably best if you do a "Save As Data Tables" and give your data a new name, then you can freely write over any portions of your new data tables and keep InitialNewFile in original tact.

General NoteWeaver flow

o   Ports and other global items are set from within the Setup window -- also bulk copying between files.

o   Incoming MIDI notes point into Keyboard A, Keyboard B, and Guitar (KG) maps, starting at the bottom left.

o   Each KG map contains 8 layers of functions, chords, and output channels.

o   KG maps decode the incoming note functions in various ways, decode the notes through scales, and send the scale notes out through the Synths maps.

Also, Chords can be applied to various layers, and these are edited within the Chords window. Applied chords sequentially output their notes through the 8 layers of assigned output port.channels, giving rich timbres. They start at the current layer, increase layers until layer 8 is reached, then wrap to layer 1 and continue.

o   Synth voice outputs and incoming controller routing is edited from within the Synths window and can be applied to any given output synth channel.

o   Incoming MIDI notes and controllers are recorded into songs, then the song tracks decode the output notes back through the applied KG maps for each track.

   The Score displays the final output and cannot be edited.

Terminology

KG Map

Keyboard A, Keyboard B, & Guitar Map

One of 256 integrated sets of ultra quick-to-edit tables with 8 layers each, that assign various functions to Keyboard A, Keyboard B, and Guitar playing surfaces.

When a KG map is selected in any way, all 3 Keyboard / Guitar portions of the map change to a new mapping.

This way, one person playing can instantly direct the performance of multiple performers using multiple instrument inputs.

Synths Map

3 large output synthesizer voice and input controller settings tables.

Expanded Track

If a song track is horizontally expanded, it's individually edited differently than using multi-track edits. A single track is expanded by clicking within 3 portions of the top track name line and moving the mouse.

KG "Drum" Support

If you're using drums, simply map the drum notes into the appropriate note locations, or press the drum pads and see which notes light up in the KG tables to set individual output drum notes. These can be applied to Keyboard A, Keyboard B, and Guitar tables.

NoteWeaver Overview

NoteWeaver specializes in freeing up playing surface note choices.   Lots of various functions can be applied to incoming notes and you can weave in and out of potent table mappings with ease.

NoteWeaver includes 8 possible layers of note decoding so each note can, for instance, immediately, on the fly:

o   Trigger a note or chord sent to any of up to 256 synth voices. The chords can have up to 32 notes and cycle through the Out Chans map layers, or, the last 100 chords can cycle through 32 sequential voices

o   Start recording a 1-shot, or repeating riff

o   Trigger a multi-synth, multi-scale, multi-octave cycling echo

o   Trigger a multi-synth, multi-scale, multi-octave cycling arpeggiator

o   Select a completely new mapping of 256 synth voices, each with their own volume, pan, lo note & hi note limits, MSB, LSB, voice, etc.

o   Remap the entire playing surface functions of multiple physical input controllers, including MIDI guitars

Note: Scales and Transposition, shown at the bottom left of the KG windows, are applied independently to each Keyboard A, Keyboard B, and Guitar instrument map layer. So there are 3 x 8 = 24 each. Then additional superimposed transposition and scale shifting can be selected from within the Play window, lower right.

Editing and Navigation Features

o Mouse hover tips are displayed at the top of the window as the mouse is moved over various tables and controls, indication their function.

o Clicking in a blank window area does an "All Notes Off". They can sometimes stick on if various controls are selected with current notes on. Also, sometimes, like if sending too many Echo events to the output synths, their buffers overflow, and they need to be power cycled.

o Press Shift when selecting top, window menu items to open additional windows.

o Repeated clicking on a window menu selection item toggles between the current and previous windows -- valuable for quick peeks at various sections of NoteWeaver.

o Space Bar swaps between the current and last window displayed. Then other PC keys select recording options.

o To type text or numbers simply position mouse and start typing without clicking mouse button.   Moving mouse or Enter key enters text.

Names can be edited either in the Names window, for speed, or where they display on the other windows.

o In the Names window text can be selected, using either axis of movement.

o "X" and "Y" change X and Y magnifications -- for Tracks window sliding mouse after clicking X is necessary.

o   The starting location of the sequencer on any window displaying an upper transport control is adjusted using the 3 Marker values near the top middle of the windows.

o   To adjust colors in the Colors window 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.   Holding shift or control key down at the same time in the center RGB location adjusts all 3 RGB values to the same. Or 2 at a time on the outer two cells.

o   Note oriented Offset window number values are cleanly in base 12: 0 - 9 a b 10 11, etc. when showing   notes or intervals. his way the left number cleanly represents octave amounts: 10, 20, 30, 40 all represent C, one octave apart. Using an Interval note Function offset of -10 creates a 1 octave jump down.

o   Score notes cannot be edited since they represent the final output from a song after KG table translation.   Instead, edit the song itself.

   Note: The Score is rudimentary, at best.

o   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 keys during a mouse Place operation. This is on an expanded track.

o   Ctrl-S Saves the current song AND data files. If you want to individually save them, use the file menu.

Nutshell Overview of NoteWeaver

Here's a quick bullet overview of the features of NoteWeaver:

o   128 MIDI input channels to choose from

o   256 MIDI output channels that can create up to 256 independent synth voices

o   256 sets called "KG Maps" of data. You can 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.

o   8 Layers of possible played or played-back note decoding functionality that can support things like note-by-note, on-the-fly remapping of instrument surfaces.

o   A host of functions assignable to each input note event. A note event is a MIDI input note that decodes 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.

o   Individual offsets applied to each function. These offsets are usually in number base 12 since there are 12 semitones per scale.

o 256 programmable chords:

NoteWeaver contains 32 built-in chords, by default, which can be freely overwritten and reselected.   Chords can contain up to 32 individual notes and are edited using a quick, intuitive editing grid.   The chord note order is the same as they're entered on the grid and play relative to each other, with the Orig note being the note the function triggers.   The Chords window is where you place notes on the grid in any musical Key you're comfortable with, and NoteWeaver makes the relative translation.

Note: Even though the chords play relative to each other, if a non-chromatic scale is applied to the layer, the chord notes play relative to the scale notes, always remaining in the current scale.

o 256 maps of 256 channels of output synth configuration. The left grid contains settings sent to you synths containing: Volume, Pan, Lo note limit, Hi note limit, MSB, LSB, Program/Voice, and Mute.

  There's also Synths map voice auditioning in the upper left Synths window.

o 256 programmable scales that map all 128 MIDI final output notes ranging from 0 - 127 into 128 selectable notes.   Individual scale notes can be mapped to a playing surface in many different ways like chromatically, white notes only, white notes with upper black note playing 2 octaves higher, etc. and they can also be created in various orders, positive and negative, by clicking on or between orange numbers.

o Sequencer made up of the Tracks and Score windows. 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.

o The Score window displays music notation for 20 groups of 6 synths, each of final output.

Simplified Window Descriptions

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.

Spokes

The spokes window displays 3 types of multi-colored outgoing note indications.   For entertainment, or as an aid to help understand music theory, the window can be resized by clicking in the left and right portions of the upper portion of the inner window area.

Different kinds of operation are selected by clicking inside the lower portion, either side.

While C is usually placed at the top by other programs, NoteWeaver places D at the top so the 2 effective black notes symmetrically straddle the top, and 3 effective black notes symmetrically straddle the bottom.

Names

Names is a 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 custom 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.

Keyboard A

Functions   12 x 11 grid of selectable Functions that decode input notes events
Offsets   12 x 11 grid of selectable Offsets that contain data used by above
                        Functions
Chords   12 x 11 grid of selectable Chords
Out Chans   12 x 11 grid of selectable Output port.chan
Links   12 x 11 grid linking the current layer note to other layers

Keyboard B

Functions   12 x 11 grid of selectable Functions that decode input notes events
Offsets   12 x 11 grid of selectable Offsets that contain data used by above Functions
Chords   12 x 11 grid of selectable Chords
Out Chans   12 x 11 grid of selectable Output port.chan
Links   12 x 11 grid linking the current layer note to other layers

Guitar
Separated into 6 sets of 24 notes, each having its own MIDI input channel, and pitch bend

Functions   12 x 12 grid of selectable Functions that decode input notes events
Offsets   12 x 12 grid of selectable Offsets that contain data used by above Functions
Chords   12 x 12 grid of selectable Chords
Out Chans   12 x 12 grid of selectable guitar Output port.chan
Links   12 x 12 grid linking the current layer note to other layers

Chords

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.

Scales

12 x 11 grid of scales. Default scales can be selected as can be various ways scales are applied to a keyboard. Further, orange numbers can be used to select various scale notes in any order (per octave).

Synths   6 x 256 grid of the following Synthesizer configuration top grid information:

Volume   =   Standard MIDI volume
Pan   =   The relative stereo output volume of your synth outputs
Lo Note   =   To filter out undesirable low MIDI notes sent to synths
Hi Note   =   To filter out undesirable high MIDI notes sent to synths
MSB   =   High bank of patches, if your synth supports them -- see your synth
                manuals
LSB   =   Low bank of patches, if your synth supports them
Patch   =   The sound the synth makes
Mute   =   Lights up when that channel's muted

The middle grid contains controller routing per port.chan 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, 8, 16, or just a few output synths not all 256 at a time. This would completely clog the MIDI output stream.

The following controllers are filtered:

> Sustain
> Pitch Bend
> Modulation
> Channel After Touch

Then, also for each synths map, there are 2 sets of 8 layers of steerable controller events, set from the far-right table. Each set can be controlled from a different input port channel, ranging from 1.1 - 8.g.

The right-hand grid on the Synths window flexibly chooses MIDI instrument controller knob and other input device routing. Using this table controller knobs, etc. can be flexibly assigned various input and output MIDI controller spans for any of 8 possible layers. For instance, after-touch could be assigned to provide 4 different pitch bend ranges, and 2 different volume ranges, and 2 different filter resonance responses. These are assigned to particular voices of each synth map using the middle table. The ranges can also be reversed.

There's also an Auditioning grid for scanning through synth voices, and placing your favorites into your current synths map.

Tracks

With a traditional Piano Roll view, that reflects your instrument orientation, the Tracks window lists multiple tracks of a song. Time goes downward. Tracks may be horizontally expanded to yield track local, traditional piano roll type editing by clicking inside the top Name field and moving the mouse, horizontally.

Score

The Score window displays a rudimentary final output music notation for the songs.

This displays the final output of the KG tables, unlike the Tracks window that shows the input indexes into the KG tables. You can view any of the 256 synth output channels and send them to the selectable programmable staffs. It gives you 20 types of these synth and programmable staff selections.

Play

Displays a higher-level performance-oriented window that contains a top keyboard showing both input and resultant output notes. This is also where the highest degree of control over real-time synth settings, scale settings, and arp and echo adjustments can be made during a performance.

Top Map View

This is the simplest way to interface to the program if you simply want to select various Keyboard A maps and play from there.   It also provides the clearest input/output display using an upper keyboard for input and a lower keyboard for output.

Teachers and students may find this the most convenient form of interaction medium, while teachers are demonstrating things for students, and visa-versa.

Setup

This window 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

Quick help system. Also includes a block diagram of NoteWeaver so the MIDI flow can be understood.

Note: Clicking Help while viewing a window instantly vectors into information about that window.

Data, Song, and Standard MIDI Files

For ease of copying groups of data between various files, a custom file system strategy is employed.   (See lower right Setup window)

There are 3 total user file types.

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

You can work with up to a total of 5 files:

        2 song files
        2 data table files
        1 standard MIDI file

All the files are stored in their respective folders inside your

       …\Documents \NoteWeaver\Data Tables\

       …\Documents\NoteWeaver\Songs\

       …\Documents\NoteWeaver\Standard MIDI Files\

Note: The files, themselves, -- Can Not -- be clicked on to launch the program.

The NoteWeaver application automatically loads the files upon execution.

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

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 window.

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 window above the menu items you will see something that looks like this:

NoteWeaver   tables: Data1 last(Data2)   songs: Song1 last(Song2)

The file names after the colons are the current files in use, and the file names in parenthesis are the (last, or previous) files in use.

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

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	Yes
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 data and song files in use, and also remembers the names of the (last) files used.

If you don't want a current file saved, first select Revert from within the Files menu beforeclosing the program.

Copying data between current and (last) files

Song File

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

The only way to copy events from multiple tracks of your current song to the (last) song is from within the Setup window, bottom right. Here you select a range of tracks and press the "-->" button to copy.

There's 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 lower right Setup window. 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 Data or Song 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 names of the current and (last) data and song files so the program can remember them during program launch and operation.

The file path is:

        ...\Documents\NoteWeaver\Resources\NWFiles.txt

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

NowData|LastData|NowSong|LastSong| Note: just the file names, not paths

Notice the 4 "|" characters that Must be placed Between the files and at the end of the string. -- Not at the beginning.

If you place "||||" in the file and save it, the program will fill in the files as necessary

when you create or open data or song files when using the Files menu.

Map Nomenclature

NoteWeaver contains various groupings of data. Two 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: 256 entire groups of Keyboard A, Keyboard B, 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. An KG Map update which can be triggered by a single input note event will choose a new KG Map that will be used by the Keyboard A, Keyboard B, and Guitar.

Synth Maps: 256 groups of Synthesizer configuration data for all 256 synths. These apply various sound, and controller settings to the output synths. The term mapping is specifically appropriate when considering the middle portion of this data. In this case the MIDI controller changes are mapped into various synths.

Base 12 Numbering

For regularity and clarity NoteWeaver also uses base 12 for musical note and note offset numbering:

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

This helps you line up notes vertically in the Offset and Scale grids and also helps you instantly tell which octave is being used:

.

.

.

```
20  21  22  23  24  25  26  27  28  29  2a  2b
10  11  12  13  14  15  16  17  18  19  1a  1b     Notice 12 each
 0   1   2   3   4   5   6   7   8   9   a   b
```

Please don't confuse 'a' and 'b' with standard musical notation A and B.

Interval Offsets are intuitively easy to set up and work with using this base 12 approach.

An offset of -20 will produce a minus two octave jump and a 30 will produce a plus three octave jump.

A -7 Interval Offset will jump down by 7 semitones (a Perfect 5th), assuming a Chromatic scale.

When you view the tables of data there's 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 an expanded song track. The octaves may or may not correspond to the final output produced by the tables since the tables and scales generate the final output.

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 the tables are set.

When you play and aren't using the sequencer your MIDI note inputs act as pointers from 0 - 127 into the Keyboard 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 map 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.

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 point, or index into the appropriate KG tables to select the table items.

The scale remapping occurs just before the final output to the synths. A selected KG scale layer 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.

Windows

Colors

The Colors window 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	Expanded Track 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.

Further, if shift/control is pressed in the middle, each of the 3 RGB values will be adjusted the same with mouse movements, and if the left or right sections of the grids are clicked in, then the left two or right two values will track with mouse movements.

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.

Spokes

Displays a 12 spoke window that's used to view relative locations of output notes for entertainment and to help understand musical shapes that correspond to musical chord theory.

Clicking on the top left and right inner sides of the window changes its size.

Clicking on the lower portion cycles through 3 different modes of operation:

Shapes: Dots with interconnection lines

Spirals: Each new incoming note is placed on outer ring, and all other notes move inward

Dots: Just dots

Names

In most cases names can also be added by positioning the mouse to the right of the View or Dest boxes above maps, scales, and chords. Just point and type, without clicking.

Names is a unified window used to enter various types of names into NoteWeaver, also to assign various synth names internal voice names files to output synth ports/channels, and further to enter custom MIDI commands that can be sent to your synths, by entering data into the far right "More MIDI" editing area.

From within the Names window using column editing techniques, the categories are:

Item	Length in characters	
o 256 Kb A, Kb B, and Guitar (KG Maps)	30	
o 256 Chords	30	
o 256 Scales	30	
o 256 Output Synths Maps	30	
o 256 Synth Names	30	Names of your synths
o 256 Synth Voice Names Files	30	File names containing the voices of your synths
o 256 Tracks	30	
o 256 More MIDI Messages	256	(custom MIDI out 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:

Select	Drag mouse over text	Action
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

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...position mouse and start typing (without clicking, first) to edit.

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 clicking the mouse and sliding it vertically.

More MIDI

To create MIDI messages, enter the Names window 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 may not be embedded within another.   You can follow complete commands with others on a line.

For instance: <midi xx xx xx >   <sysex xx xx xx >   <cont xx xx xx > can all be placed on one line and sent as one event.

You can 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 KG 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 (uses no decimal point)
Custom MIDI events	hex or decimal 90 20 c0 or 10. 200. 100.

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

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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)

Also, remember to 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.

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.

Keyboard A, Keyboard B, & Guitar

These operate as follows:

Functions

A very powerful aspect of NoteWeaver is that the function of the operation of each note can be altered in many ways. An input note can be thought of as a trigger that does some function. This function can 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 send a System Exclusive command to the synthesizers, etc. A complete description of all the functions is given in the following section.

Offsets

These are offsets or data that's used in conjunction with the above functions. If a function is "S" that stands for Still, then the offset points directly to the scale note the map layer uses. This scale note then gets played.

Each Keyboard A, Keyboard B, and Guitar of tables works with what's called a Reference.

The Reference moves up and down in conjunction with various Interval (jump) producing notes.

If the function is "I" which stands for Interval, then the offset is an actual offset from the current Reference note that selects the scale note associated with the map layer. 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. Usuall,y 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.

Chords

The Chords table is used to select the chord that a given Function for a given input note may trigger.   There are 256 chords to select from and the individual chords associated with each input note are assigned here. The actual chords themselves are edited in the Chords window. 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 wasn't being used. The collection of notes in the Chord window are placed so they produce pitches relative to this note depending upon how they were entered on this window.

Out Chans

This is the output port.chan destination of your notes, or chords that contain notes that cycle through other layer Out Chans, beginning with the current layer.

Links

The Links table on each layer is used to direct these notes to additional layers.

Then, on a note-by-note basis, the Links table links the input notes to additional layers, or maps, relative to starting map/layer location. The link data selects just a note "-" or links multiple layers, simultaneously, or uses velocity to select a layer, or select a random layer, or progressively play multiple layers depending upon the velocity.

Operation of the Grids

The Keyboard groups of windows 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 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.

This grid is divided up into 11 rows of 12 columns. The bottom row of the Keyboard 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.

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 window you are free to offset your 6 guitar strings into these 6 groups of 24 input notes any way you choose. When viewing an expanded song track with the "G" setting you will see these 6 groups of 24 input notes instead of the octaves used in the "K" settings. The notes are mapped from left to right on the expanded song track corresponding to bottom to top on the Guitar grids. From within the Tracks window you need to select the correct In / Out map setting.

Arpeggiators and Echos

Arpeggiators and Echos are located in the Keyboard A, Keyboard B, Guitar, and Play windows.

Arpeggiators (Arps), when triggered with a high velocity Arp function, arpeggiate notes that are played on your instruments. Echos echo final output notes.

For the Arps, the following settings apply:

Del   The quantity of delay between notes.

Octs   Various octave shifting settings.

Chans   The quantity of output channels that are cycled through, starting with the original note.

offset   An offset channel from the original note channel triggered.

inc   Increment. As output channels are cycled through, this sets the jump quantity to the next channel.

Rand Vel   Superimposes a random velocity amount on the original note velocity.

Mode   Ordered, Up/Down, Up, Down, & Random modes of the arpeggiation process.

Times   The quantity of times each note (or chord) is repeated, before switching to the next one.

Scales   The quantity of scales that are cycled through.

offset   The starting scale to start the cycling at.

inc   The step size, indexing into various scales.

Beats

The sequence of beat timing assigned to each successive note.

On the Keyboard A, Keyboard B, and Guitar windows, when the left mouse button is pushed on the Arp Beats and the mouse is slid, a right-hand selection of beats appears.

-- Not on the Play window.

There are 255 beats to select from, however, if you keep scrolling past 255 there are another 100 beats to select from with 4x the timing resolution.

You'll notice, under the main middle grid the horizontal beats are displayed.
When an upper 100 beat is selected, you can Clear, and click on much finer resolution beats, when clicking on the beat bar, itself.

Note: It's important you only select up to 8 beats with this finer resolution. (currently)

Inside the Play window, during real-time play the sliders underneath the shown beats superimpose velocity values of the beat notes.

For the Echos, the following settings apply:

Del   The quantity of delay between echo note cycling.

Octs   Various octave shifting settings.

Chans	The quantity of output channels that are cycled through, starting with the original note.
offset	An offset channel from the original note channel triggered.
inc	Increment. As output channels are cycled through, this sets the jump quantity to the next channel.
Rand Vel	Superimposes a random velocity amount on the original note velocity.
Tot	Total amount of time for the Echo to play.
	Near the end, the velocities will start ramping down to 0.
Scales	The quantity of scales that are cycled through.
offset	The starting scale to start the cycling at.
inc	The step size, indexing into various scales.
Beats	

See Arp beats, above…

Chords

The Chords window is used to create chords. There are 256 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 its position relative to this Original 0 note.

You are free to position the first note in a chord 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.

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

Scales

There are 256 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.

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

Per KG map and layer, the Kb A, Kb B, 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 ensure 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 can 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. You can also create chords from scratch, by adjusting the offsets of various layers and linking them.

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

Synths

The Synth (Synth Configuration & Controller Routing) window includes three main lower large tables.

	Left Table	Middle Table	<--	Right Table

       Left Table   Middle Table   <--   Right Table
                                 ...that provide:

Output Synth Settings   Output Synth Controller Routing   Input Controller Modification
x 256 Synth maps   x 256 Synths maps   x 128 input port.chans

The lower right table is a single location where all incoming synth controller events are
assigned and modified by range for up to 8 individual layers.

The lower right table doesn't change like the lower left and middle tables do
as various synth maps are viewed.

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

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

The lower left table contains the following information:

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
Lo Note   = The low 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.
Hi Note   = Same as above but high limit
MSB   = A high bank select value, if needed, or used -- see synth manuals
LSB   = A low bank select value, if needed, or used
Prog   = This is the MIDI output sound the synth plays -- currently 128 are
                 supported.
Mute   = This mutes all output from the synth.

GM2 Note: If the MSB is set to 121, General Midi 2 standard is used and displays "GM2".
Thereafter, by sliding the mouse up and down (or left and right) after choosing Prog, a list of
256 GM2 voices can be selected from a left-hand list.

   The lower middle table routes the following incoming MIDI fixed events:

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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

The lower middle table is also used to rout the lower Right table incoming MIDI controller events to the currently playing Synths map channels.

For flexibility, two independent incoming port.chans of input controller data can be applied to each output synth port.chan, per synth map.

Various layers of selected right hand table controller events can be enabled and disabled using the middle table.

Controller Routing

With the right set of tables you can direct various input controllers to up to 8 output controllers, per input controllers, each with their own input and output ranges. These 8 layers can be enabled or disabled using the Inst(rument), and L1 - 8 orange dots in the middle large lower table.

If you click on things, and play with the numbers, you'll get an idea how they work.

This way, one or two sliders, or knobs, for instance, can simultaneously control many synth settings.

The far right lower table contains 64 sets of input controllers, for each of 3 instruments, Kb A, Kb B, and Guitar. The controllers selected for each of these instruments, can then be enabled in the large controller routing table in the lower middle. While the Sustain, Bend, Modulation, and After Touch (Channel Pressure), can be assigned to each output channel, directly, more versatile controller events can be selected from the large right controller table.

Important:

When any controller event enters NoteWeaver from an instrument, if that instrument is selected in one of the 2 groups of "Instrument Controller Layer Selections" in the large middle table, the bottom right large table is scanned for the Type and any input and output controllers will direct control information to the associated Synth output channel. For speed, if the Type for that row of 64 is disabled, scanning stops. However, all layers are scanned, and decoded, if enabled, and they're also enabled in the lower middle table.

Why are there Enables on the lower middle table and lower bottom table? Good question. I figured it would give a little extra flexibility for completely disabling certain controllers using the lower right table, without having to adjust the orange dots in the large middle table.

I get, this is complicated, however, it provides pretty wide open flexibility.

Note: While the large middle tables get stored in each Synths map, and changes, accordingly, the lower right controller routing table is fixed, and doesn't change with Synths map selections.

For the far right lower table:

A pitch bend wheel yields 14 bits of resolution. Other controllers in this table are 7 bit resolution, including After Touch (Channel Pressure, in the MIDI spec), which is a pressure sensitive strip that determines the pressure of any note or notes pressed, anywhere.

Regarding Pitch Bend

Synthesizers and sound modules expect a full-scale Bend input swing to control their pitch bend. These devices have settings for how many + semitones and - semitones these input swings will ultimately bend the final output sounds.

The Type column can set Bend ranges within 1-24 semitones Up, and 24 semitones Down.

This large range was selected so you can bend up and down 2 octaves from the center position of a bend wheel/lever.

Now, this is ONLY true if your synth or output sound module is set to a +/- 24 semitone range.   However, your synth may not support a full +/- 24 semitone range, or, maybe even a larger range swing. Suppose your synth is set to +/- 12 semitones. Bend Up 24 and Down 24 will then create this full scale swing you need to get +/- 12 semitones. NoteWeaver Bend Up 12 and Down 12 will yield +/- 6 semitone swing.

If your synth is set to a +2/-1 semitone range, selecting a Bend Type of Up 3, Dn 4, will slightly deflect the pitch, because +/-24 semitones is the full-scale swing. If Up = 24 and Dn = 24, then you'll get the full synth +2/-1 swing.

Various Type, Input, and Output settings perform in many combinations:

Type	Input (set to…)	Output (set to…)	Final Output
Any 7 Bit	Controller	Controller	7 bits
	Controller	Pitch Bender	Full range Bend with 7 bit precision
	Pitch Bender	Controller	7 bits
	Pitch Bender	Pitch Bender	Full range Bend with 14 bit precision
14 Bit Bends	Controller	Controller	7 bits
	Controller	Pitch Bender	+/- Semitone Bend with 7 bit precision
	Pitch Bender	Controller	7 bits
	Pitch Bender	Pitch Bender	+/- Semitone Bend with 14 bit precision

By editing the lower right table inLo and inHi settings, the full scale range can be shrunk down and positioned anywhere in the input range.

The outLo and outHi settings (which may be reversed) will effectively mask the output swings so they only output the controller events within a certain range.

Auditioning

In the upper left, there's also an Auditioning grid, whereby you can scan through, and select various favorite synth voices to be entered into your left-hand lower synths table.

The settings are:

Begin:

1.1 - g.g	=	One of 256 Starting Port.Chans
Type1 - Type 6	=	Select a note, or various chords and octaves
X1 - X16	=	Quantity to duplicate, at a time
V 1 - v 127	=	Velocity for the notes(s)
-6 -1 +1 +6	=	Decrements and Increments of the current starting note
Play	=	Play current sound
<<	=	Set patch 1 lower, and play sound
Next	=	Set patch 1 higher, and play sound
Use	=	Keep current patch and move on to the next channel

Update

Performs high speed editing of the lower tables...

Update:

Ramp	=	Set to Ramp values Volume, Pan, Lo Note, or Hi Note by first adjusting one cell, then another, vertically. Does not work with MSB, LSB and Program
Ramp Pr	=	Ramps Program values
Rand Pr	=	Randomly sets a selected Quantity Program values within a range set by right hand Beg and Qty numbers

When Ramp or Ramp Pr are disabled, the values are updated middle row Qty of times every bottom row times.

Tracks

Individual tracks record data from Keyboard A, Keyboard B, or Guitar. The tracks each have an output KG map selection that decodes the played back notes. Make sure any track KG maps decode their outputs into different output channels, otherwise you will get stuck notes if multiple notes on tracks overlap, and output to the same channels. If they never overlap, there's no problem.

There are default values applied to a song when a New Song is first created from within the File menu:

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

The Track Editor is used to perform the following operations:

- o Work with your songs from the highest level
- o View and manipulate multiple tracks of your song data at once
- o Using the two little tick marks at the top of "Name Width" each track can be individually expanded.

   Note: When tracks are horizontally shrunken, editing moves notes between tracks.

      When tracks are horizontally expanded, editing occurs within the track.

- o View various types of selectable song data
- o Import standard MIDI files into NoteWeaver songs
   or export standard MIDI files to use in other applications

Keyboard Shortcuts:

 When not entering a name in some cell, the following tracks shortcuts can be used:

    "r or R" Starts recording.
    "s or S" Stops recording.

"a or A"(Again) deletes recorded material and starts recording again.

"p or P" Starts playing

"t or T" while recording, every 4 presses of key inserts a new tempo update into the song with 3 time intervals being averaged.

…or assigned Tap Tempo controller from within the Setup window can be used

The Tracks window contains the following controls:

o Start   Displays the current mouse location in Bar, Beat, & Ticks. This item is not editable. It changes as you move the mouse around.

o Length   Adjusts the quantity of Bar, Beats, and Ticks to delete or add to a track using -Time and +Time.

o Edit Qty   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.

o 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.

o 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.

o Big #   Selects this window to display the large 7-segment marker location at the window bottom right.

o Mouse   Sets various mouse pointer operations:

Select (multi-size-squares):

In this section use this to drag a rectangle across events.

See "Editing Unexpanded, Multiple Tracks" and "Editing An Expanded Individual Track" 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 window where the current marker is located when the sequencer is stopped.

Place (pencil):

Places individual note or controller 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 (left tilting diagonal line):

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's at least 1 horizontal count of controller or tempo change.

This means fairly vertical ramps will tend to be filled in and horizontal ramps will have gaps in them.

Delete (X):

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 (vert arrows pointing in and out):

These are used to add time or subtract time (ticks) from a single expanded (wide) track, or all tracks if not used inside an expanded 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.

o 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.

o Shown Events   Rolls through showing note data and controller data.

o X

 Adjusts X axis magnification for all tracks -- sliding or clicking this box left and right increases and decreases the X size.

o Y

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

o < >   Shifts tracks left or right so you can view other (blown up) portions of your song.

o Show Record Notes

During recording this can be disabled for speed.

o Metronome

Starts and stops the Note producing metronome set within the Setup window.

o Standard MIDI File   Import (from within the Files menu)

The default folder for standard MIDI files is:

      ...\Documents\NoteWeaver\Standard MIDI Files\

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 its 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

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 a 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, often each standard MIDI file track uses its own MIDI channel throughout.

o Standard MIDI File   Export (from within the Files menu)

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 compatibility.

o ---controllers--- (two of them)

These are used to edit various controllers, two at a time.

Use the Mouse edit selections to edit these. And it's possible to ramp note velocities of selected rectangles of notes by dragging a rectangle across them and using the Mouse ramp tool. These edits are only possible on expanded tracks.

o Note Data Off (or on)

This displays note map data on expanded tracks. Function, offset, velocity, chord and output channel.

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

o Name Width

At the top of each track the mouse can be moved here, and names can be typed in.

At the top of each track are two little tick marks, separating the "Name Width" section into 3 vertical parts. Clicking and sliding in the left section adjusts the track width to the left.

The middle section expands the track in a balanced fashion, and the right section adjusts the right side.   Note events can only be individually edited within the track if a track is expanded horizontally.

o In / Map Pos

The first setting selects the input source: Kb A, Kb B, or G.

The second label selects the output KG Map the track feeds.

Pos (position):

When tracks are expanded horizontally, extra track width "X", horizontal movement "< >", and note horizontal fill "|....|" controls can be used.

 o 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 Unexpanded, Multiple Tracks

There are two main methods of editing unexpanded tracks:

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

    Copy,   or Paste from the Edit Menu, 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: | 6.3.240 |
| 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.

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. You will need to perform a copy and paste then delete the original data.

2. The second (and best) 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 Rectangle:	Move Vertically
Middle Rectangle:	Move any direction
Bottom Rectangle:	Move Horizontally

Right Mouse Button

Top Rectangle:	Copy Vertically
Middle Rectangle:	Copy any direction
Either Bottom Rectangle:	Copy Horizontally

Editing An Expanded Individual Track

There are two main methods of editing an expanded track:

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

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 an expanded track events, there are 5 sections showing.

   You can then click inside the various sections to perform the following operations:

Left Mouse Button

Top Rectangle: Move Vertically
Middle Rectangle: Move any direction
Either Side Rectangle: Move Horizontally
Bottom Rectangle: Stretch Notes

Right Mouse Button

Top Rectangle: Copy Vertically
Middle Rectangle: Copy any direction
Either Side Rectangle: Copy Horizontally
Bottom Rectangle: Also, Stretch Notes

Editing Expanded Track Controller Events:

There are 5 types of controller information that can be edited from the Tracks window:

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 expanded track 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 Label Color box, which will select a color. This will automatically reset the Mouse grid to "Select." Then position the mouse anywhere on the track and start entering text. There's no need to click the mouse button.

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.

Score

The Score window 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.

Each of the 6 horizontal staffs can display any of the 256 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:

o Time (beats)

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

o Sig(nature)

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

A ote or rest duration equals a single beat:

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

o Key Signature

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

o Tempo

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

o Offset

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

o Transport Control

| < <   =   Jump to Beginning of song
Stop   =   Stops record or playback
Play   =   Begin displaying selected output channels from current marker position
Rec   =   Begin recording

o Display: or Printer:

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

o 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.

o Big #

Selects this window to display the large 7 segment marker location at the window bottom.

o Synth (6 each)

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

o Staff (type x 6)

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

       -     Displays nothing
   Treb   Treble staff only
   TrBa   Treble and bass staffs
   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

o View

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

o Beat Width

Determines the width of each beat.

o Quantize

Determines horizontal resolution of note values.

Play

This window is used as the command center for most real-time operations. The keyboard displays input notes as small colored indicators on the top strip of the keyboard, and the output notes are displayed in the lower sections of the keyboard notes.

Whenever you click on a label with a ? indication prior to it, the program will momentarily switch to the corresponding window for that data. Then, if the mouse isn't moved far, the next click will return to the original Play view. Otherwise, it will open the window for editing and stay there (unless it's already open as a separate window in the first place).

Here's a list of top functional editable boxes as you view the Play window from left to right:

o Functions   Offsets   Chords   Out Chans   Links

These select whatever type of data you want to view on the horizontal keyboard.

--> in front of any label means that quick peeks at those windows are possible by clicking the label and not moving the mouse.

o 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.

o 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

o Big #

Selects this window to display the large 7 segment marker location at the bottom.

o 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.

o Size   Adjusts the size of the keyboard.

o < >   Shifts keyboard left and right.

o Top Port   Selects the current large Synths map table displayed in the bottom right.

                1 2 3 4 5 6 7 8 … g

o Synths Map   Upper right, selects the current Synths Map.

o Kb Map

 Selects the current KG map that's used, and hence whose functions and offsets are displayed on the keyboard.

o Scale Selects the current scale applied to the selected KG map portion.

o Added Transpose

Adds (or subtracts) an additional transpose value onto the final output notes from the transpose set on the KG map layer.

o Shift Scale Position

Shifts the positions of the final output scales. For instance, If you're echoing through a bunch of notes that play through a major scale, it shifts the output notes along the actual scale note set, always remaining in Key. As opposed to the Added

transpose, which shifts the musical Key of the notes to a new Key.

o Layers

    View: Currently viewed layer of the selected Keyboard or Guitar.
     Play: The layers of the currently viewed Keyboard or Guitar portion that play.

o Kb A   Kb B   Guit

Selects if you're working with the Keyboard A, Keyboard B, or Guitar portions of the KG tables.

o 5-7 6-6 Circle

This selects various ways to view the output scale notes and can be edited in real-time.

When 5-7 or 6-6 are displaying, scale notes can be turned on and off by clicking in them. Clicking between 2 notes invert the notes.

When Circle is select, and you click on, between, or inside the inside line divided sections.

       When the dark inside circle is clicked on, all the notes invert.

o Link Delays by Ratio

When the above 5-7 6-6 Circle setting is 5-7 or 6-6, there's room to show what's called a Lambdoma grid of ratios. When simultaneously using Arp and Echo, you can ratio their delays to each other, in real time, so they will track each other.

First choose Arp to Echo, or Echo to Arp, then click a lower ratio.

When Arp to Echo is selected, the Echo delay changes, with the Arp's Del slider and then the Echo delay may be freely changed from there, but they won't track;

When Echo to Arp is selected, the Arp delay changes, with the Echo's Del slider and then the Arp delay may be freely changed from there, but they won't track;

Top Map View

This window displays an upper and lower keyboard that show input notes and output notes.

The center section is used to select various KG maps with the mouse. At any given time, only one KG map is in use by all incoming instruments. However, the current KG map can also switch rapidly during play if the note functions update it.

Here's a list of functional editable boxes as you view the Top Map View window from left to right:

o Keyboard Width Selects the displayed grayed width of the keyboard. This usually defaults to the width selected from within Setup for the specific keyboard input layer used.

o 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.

  o 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

o Big #

 Selects this window to display the large 7 segment marker location at the bottom.

o 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.

- o Size   Adjusts the size of the keyboard.

- o < >   Shifts keyboard left and right.

- o Layers   View: Currently viewed layer of the selected Keyboard

               Play: The layers of the currently viewed Keyboard portion that play.

- o Map Column   Shifts middle maps left and right.

Setup

This documentation assumes you understand how to connect MIDI equipment to your computer. If not, please read the documentation that came with your MIDI interfaces and/or equipment, to familiarize yourself with this topic. Basically, once valid device drivers recognize your equipment, then NoteWeaver will recognize them.

Initially, thereafter, every time the program is booted and the input or output MIDI ports have changed in any way from the last time the program was exited the ports need to be updated from within the Setup window.

The Setup window accomplishes multiple things, including:

- o   "Selected MIDI Input Ports"   "Selected MIDI Output Ports"

To select input and output ports, click the above "Refresh..." label, then click on the grayed list of ports in each list. Do this in the order you intend for the ports to be used in NoteWeaver.

For instance, if you want the 3rd input port listed under System MIDI Input Port(s) to provide possible input channels 1.1 - 1.g, click on this first, and it will list it first under the "Selected MIDI Input Port(s)" label.   For instance, if you want the 4th output port listed to be your first synth used in the Synths   window, click on this first.

o   "Input Instrument Routing and Widths"

Assigns, Kb A, Kb B, and Guitar input port.chans (instruments) to point into the current KG tables and assign keyboard widths to input instrument port.chans so the outlines show in the KG tables and the lower keyboards in these windows are a correct width.

During normal operation incoming MIDI notes choose which of the 128 Keyboard portions of the KG tables to point into. Guitars are another thing, as incoming notes from channels port.b - port.g, 24 notes each point into the guitar portions of the KG tables using 144 notes (6 x 24 notes, ea).

o   "Set KG Map 256 Navigation & Chord Default Values"

KG Map 256 is used for high-speed musical and other program navigation during normal operation. Any pressed musical keyboard note Function that has "nav" assigned to it will throw up a Navigation window at the lower bottom of the main monitor and switch into KG Map 256, displaying many options that may be selected to change various musical and NoteWeaver internal items during a performance.

Using this control updates Map 256 with default values, which may later be changed to your liking.

The right-hand Chords? box resets the first 32 chords (Chord Notes) and their names.

o   Guitar String Values

These are the starting values of the strings for input MIDI guitar controllers

o   Synth Program

…for selecting between used number ranges of 0 - 127 or 1 - 128   Range Selections Same Note Multiple Note-Ons? Also, for determining whether to turn the same note off before a new note-on of the same note value is output. Some synths support multiple note-ons of the same note number, some don't.

o   Function Threshold

Arp, Echo, and Riff functions use the velocity of the note to determine how they operate --
higher velocity, or lower velocity. The Threshold is set here. Usually, a hard press starts the
Echo, for instance, and a soft press ends the Echo.

o   Tap Tempo Timing

During song recording, this controller input (usually a padal) can be used to insert
new tempos into a song. Every 4 taps of the pedal inserts a tempo that is the average
of the 3 intervals between the 4 taps.   Also, "t" or "T" on the computer keyboard
may be used to do the same thing.

o   Metronome

Note, velocity, and output Synth can all be chosen for the metronome that
is enabled and disabled from within the various sequencer windows.
When the metronome is on and the sequencer is running it will click
notes in beat with the current time signature and tempo.

o   Copy Items…   …Into Current File From Last File.

Up on the top of NoteWeaver windows is an indication of the current and last "tables:" and
"songs:" files that are/were used. NoteWeaver doesn't support multiple open songs, or
open data (tables) files, however you can copy chunks of your tables or songs using the
lower right "Click to Copy" << boxes. It just keeps track of the last names of previous files.

KG Function Description

There are many incoming note Functions to choose from. 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 A,
Keyboard B, 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.

The table below indicates the various note functions and how the corresponding data is associated with it.

Often the corresponding data isn't needed. Also, the base of the values, 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.

Symbol	Functions	Offsets	Chords	Out Chans	Base	Reference
-	Do Nothing	-	-	-	-	-
S	Still	Note	Yes	Yes	12	-
I	Interval	+/-Interval	Yes	Yes	12	Yes
P	Parallel (motion)	Relative Note	Yes	Yes	12	-
C	Contrary (motion)	Relative Note	Yes	Yes	12	-
LI	Repeat Last Interval	No	Yes	Yes	-	Yes
QI	Quiet Interval	Yes	-	-	12	Yes
R	Reference	Value	Yes	Yes	12	Yes
QR	Quiet Reference	Value	-	-	12	Yes
Iz	Interval Zone	Start Note	Width	-	12	-
Tz	Toggle Zone	Start Note	Width	-	12	-
M	KG Map	Map	-	-	10	-
+M	Increment KG Map	+/-Incr	-	-	10	-
Sy	Synths Map	Syn Map	-	-	10	-
+Sy	Increment Synths Map	+/-Incr	-	-	10	-
Sc	Set all KG scales same	Scale	-	-	10	-
Sc L	Set 1 Kb A, Kb, B, or G layer	Scale	-	-	10	-
+Sc	Increment all KG scales	+/-Incr	Beg Scale	-	10	-
+scL	Incr 1 KG layer scale	+/-Incr	Beg Scale	-	10	-

Tr	Transpose KG scales the same	Tran	-	-	10	-
Tr L	Transpose 1 scale layer	Tran	-	-	10	-
+Tr	Incr all KG scales	+/-Incr	Beg Scale	-	10	-
+TrL	Incr 1 K,D, or G scale	+/-Incr	Beg Scale	-	10	-
Arp	Arpeggiator	Edited inside arp control area				
Eco	Echo	Edited inside echo control area				
Rif1	1-shot recordable riff	-	-	-	-	-
RifR	Repeating Riff	-	-	-	-	-
Mid	More MIDI	Which Line	-	-	10	-
S Trk	Init song to track	Track	-	-	10	-
Sng +	Play next song note	-	-	-	10	-
Win	Select a new window	Window	-	-	10	-
Nav	Throw up Navigation window	-	-	-	-	-
Lvew	Selects the viewed layer	Layer	-	-	-	-
Lpla	Toggle played layer	Layer	-	-	-	-
NOff	Turn all MIDI notes off	-	-	-	-	-

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 Offset values directly point into KG map layer scale to produce the output note.

I, Interval (notes or chords)

NoteWeaver incorporates a new system where played notes produce jumps, or musical intervals relative to the previous note that was played. Playing a note (or chord if the output type selects one) repeatedly creates steps or jumps up or down from the last note location. These steps, or musical intervals, represent quantities of indexes and are determined by the settings of the Offset tables. Then these indexes get translated by the Scale associated with that layer to produce the final value to send to the Synths tables to generate a note.

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 note 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:

(Assuming a Chromatic scale is used)

Offset Value, Base 12

Semitone Step Qty			Musical Interval
	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

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-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
-40  or  40      P16,  Perfect 2 octaves
            ...etc.
```

On the Synths window 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 may 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.

Note: The Interval Zone function can be set so that the notes always jump inside ranges.

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, assuming a chromatic scale is used for that layer. 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 cris-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 cris-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 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 Chords number that acts as a width, or range value.

When the end of a zone is reached, they wrap back to the beginning +/- the remaining interval value.

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.

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 20 (remember, 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.

Disabling a zone returns to the standard full range non-wrapping interval process. To disable a zone simply press the note again.

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 8 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 function, then Offset sets the beginning note, and Chords 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), Chord = 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.

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 Kb A, Kb B, and G Functions, Offsets, Chords, and Out Chans instantly switches to a new group (KG Map).

It's a 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 window 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.

Sc, Set All KG scales same

Sets all the KG scale layers of the entire map the same using the Offset value.

Sc L, Set one K, D, or G layer scale

Set the current layer KG scale to the Offset value.

+Sc, Increment all KG scales

Increment all layers of the complete KG map using the Offset value.

+Sc L, Increment one Kb A, Kb B, or G layer scale

Increment the current layer of the KG map by the Offset value.

Tr, Transpose KG scales the same

This transposes all the KG lower left transpose values to the same value.

Tr L, Transpose 1 layer

This transposes 1 layer of the current KG map.

+Tr, Increment Transpose

This increments the transposition of the entire map by the Offset value.

+TrL, Increment Transpose 1 Layer

Same as above, but increments the transposition of the current layer by the Offset value.

Arp, Arpeggiator

Arps start and stop using the same Arp function note.

　　A High Velocity press = Starts arpeggiating when other notes are pressed

　　A Low Velocity press = Stops arpeggiating

Note: The velocity threshold is set within the Setup window.

Arpeggiators are linked individually to Keyboard A, Keyboard B, and the Guitar portions of the KG map.

So, if playing through 3 instruments, all 3 Arpeggiators can operate simultaneously.

Each of 256 KG maps has its own independent 3 Arpeggiators with their own settings.

Arpeggiators are effectively placed at the note input side of things.

In NoteWeaver arpeggiators simulate notes played sequentially. As notes are pressed and held down, they sequentially turn a note on, then immediately turn that note off, then the next one on, etc.

They can do this using various modes of operation like Ordered, Up/Down, Up, Down, Random, etc. They can also shift notes by various types of octave amounts, shift through various scales, and select various beats, channels, and repeat each note various times.

If Delay is set to Manual, the first note played starts recording, then pressing Arp with low velocity again starts repeating, which sets the timing for subsequent Arp note cycling.

Eco, Echo

Echos start and stop using the same Eco function note.

When the Echo Del(ay) is initially set to Manual its timing is controlled by the second, low velocity press of the echo key. It records up to that point, then starts repeating the echo. This way super accurate echo delays can be set to coincide with the timing of your song.

If the Echo Del(ay) is initially set to a number, the Echo will start echoing using that timing, upon being triggered with a high velocity Echo note press.

 A High Velocity press = Starts Recording, pressing high velocity again resets and starts recording, again

A Low Velocity press = Starts the ongoing echoing, then another low vel press stops the echo

Note: The velocity threshold is set within the Setup window.

Echos are applied, individually, to Keyboard A, Keyboard B, and the Guitar portions of the KG map.

So, if playing through 3 instruments, all 3 Echos can operate simultaneously.

Each of 256 KG maps has its own independent 3 Echo settings.

Echos are effectively placed at the final note output side of things.

The echo controls operate very much like the above-mentioned arp controls, except at the top right the "tot" time echoed can be set.

Before the echo times out the velocities of the notes ramp to 0.

Rif1, single-shot Riff

High Velocity = Start recording rif (after the currently playing rif times out, it there's one playing)

Low Velocity = Stop recording if currently recording

Pressing this function from scratch starts recording subsequent notes that are played on that layer.

Note: The velocity threshold is set within the Setup window.

Riffs are like mini recorders.

RifR, repeating Riff

High Velocity = Start recording riff (after the currently playing rif times out, it there's one playing)

Low Velocity = Stop recording, or start and stop repeating riff if one is recorded

Note: The velocity threshold is set within the Setup window.

Mid, More MIDI

Three types of additional MIDI commands can be created from scratch inside the Names window in the More MIDI

column to the far right. Using the mid command you can trigger one line (of 256) of these MIDI commands.

They consist of System Exclusive, More Controller routing, and Custom MIDI commands.

S Trk, Init Song To Track

Song notes of a track can be stepped through using Sng+ function. This function resets the song to the beginning of a given track.

Sng +, Play next song note

Multiple keys can be placed side-by-side and song track notes are cycled through by pressing these notes. The current map/layer scales and transposed values are used to play the notes.

Win, Select a new window

This selects new windows to be shown on the screen using the Offset.

Nav, Navigation Window

One way to navigate throughout various settings during real-time play is by selecting this function, which displays a Navigation window as long as the function is pressed. (note, this is the only way to display this window)

What the window does is assign various program navigation colored key notes, multiple occurrences of which can be selected before the Nav key is let up.

Lvew, Selects the viewed layer

Changes the currently viewed KG map layer of from within a window.

Lpla, Toggle played layer dots

Turns on and off layers during real-time-play.

NOff, Notes Off

Sends MIDI All Notes Off commands to all the output synths in use at the current time.

Viewing, Copying, and Editing Controls

NoteWeaver is designed to be exceptionally quick and powerful to navigate, copy internal table values, and edit. Many of the copy and edit operations can simultaneously replicate appropriate data in multiple ways.

Here's a list of some of some possible edit and copy operations available:

  Map Dest   =   Selects a beginning destination map for copying data
  Map View   =   Selects a map for editing or playing and to be the source
                          for KG map copying.

…and here's a list of some of some possible edit and copy operations available:

- o by Columns
- o by Rows
- o by All
- o by White notes
- o by Black notes

- o by Auto incrementing/decrementing up, down,
      or up and down from a location
- o by selectable Layers

And in the case of the synth tables on the Synths and Play windows:

- o by a selectable quantity of synths
- o by every so many synths (like every 4th)
- o by ramping up or down
- o by random values within a certain range

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

Also, various layers of data can be enabled during copy and editing operations, as can 3D group of various types of map information.

Using the middle, above Copy + ++ >Layer box, the + will copy the viewed map into the Dest map, then only bump the Dest map number so that original Viewed map can be copied multiple times.

The ++ bumps both View and Dest maps of data during the map copy operation so ranges of maps can quickly copied. That is, every time the ++ is clicked, or the mouse is slid after selecting ++, both maps will be bumped.

The >Layers copies data from the currently viewed map layer to other various layers of the currently viewed map, depending upon how the left hand "Layer Edit & Copy Replication" layers are selected. The right-hand O dot must be selected for the layer copying to occur.

You can copy various KG map portions using the Copy portion selection at the very top. For instance,

suppose you're in the Keyboard Function window. You can choose the following copy types:

Copy		Dest Copies
Current	=	Only the large grid that's showing
K All	=	The entire Keyboard information:
		Functions, Offsets, Output Types, and Chords
KbA -> KbB Current	=	For quick copying from the Kb A to Kb B portion of the map
KbA -> KbB All	=	Same as above, but copies all the KbA data to KbB
KG Map + Name	=	The entire KG map consisting of Kb A, Kb B, and Guitar data.

This works the same for Keyboard map portions.

The Guitar is similar, but doesn't have KbA -> KbB, or KbB -> K copying ability.

The lower Transpose and Scale values, that pertain to each individual layer of each Kb A, Kb B, and Guit portion of each of the 256 KG maps can also be copied to various other layers and KbA, KbB, or Guit portions of each KG map using the Layer Edit and Copy Replication, also.

Editing Data

Each of the 15 KG windows contains an Update grid. The Offsets windows 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 Offset window

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

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

Keys: Blk & Whi   =   Update black and white keys.

              Black   =   Only update black keys.

              White   = Only update white keys.

If Black or White keys are selected, only those can be edited during mouse clicks.

At the upper right of the Kb A, Kb B, G, and Scales windows there're also controls for shifting data. The top and bottom values are 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.

At the far left there's a control called "Layer Edit & Copy Replication".

With this control you can enable and disable automatic copying of data to all layers for each of the edits you perform. The circle at the right enables, of disables this.

At the far right, there are controls for "8 Layer Fill".

Clicking on the Funct, Offst, Chord, and Chans: labels copies all the table data from layer 1 to all the other layers. You can adjust the Chans: value to "Same", which duplicates the channel for all layers, or By 1 - By 12 to increment the channels for subsequent layers by that increment.

Clicking on Transp and Scale, duplicates Layer 1 Transpose and Scale values to the other 7 layers.

This is useful for quick filling in of the tables.

Templates

To the left, on the Keyboard windows you can select from a few starting templates. They are set up for a 61-note keyboard.

Synths, Chords, and Scales Window Controls

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

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 Synths 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 16 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.

Synth NRPN Controller Information

NRPN means "Non-Registered Parameter Number". Synths often send these MIDI messages out when various knobs or other controls are changed. They end up being (4) 3 byte controller messages that encode 14 bits worth of data: 2 sets for the Number, and 2 sets for the Value.

When Local Control is turned off and NoteWeaver is using a synth as both the input controller and output sound engine, the synth controls don't directly do anything to the sound output, instead they send these NRPN messages to NoteWeaver, and NoteWeaver sends them right back, unchanged, so the controls will work as designed.

I did some calculations, and best case, there's a 4 ms round trip time for each update, and that's not calculating the processor timing at each end.

I own a Prophet 12. I had to go into the Global settings and make sure all the settings were adjusted to send and receive NRPN messages. I was having difficulty getting this to work because I later Googled that the Global menu had to be exited in order for my settings to take effect. Moral of the story: Things can get tricky, getting everything to work as desired.

Other controllers

Also, besides Sustain, Bend, Modulation, and Channel After Touch, which each Synths map directly uses, all other controller routing must be chosen using the large right hand

Synths table, then selected in the middle table. This gives much more versatile control of the ranges, directions, and quantity of the controllers controlled with each controller input knob, slider, etc.

None of these are directly sent back to the synths (like the NRPN messages) until they first get decoded.

Polyphonic After Touch is currently not supported.

Thank you again, and enjoy...