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Published by RedMoon Music - www.RedMoon-Music.com

RedMoon's maxWerk

~ mad scientist's music composing tool ~

Version 8 Users' Guide

Revised June 6, 2009

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Meet maxWerk

maxWerk is a loop-based MIDI composition tool that gets its name from the Max programming language with which it was built. It can give endless musical suggestions, but it also encourages entirely original ideas. Using tracks set up in GS mode, you can work with a set of standardized but editable sounds in a single-device environment, and prioritize the construction of your Werk before becoming preoccupied with sound design and multiple-device mixing. Using normally enabled tracks, you can include up to 16 different devices if you prefer to address a favorite synthesizer setup that suits your creativity. maxWerk lets you experiment as you compose, making changes to various ways of structuring your music without disturbing or changing aspects that you already like. You can produce widely divergent flavors of music in maxWerk without formal training, instrument "chops", or knowledge of music notation.

maxWerk can incorporate your recorded MIDI input to its looping tracks along with generated ideas and on-screen edits. As your maxWerk composition develops, you can create and change any of the following components:

- * A note pattern: one to four bars long, with a selectable number of steps per bar and many available pattern treatments
- * A corresponding velocity pattern, randomized in groups
- * A pattern of octave shifts per step
- * A pattern of wrap steps (octave cutoff points) per step
- * A harmony pattern (several types are available)
- * A mode of note duration (various types), including a random treatment of durations
- * A loop timing offset relative to global bar lines
- * Up to three parallel note lines. You can offset the above elements independently in each one, and you can reassign each to play through any other Basic Loop instrument.
- * A pattern of play direction
- * Patterns of intelligent scalic portamento and/or pitch filtering

- * Two control patterns and pitch bend. Control destinations are freely selectable, and pattern choices include various generated or hand-drawn sweeps, which can retrigger with new notes. You can enter step-synced patterns, and patterns can dynamically creep or randomize.
- * A pattern of progressively mutating the core note-pattern and reverting to the original, with adjustable parameters

Eleven completely independent Basic Loops incorporate all the features listed above. Besides these, there are two dedicated Drum Loop tracks with a pattern generator, and three more special-purpose tracks, for a total of sixteen. Specialized tracks include the Melody engine, the Noodle track, and Improv, maxWerk's eager volunteer. A bonus Idea track merges with any other of your choice.

You can create and store the following kinds of data, which can change with each bar:

- * Patterns of chord (triadic) transposition change
- * Patterns of transposition of an independent fourth chord note
- * Patterns of transposition of a pedal point
- * Patterns of scale change underlying the chord notes
- * Patterns of key change underlying scales and chords
- * Mid-bar changes to any of the data above, placed at any beat of each bar
- * Global key offsets underlying all other transpositions
- * Patterns of track muting
- * Tempo changes
- * Linear or parabolic assignable controller fades for each track

Finally, you can arrange up to eight definable Subsequences (multi-track sections) into one or more full "Werk" arrangements. You can save and copy individual loops, move them around, or import them from a completed and saved Werk or a single-loop file. You can also import nearly all types of information from another saved Werk.

While you are working on progression or song ideas, you can disable Transposer information and use a controller keyboard, your computer's keyboard, or a hardware fader box to "play" maxWerk

modally while you add your own part over the accompanying tracks. Comprehensive shortcuts let you play and Werk effectively using only the computer's QWERTY keys.

You can use external hardware or software as a MIDI clock source or destination. Your finished Werk can follow its Tempo Map or play in a fixed-tempo mode as it records its output to a redorder or to standard midifile for export to a full-featured sequencer. Support for an optional Peavey PC-1600 MIDI controller is included.

What maxWerk Doesn't Do

maxWerk contains no music at all when you begin a new Werk, except for automatic chord arpeggios that help you audition progressions. It is not an auto-accompaniment program with canned patterns! Its huge array of possibilities begins with choices made by you.

maxWerk is not a notation program either, but it saves all the types of information about your composition listed above, and it creates a reference text you can save and print that shows, by bar, useful things to know about the structure of your composition. Although you may choose to use fewer than seven Scale tones (as in the Pentatonic scale, for example), maxWerk does not support scales that have more. However, it does let you store and use up to three customized Scales in each Werk.

maxWerk does not directly produce audio files. Because it deals with MIDI data, a world of possibilities awaits for developing the music you begin with it. maxWerk is not a full-featured sequence production environment, but it can be a partner to your favorite one.

System Requirements

- A Power Macintosh G3 or better with Operating System 8.5 through 9.2, running OMS. See your OMS manual for instructions about how to install this MIDI management system and how to create a studio setup document.

- 40,000K of free RAM
- A MIDI interface
- While a MIDI sound module compatible with the Roland GS standard is highly recommended, you may address multiple polyphonic and multi-timbral synthesizers. Bear in mind that maxWerk allows up to sixteen polyphonic parts, and you are likely to think of uses for all of them!

This fully functional version of maxWerk is freeware, and your comments and feedback are invited.

For the program's proper operation, certain files should remain in the same folder as the “**RedMoon's maxWerk**” application file. These are “**maxWerk_default_setup**”, “**untitled.mWk**”, and the folder titled “**template Werks by meter**”.

I. Concepts and a Tour

It's fine to explore maxWerk without first reading this Guide, by simply entering some notes and playing with its various functions as a voyage of discovery. The material that follows covers almost everything you'll find out this way. Reading through this first section is valuable, however, because it can give a perspective to help you consider and develop your own style or approach to composing complete Werks.

Listed later on are descriptions of maxWerk's typed shortcuts that expand on some of the terms you'll see in the program's Shortcuts reference window. Most window-opening shortcuts are easy to remember because they simply involve the shift key and the first letter of the window name.

Many play functions and parameter settings are not discussed in this section, but you can often easily figure them out. If you have trouble, look for descriptions in the second part of this Guide. If you are used to the composing process, you will find many of the function and parameter labels informative enough. The primary aim of this Guide is to show how even if you have little knowledge of music theory or keyboard playing skill, with maxWerk you can set up ambitious and rewarding experiments in song-design.

1.1 Global Setup

On first launching maxWerk, you will need to modify and save the "maxWerk_default_setup" file that lives in your maxWerk folder. This prepares the program to talk to your synthesizer setup thereafter. When you set tracks to GS mode, which is tailored to one of the range of Roland Sound Canvas modules or other GS-compatible synthesizers, this setup file, among other things, lets maxWerk provide the correct alphabetized patch list for your particular model.

The **maxWerk_default_setup** set of customized, user-created data remains separate from Werk (.mWk-suffixed) song-data files. In the

Global Setup window, which appears when you press the Main Screen "Globals" button, you can enable GS or normal MIDI mode for each OMS device you want to use, and confirm which is to be the target for each of maxWerk's tracks and for your "Noodle" play. maxWerk creates a list of available preset names for GS mode use according to the GS module model parameter setting in this file. You can find the GS mode MIDI channel layout of maxWerk's tracks in the "Werk Files" section near the end of this Guide.

Checkboxes let you transmit or suppress sending and recording to midifile normal **banks/program changes** as well as **GS patches and sound settings**. Other Global Setup parameters include MIDI **clock source** and **clock enable** for driving external devices. You can make **click settings** for the metronome, and there are options to **send transposer notes** to an external device along with MIDI beat clock. You can read about **QWERTY keys** and the **keyboard map mode** settings for MIDI input from your controller at the start of Part II of this Guide, "maxWerk in Depth".

After you have prepared a default or alternative Global Setup with your desired settings, you may wish to reload any Werk file already open in order for the MIDI information it contains to be directed properly to the newly defined setup. A useful trick to know is that the **resend all settings** command under the Utilities menubar heading lets you quickly re-transmit the current Werk's MIDI settings to the currently enabled set of sound-generating devices.

When maxWerk launches it first reads in an untitled (default) Werk template, and then is ready to open any other file of your choice or an alternate template if you wish to change from an eight-count Meter. It routes MIDI thru to the **Noodle** track, which is always dedicated to your live playing. Open the window for this track to make basic settings for the MIDI input from your controller. These settings include an offset for incoming note velocities and an octave shift from center. Optional settings for live play through Noodle allow automatic mod wheel or aftertouch ramping, along with forward or reverse ramping of built-in GS sound shaping messages.

1.2 Menu Items

Whenever you choose **New** from the **File menu**, maxWerk loads an 8-count Meter Werk file of default data called **untitled.mWk**, a copy of which resides in the maxWerk application folder. You should not change this locked file. While it's possible to change the Meter of an existing file, you will find copies of alternative template files in the "**template Werks by meter**" folder that can save you having to make many tedious associated changes. Once you are used to maxWerk, you might wish to use these as a basis for creating your own template files, especially if you find you often use loops longer than one bar. Be sure to rename Werk files you wish to save! It's a good idea to use a sequential numbering scheme to save each update; for example, "TuesdayTune_03". maxWerk automatically appends the suffix **.mWk** when you name your Werk file.

maxWerk doesn't make use of the traditional Macintosh Edit and Windows menus. You should leave "**all windows active**" checked for it to work properly. The **MIDI-thru menu** lets you change the target for input from your controller keyboard to any of the instrument/channels you have assigned to tracks. When the **auto-thru** checkbox in the upper left section of the Main Screen is enabled, MIDI thru will follow each track you visit for editing. At the top of the MIDI-thru menu is a switchable item **ENABLED**, which disables and enables keyboard thru play. However, this does not disable MIDI notes triggered by your computer's QWERTY keys. You can check the state of this function by noting the presence or absence of color in the MIDI indicator LED. When external MIDI input is enabled, you will see a green background against which the LED flashes yellow on incoming MIDI signals. When it is disabled, the LED continues to flash yellow in response to computer keyboard play, but the background color is gray.

The **arp menu** lets you redirect notes from the chord-auditioning Arpeggiator to any pitched-note track other than the default Noodle. Learn more about this feature under "The Transposer".

The **utilities menu** includes a backup trigger for maxWerk's normal **stop play** procedure, which resets several internal functions and

sends a silencing command to all MIDI targets. The second item triggers the **all notes off** message by itself. As a last resort in case of intractable behavior from your GS module, use the item **GS reset** to initialize it. Built into this system exclusive message is a GS command that assigns Channel 11 in addition to the default Channel 10 to Drum Kit instruments. The **reset controls** message addresses all targets using Controller 121. The **resend all settings** command restores your sound generating setup to match all settings and patches, whether saved or unsaved, based on the Global Setup. The next item **realign windows** restores all the default placements, and the last item **Revert to last save** lets you go back to the most recently stored version of your Werk.

The **shortcuts menu** for typed commands lets you show an important reference list. Typing [shift-k] (for "keys") does the same. The Key Shortcuts Reference at the end of this Guide describes each in detail. Since QWERTY keystrokes greatly speed using maxWerk, it's a good idea to refer to this list until reminders are no longer necessary.

The **extras menu** offers **quick mutes**, a handy movable panel for controlling play of multiple tracks manually when Automute is not engaged. Editor window buttons and a key shortcut also bring up Quick Mutes. From the Extras menu, you can also open the **idea** window for on-the-fly midifile recording from your controller keyboard. This window also has access buttons in the Editors. A third menu item brings up the window for a helpful Werk **info-text** you can save as a separate file. Read more about the Idea track in Part II, and about the Info-text in the closing section "Werk Files". The fourth Extras item is **subsequences**, which presents an editor for definable groups of bars that you can arrange to play in any order you like, once the various sections of your Werk are in place. More about Subsequences follows when we discuss Automute.

1.3 The Main Screen

Music is comprised of time segments or measures, and we call ours **bars** for brevity of labeling in the various windows. maxWerk stores

data sets for up to 128 bars. An important first decision in composing is how many eighth-note beats or counts you want in a bar, and your Werk's Meter can be set at 5, 6, 7, 8, 9, 10, 11, or 12 beats. You can make your desired choice in the **meter menu** in the upper left section of the Main Screen, which defaults to 8 eighth-counts. Meter governs the eighth-note click of the metronome, which is provided for guidance as you enter data while listening to your tracks, and which you can switch in and out with a key shortcut. Meter also determines the automatically computed step resolution of two special-purpose tracks. One is the Melody line, and the other is Improv, where maxWerk "expresses itself" given constraints and pointers you impose. We'll cover everything soon enough about how these work, and you'll find that using them comes easily once you have a feel for making looping tracks.

While maxWerk supports only one Meter choice per Werk, tracks based on step numbers that are multiples of six and eight counts are compatible within the same Werk, and may be included in either Meter. In other words, besides steps in multiples of 8, you can choose step numbers of 12, 24, and 48 in an 8-count Werk. Similarly, besides 12, 24, and 48, in a 6-count Werk the number of steps can be 8, 16, or 32. To create a piece that has changes in Meter, you can save a Werk to become a midifile source, change Meter, edit as necessary, and save it again under a new name, so that at a later time you can join together music segments from the midifiles of each. You should take into account that decreasing the number of counts may shorten some loops and Melody lines such that notes may be lost, and increasing the count will of course add empty steps.

Tempo in BPM (beats per minute) is set from a Main Screen **tempo slider**. You can adjust tempo by using key shortcuts as long as you are not in Performance mode, which continuously refers to a Tempo Map. Next to the Tempo slider is the **tempo map button**. The map is described fully in the "Main Settings" section of Part II. Briefly, tempo mapping takes effect when you engage Performance mode and allows a tempo change at each bar. When you open a Werk file, the Tempo setting saved for bar 1 appears as the default.

The round clock status indicator below the Tempo indicator is also a **start/stop button**, though it is easier to use the spacebar to toggle play. Play always starts at the beginning of the bar following the one that was in play at the stop command. To **pause** mid-bar and resume without advancing the bar counter, press [option-spacebar] instead. The clock runs in the background, but the flow of MIDI clock ticks is interrupted. You will see that the start/stop button still shows the clock running. The next press of the spacebar resumes the flow. A key shortcut lets you switch playback from **full tempo** to **half-timed**, so you can consider exact note positions while you edit higher resolution patterns. Half-time play status is indicated next to the **bar counter**.

Below the play-status section of the information panel there is a bank of **function switches**, which are buttons that have handy key shortcut equivalents. These switch-buttons always show their function's status. Important indicators in the lower left section of the Main Screen dynamically display the elements that comprise maxWerk's transposition status: a **key name** from A though G# after any offsets, a **scale name**, the **chord root**, a **pedal point** which may be different, and its **root note number** and **(+)Note number**. The significance of these numbers is explained fully below.

A panel of **window-opening buttons** fills the lower right section of maxWerk's Main Screen. You can use either these buttons or their equivalent key shortcuts depending on what windows are already open. When you open the Melody window and make a Melody Block selection, maxWerk automatically enables the Melody track, as will be shown by its left panel function switch.

A vertical row of blue LED's lies to the left of the **track access buttons** on the Main Screen, opposite sets of **pan and volume knobs** for each. Besides showing track play status, the LED's are also **mute/enable switches** like those in the Quick-Mutes window. A "maxWerk" preset for the Peavey **PC-1600 MIDI controller**, described in detail in Part II, provides additional mute/enable buttons in hardware, along with faders that control track volumes. One PC-1600 fader is reserved to echo the bar-scrolling QWERTY key shortcut.

1.4 Features to Note

A **display lock switch** appears at the bottom of maxWerk's three larger editor screens, the Automute window, the Transposer and the Melody Editor. This feature locks out manual edits to the graphic displays, and is included to prevent errant mouse clicks from damaging data until you are ready to change it. By default, display lock re-activates on file loading, whether you reload a saved Werk file or start with a fresh template. When you change the display lock status from any switch, it affects the behavior of all three windows.

Also shared between the Automute and Transposer windows is a row of **locator buttons** across the top that let you jump easily among important points along your Werk timeline. A nearby button in both windows to **edit locators** lets you customize locator numbers to your needs. Locators are saved with your Werk.

Pairs of arrow-shaped "**go-to**" **bar buttons** appear in several edit windows. Some edit functions take effect beginning at or only on the last "go-to" bar you set. To go to any bar quickly, hold an arrow button, use one of the navigation command keys for bar scrolling, or simply press one of the locator buttons and then fine-tune the bar location. While you are working in the Automute window, you can also use a dedicated clickable navigation strip. After maxWerk has been in play, you can return quickly to the last set "go-to" bar by clicking the dynamic bar number indicator between the two arrows.

1.5 Automute

In order to offer a perspective of a full Werk, we'll jump right away to a preview of **automute** - a function that is normally not used until you have created a few tracks. Then we'll zoom in to the pattern-making level.

maxWerk plays looping patterns on thirteen of its tracks, not counting the Melody track, which we will discuss separately. With Automute active, you can have Basic Loop and Drum tracks either

mute or continue playing as they reach each new bar. The information that controls this is available for editing in the Automute window. The **automute track strips** are essentially horizontal bar graphs of 128 bars each that have a vertical range of 1, so that each track stores a value of 0 or 1 for each bar. Values of 1 appear as colored bars in the strip and 0's are empty. The thirteen fully enabled strips appear entirely filled-in in a new file, for the default state is that all tracks are enabled all the time. Automuting may be enabled or bypassed for all tracks at once by means of a key shortcut. Bear in mind as you create track material that you'll be able to introduce creative track muting and interweaving of patterns into your composition in whatever manner suits your creative style, whether you are a minimalist or a lover of densely tracked music.

The first of the individual Automute **track strip controls** is a check (toggle) box to temporarily mute **GS instrument parts** by means of system exclusive MIDI commands. This offers users of GS mode a handy way to temporarily silence tracks without affecting stored data, allowing the Automute function to remain enabled.

You can always enter Automutes by hand, but two different ways of using the **track label button** make the job of editing across many bars much easier. A single click of the track label brings up a small window where, according to the status of a switch it contains, you can enable or mute all 128 bars of the track at once from any point in the Werk. Double-clicking the track label brings up a **pattern-entry dialog**, where you can enter a binary pattern of ones and zeroes. maxWerk will apply this pattern beginning at the last "go-to" bar.

To give an example, if you enter the pattern **001111** into the dialog presented, it appears in the track strip as a repeating sequence starting from the "go-to" bar all the way to the end. This particular pattern causes two bars of silence followed by a full function cycle. After it plays you'll hear two more bars without this track, and then the play pattern of ones repeats.

The Note Editor's **start style** setting lets you randomize the start bar of any multi-bar pattern to add unpredictability. By default, at

each bar where a track's status switches to enabled, maxWerk resets the loop to its beginning state. For example, if a three-bar pattern is muted after two bars and returns several bars later, it restarts at the head of the loop on being re-enabled without playing the third bar. This default can be overridden per track. It can spoil the effectiveness of some of the available functions to mute patterns prematurely, so when devising Automute patterns keep in mind the number of bars suggested by your chosen play parameters.

On its own in the upper left window corner is a setting to **loop full Werk** for repeats in its entirety, and across the top of the Automute window under the locator buttons are some specialized settings. **Improv setting bar menus** automatically bring in and silence one interlude from maxWerk's bonus strolling musician. Another setting specifies the **end bar** of your Werk, and optionally applies ending bar behavior to all the loops. Read more about end bars under Loop Magic 2.

A set of **"go-to" bar buttons** in the upper left window corner and an equivalent clickable **bar navigation strip** immediately below the track strips facilitate listening to your developing arrangement. At the lower left, an **elapsed time counter** can be enabled to begin showing the time in play at the next starting of the clock. The timer automatically switches off when the clock is stopped.

A **mute edit button** above the bar graphics lets you make several kinds of global track edits. You can **move mutes**, shifting one or all tracks by several bars in either direction. You can also **randomize** or **invert mutes** relative to data present in any other track. Keep in mind that the randomizing function always starts at the "go-to" bar.

Automute has a global **end bar setting**, and a parameter refining the global value for each track appears in the lower panel of the Note Editor. On editing each loop you'll also find a **16ths hold on mute menu** setting that determines the number of sixteenth-note durations the last step plays before automuting cuts notes off. These delayed note-offs do not follow the transpositions of succeeding bars. This feature is designed to allow creative

overlapping of sounds as tracks enter and leave your mix, and, like the settings for end bars, it applies only when Automute is enabled.

Related to Automute and accessible only from the Automute window, **autofade** can lend interest to your mix. Its button brings up a single bar graph display representing all bars of the last edited Basic or Drum Loop track. Autofade's **track-switching menu** does the obvious. Each **track strip** stores one selectable continuous controller value with a range of 0 through 127, sent at the beginning of each bar. The default **assignment menu** setting for all tracks is Expression Controller 11, affording a handy way to mix levels of your arrangement. Autofade is always active along with Automute, and you can creatively layer the two functions. Be aware that when Autofade levels for a track are down you may not be able to hear anything, but notes enabled by Automute are still consuming the available MIDI notes (polyphony) of the target sound-generating device.

The **subsequences** playback arranger is the last one found in the Automute window. It is also accessible as the last item of the Extras menu. When you open the Subsequences window, a map is enabled comprised of eight independently definable groups of in/out bars, labeled A through H. These always play in sequential order starting with the last selected group. Play stops as soon as maxWerk encounters a value 0 as the next starting bar number. A reset restores the starting group selection to A. Since you can define groups that overlap or skip Werk sections of any size, Subsequence mapping can greatly affect the length of your piece.

It is important to note that when the Subsequences window is open, you can use only the A-H group buttons for navigation. The locator buttons, strips, and bar scroll key commands you normally use to navigate through your Werk simply have the effect of disabling Subsequences. The window itself is a function status indicator, and closing it returns maxWerk to normal control and playback behavior.

As you create Subsequence groups, be sure to keep in mind their compatibility with your Werk's patterns of transposition, the in/out bars set for mutating loops, the bars that trigger and end Improv

play, the Melody Block Map, the Tempo Map, and the designated ending bars. Since you can start playback at different manually selected points, you might wish to create and store alternative arrangements for listening or recording.

1.6 Basic Loops

Let's go back to the Main Screen to begin making some looping tracks. A click on the numbered panel button for any track opens the **note editor** window, as does a key shortcut. The **enable indicator LED/button** at the bottom of the Note Editor shows the play status of the loop you are editing. If Automute is enabled and this track is currently muted, maxWerk suspends muting temporarily (in other words, enables the track) for as long the Note Editor is open.

At the top of the window, the **loop length selectors** and the **step number menu** set the number of bars for the currently edited loop and its event resolution. The length of a Basic or Drum Loop before any changes in play direction occur can be from one to four bars. In order to keep track of what is going in a multi-track Werk and to edit loops more easily, it is a good idea not to overdo the total number of steps; that is, the steps per bar menu selection multiplied by the number of bars. Instead, think of maxWerk as an analog-style step sequencer. Step-entering notes to match a previously stored midifile motif may sometimes call for a higher step resolution so that the results can reflect as well as possible the timing of the original. (There are window buttons and key shortcuts that make doing so easy. We'll talk about them later under "Keyboard Entry".)

Each Meter offers several levels of step resolution, and as we previously mentioned, step number choices for 6 and 8 count Meters are interchangeable. If you pick a number of steps that is not an even multiple of Meter count, a dialog appears reminding you of the choices that work. If the total steps are allowed to remain out of sync with bar starts on play-through, the resulting repetition of beginning steps and/or skipping of end steps will cause confusing track behavior. Read on to discover maxWerk's much better approaches to shifting loops creatively.

If you are unfamiliar with music theory, the first of the four sections of bar graph data in the Note Editor, the nine-value **notes display**, offers a fundamental maxWerk concept. Here is where you can begin making musical patterns, using as your components the seven pitches found in most western musical scales, represented by values 1 through 7. As you might expect, a value of 0 represents a rest or silence. When you enter a number 0 through 7 on the computer's QWERTY keyboard, or play back a set of numbers that you store for each bar, maxWerk transposes all the patterns made in the note displays to play over any of the seven different triadic chords or positions in the current Scale. This means that you should view the patterns you enter in the Note Editor as patterns of relationship between pitches, not as representations of fixed ones.

Value 8 in note patterns is a symbol for a pitch that is also variable, but less obvious. In order to allow musically sophisticated leading tones that are not part of the current chord triad, 8's trigger notes (again, either stored or played live) from a transposition engine that is separate and independent of the one triggered by values 1 through 7. Although a step 8 gives the impression of being "larger" than the other display values because its vertical bar is longer, the Scale pitch value that it represents can in fact change with each chord, and it is always mapped to correspond to one of the other seven. Value 8 together with a 1, 3, and 5 sounds a four-note chord.

If the description above was hard to follow, don't worry about it now. With transposing disabled, simply enter some notes (perhaps a stair-stepping pattern), leaving out 8-steps until we get to "The Transposer". With maxWerk in play, try out the key shortcuts that make triadic transpositions happen. Do some experimenting with patterns that contain mostly 1's, 3's, 5's and 0's (rests) to experience first-hand a sense of this explanation. It's maxWerk's job to make your patterns sound pleasing and musically useful!

A nine-value **velocities display**, the second in the Note Editor, has a range of 0 through 8, and produces values from 0 through 127. To accomplish this, steps 1 through 7 trigger values that maxWerk randomizes at the start of each bar within subgroups of 16, while

value 8 triggers a constant value of 127. As an example, a velocity entered as value 7 actually floats around somewhere between 112 and 127 as repetitions progress, but value 8 is always the maximum 127, and the minimum value 0 is always velocity zero. The amount of offset itself rotates dynamically between all tracks at each bar.

When the **velocities menu** in the lower panel is set to **normal**, the relationship of velocities to notes is always just as depicted in the displays. Velocities that **cycle** become offset in time relative to notes by one increment with the start of each new loop. This creates a variable note-gating effect when 0-values are encountered in the notes pattern or the velocities pattern. In other words, you can devise an interaction of arpeggiating notes lined up with velocities such that a pitch pattern kicks in and out. Velocities that **rotate** respect existing rests, but with each loop cycle values 1-8 increment and wrap around and can be used to fade a loop in and out. Try the **2 ways** setting that activates both functions at once!

The data in the **octaves display**, the third of the set, defaults to a value of 4. This initially places all the notes you enter into the octave that includes middle C. While maxWerk stores Basic Loop pitch information in the default middle sound range, the notes' octaves shift according to changing data that comes from this set. Octave values range from 0 through 8, and they are read on a per-step basis just like note and velocity data. Thus by making patterns of octave steps, you can easily construct wide-ranging arpeggio loops.

You can also specify for each step an octave cutoff point, or the Scale step above which maxWerk will bump down by one octave the result of any transpositions, so that you can keep loop notes in a desired range. This is a function of values in the fourth and last Editor graphic, the **wrap steps display**. You can hear the effects of wrap values only when your loop is playing over changing triadic transpositions. When you set any or all wrap steps to value 0, maxWerk uses a random wrap step value that changes once per bar. Value 8 makes it use the current (+)Note value as wrap step. A repeating figure takes on craziness with creative octave wrapping.

Dedicated **display reset controls** that combine value menus with quick refresh buttons set all note, velocity, octave, or wrap steps to the desired value at once. Above the octaves display, the **controller THRU menu** mirrors the Noodle track window's **octave offset** setting, for quickly shifting incoming notes from your MIDI controller.

To spark your imagination, we'll describe a few play options in the Note Editor before going on to a taste of heavier stuff. The **step-cycle menus** at the top let you shorten the pattern by skipping end steps, or you can rotate or randomize on each pass the step counted as 1. In the lower panel, the **direction menu** determines whether it plays **forward**, **backward**, or **reversing**. Reversing play causes a pendulum-like readout of steps, repeating the beginning and end values and effectively doubling the loop length.

The fourth menu item **inverted** is not strictly a variant of direction. This option plays all data in a forward direction, but applies a note-mapping function (before transposing) that reverses the order of step values 1-7. Pitches assigned to step value 8 are unchanged, as are the original note durations that give the loop its rhythmic feel. The fifth play direction on offer is **random**, which is followed by **pingpong** and two variations of this pattern, **alt pingpong** and **rdm pingpong**. Pingpong plays the first step, then the last, the second, the next-to-last, and so on, working toward the middle of the displayed pattern. The 'alt' variation begins with normal forward play, makes a pingpong pass, plays normally again, and on the next pingpong pass begins at the middle. Randomized pingpong behavior is mixed in with normally played iterations for the last menu option.

With the **note trigger mode menu** set to its default first item **play changes**, a note sounds until another of a different value replaces it, or until it is given a companion velocity of 0. Each changed note triggers a note-off of the last, and by default uses the velocity, octave, and wrap data at the same step number. A note value of 0 turns the last note off, whatever the velocity at that time.

When you choose the second item **play all steps**, maxWerk triggers a new note at each non-zero step in a robotic manner after

the manner of older analog hardware step sequencers, regardless of the changing state of note values or step resolution.

Items 3 and 4 are **1 random retrigger** and **multiple random retriggers**. At these settings, note values of zero produce note-offs as always, but repeating values 1 through 8, which tie notes in play-changes mode, now trigger new notes randomly, so that each repetition of the pitch pattern is given a degree of unpredictable rhythmic interest.

Combination modes of play follow as sets of **alt1** and **alt2 filters**, each paired with **changes**, **all-steps**, **1 retrigger**, and **multiple retrigger** variations. Alt1 and Alt2 differ only in their switched state on starting. These settings remove passing tones on alternate passes of the loop. Therefore this effect can be heard only when the entered note pattern contains even-numbered values (Scale steps), not just triadic tones. Note filtering is an effective and entertaining function when applied to busier loops with many passing tones.

The last menu item is **strum note-groups**. In this mode, maxWerk will trigger and sustain adjacent note clusters until just before the next mid-bar point or bar line. A note value 0 cuts notes off sooner.

To the right of the mode menu is a color-changing **gate time slider** which, set to its default value of 0, is effectively disabled. You can randomize gate times or store a setting shorter than a full step, though with coarse resolution, when step resolution is high. Read about gating possibilities under "Loop Magic 1" in Part II.

Below the four graphic displays are various additional controls to **generate patterns**, to **add offset note lines** with a variety of parameters, and to direct these lines to other tracks. Perhaps maxWerk's most useful features, these are also covered in detail in Part II, but the basics can be fun to discover through your own experiments. Note the **quick mutes** window button and the handy **audition controls** in the Offset Note Lines panel, which help to keep you oriented and clear about what's going on in the edit loop.

It doesn't take much doing to make a set of interesting loops that form the basis for a Werk. You might feel like creating a swarm of crazed pianos at first, but remember that you can achieve the most useful results by applying just one or two functions to a simple pattern of a few notes. Try making loops that pair complex controller patterns (more on these follows) with simple, sustained pads. Simpler note patterns are best if you intend your final MIDI tracks to play synth patches that have a lot of programmed movement.

In the Note Editor's lower panel, you can give your loop a **track name** of up to 12 characters. Newly assigned track names always update the track lists displayed in the Global Setup window as well as the track labels in Automute, the Copy/Import window's source and destination menus, and a recap of Werk information called Info-text. You can visit the **Copy/Import** window to mix and match loop data between Werks in any manner you please.

1.7 Drum Loops

The Editor for the two Drum Loops lacks some of the features of Basic Loops, but has tricks of its own. It displays a range of note numbers compatible with GS drums, but you can set an offset if necessary to trigger the sounds in a non-GS device. When you hold down one of the **test buttons**, you'll hear repeating beats of the last selected kit instrument, and you can rotate up or down through the kit with button presses. An **enter button** lets you record a beat selected via the **note slider** to the right of the Drum notes display coordinating with a **placement guide strip**. A set of **beat generator controls** lets you randomly drop a selectable number of hits into the remaining available steps. The **undo button** removes all beats at the last-selected note number, so that maxWerk can place them again differently until you like your groove. To learn more about looping percussion, see "Deeper Drums" in Part II.

1.8 Controllers

In maxWerk's **control A**, **control B**, and **bend windows** you can add two different controller patterns to each loop as well as pitch

bend messages. There are three play modes to choose from for each: one called **96** for control sweeps, one called **trig**, and one called **sync**. By default, maxWerk sends Control and Bend MIDI messages at a rate of 96 steps per loop, whatever the loop length. **Trig** creates the densest control data, as each changed note of more than one step generates a controller pattern modified and interpolated as necessary to fit into its allotted time duration. **Sync** mode pairs each Note Editor step with a single accompanying message of your choice for controller, bend, or GS sound-shaping, sending values just ahead of note information to create distinct rhythmic changes or stepped effects.

The Control and Bend windows differ from the main Note Editor in that once you enter values, to make them transmit, you must enable MIDI output via the **activation menu** in the right margin of the display. This lets you block and unblock controller and bend effects while you consider patch selections. You can invert transmitted values here too, and maxWerk remembers the last activation setting.

It's best not to move Controller and Bend windows. They open positioned over the Note Editor on your computer screen, so you can conveniently compare their patterns against your pattern of notes. While you can draw in values by hand, both Control Editors and the Bend Editor offer **generated patterns** of sawtooth, sine, pulse, triangle, or either of two parabolic curves. You can auto-generate one to four **cycles** of any of these waveforms, and you can **compress** values on entry. As an alternative approach, you can quickly generate repeating sequences by entering one instance of the desired set beginning at step 1. Press the button labeled **repeat a series**, and enter the number of steps to be repeated into the dialog box presented. You'll find the same function available for each of the displays in the Note and Drum Editor windows.

You can shift entered values up or down all at once by using the vertical **arrow buttons** to the right of the displays. When you adjust patterns vertically, values 0-127 all wrap around in the display. Instead of a function to horizontally rotate displayed values, there is a control to set the **starting step** of the displayed sequence. Finally,

using the **direction options menu** you can have the readout of controller values follow or ignore any loop play direction changes set in the Note Editor.

The **randomize/latch** button always engages step-sync mode. When you use the randomizing function, maxWerk generates a single set of step-synced random values that you can keep or edit. When you check the **random-latch** checkbox, maxWerk generates a new set of step values each time the loop repeats. This dynamic sample-and-hold style function is particularly interesting when you apply it to filter cutoff, resonance or pitch bend. If you use the latching checkbox, there is no need to enter a starting pattern because maxWerk creates a new one at the start of each loop. The window's step mode indicator changes to read **rdm**, but since these patterns are not editable, the changing sets of values don't appear in the display. Part II describes in detail these and more features of the Control A, Control B, and Bend Editors.

1.9 The Transposer

The **transposer** comprises maxWerk's pitch-filtering system. Your Werk can change Key and Scale automatically twice per bar as it makes modal chord changes within Key and Scale. As a bonus, while maxWerk is in play and the Transposer is transforming stored patterns, your MIDI keyboard re-maps itself according to Key and Scale as you play. To competently noodle a live line over tracks, you can simply devise pleasing patterns on the white keys.

The Transposer has horizontally-oriented bar-graph displays of five different bar and mid-bar data sets for all 128 bars, along with a clickable **audition strip**. Values may also be entered using the **chord map** and **chord menu** windows, which are accessed through buttons along the bottom edge of the Transposer, and will be introduced shortly.

Yet another data set that affects transpositions underlies the five graphically displayed sets, and has a simpler display. It comes from the **global offset map**, accessed through a button at the top of the

Transposer window. Here you can shift the base pitch of your Werk along with your MIDI controller's input up or down by chromatic semitones, up or down from the default **key signature C** (value 3). This allows you to create overall shifts in the mood of your piece by inserting further offsets once all other patterns are in place. Along with the graphically displayed Transposer values, they work behind the scenes to arrive at the Key root names you see shown on the Main Screen and the information supplied to the Info-text. Unlike other Transposer elements that can be disabled, Global Offsets are always in effect.

To make the clearest explanation of the displayed data types, we'll describe them out of order, starting with the fourth of five tall, horizontally-oriented columnar bar graphs in the Transposer window, which may be scrolled together to reach bar 128.

keys - Transposing Keys cover the twelve chromatic semitones of the western octave. Values 0 through 11 determine the base pitch for the musical Scale in use. These pitches, summed with Global Offsets, determine the chord roots shown on the Main Screen. Their combined I-chord result tells the "key signature" as in conventionally notated music, with the difference that in maxWerk each bar line and mid-bar is tagged with its own Transposing Key number, and each bar line has its own Global Offset. You may wish to change Key only once or twice during your song for emotional effect, or you may wish to let maxWerk automatically change Key values many times to give your musical patterns complex chord progressions. You may elect not to use changing Transposing Key information at all if you are taking a modal approach to your Werk. Of course, you can experiment all you want with one data set without damaging the others.

scales - The Scale values in the third graph determine at each bar line or mid-bar the selection of seven pitches out of twelve that will be triggered by the note values entered in maxWerk. These values take effect after Key data, but before any further transposing you may do in the remaining two displays. Scales, also called modes, are given values 0 through 11 in the display. They include the seven traditional or "church" modes at 1 through 7. These have the

familiar names Natural-Minor (Aeolian), Diminished (Locrian), Major (Ionian, the default Scale), Dorian, Phrygian, Lydian, and Mixolydian. Harmonic-Minor and Melodic-Minor scales are assigned values 8 and 9.

Three definable **user scales** at values 10 through 12 may be saved with each Werk. In the Scales window, you can pick these from a menu of additional preset scales that includes Blues, Pentatonics, and other variants.

You can edit the User pitch sets to make other Scales or to support a special chord such as a Suspended. As you may know, differences between scales have to do with the patterns of whole and half step intervals between the notes of each set. While maxWerk has memorized the best known and most harmonically useful interval patterns for you, the three **user scales** let you order and repeat their seven pitches however you please.

With the transposing function disabled, you can test the sounds of various Scales from the **scales** window before you enter new Transposer values. If you want to base all your Werk's patterns on one particular Scale, be aware that the preset Scales at values 10 through 12 may not produce normal Major, Minor, Diminished or Augmented triads on all their root notes, and instead you may hear some quirky chords. If you are new to music theory, bear with us a minute about this, and you'll find out how maxWerk can play many helpful changes for you.

triad roots – The values for Triad Roots and (+)Notes you see in the first two bar graphs determine the degree of transposition within Key and Scale that maxWerk applies to Note Editor values. The pattern of Triad Root shifting from bar to bar creates a scalic or modal chord progression all by itself. Consider a Basic Loop note line that includes values 1, 3, and 5. A Triad Root transposition of 1 makes those values trigger Scale notes in positions of the same number, so if the default Key is C and the Scale is Major, as 1's, 3's, and 5's are played, you hear the tonic, third, and fifth pitches, or notes C, E, and G.

If we hear a note line (along with any notes on other enabled tracks) based on a Triad Root of C, and the pattern's Triad Root then shifts to 5, the note value at position 1 now triggers the fifth note of the current Scale. Value 3 now refers to the third above that, and so on; so that 1, 3, and 5 values now sound the pitches of the triad found at step 5 of the Scale. As a result, we hear G Major produced by values 1, 3, and 5. If the transposition changes again to 7, the pitches move to the seventh triad (the diminished in the Major Scale). Each transposition gives us a valid triad on 1, 3, and 5, and values 2, 4, 6, and 7, when and if they appear in the Note Editor, sound the passing tones.

When you disable playback of Transposer data, the numeric keypad keys 1 through 7 make the same kind of Triad Root changes over patterns. Be sure you disable the Transposer before you try out real-time transposing. Otherwise, you will find the stored values overriding your input as they are read out. As we have learned, pressing the spacebar toggles the timing engine to stop and start play. You can stop and reset the whole Werk with the left arrow key, at the same time restoring both forms of scalic transposition to their default value 1.

Both forms? Yes, another of the displayed transposition types is also scalic, and is derived from the data you see in the second bar graph in the Transposer window. It operates in tandem with the transposition of Triad Root values.

(+)notes - The word **(+)note** is pronounced as “plus-note” or “added-note”, and is maxWerk's term for a fourth chordal tone added to one of the simple triads. The second Transposer display specifies the variable Scale step you hear whenever maxWerk encounters a value of 8 in the Note Editor. It lets you add a fourth pitch to the Scale triad created by values 1, 3, and 5 to create different qualities of chords. A Triad Root 1 chord might have a 9th added to it (the second Scale pitch) by means of a (+)Note transposition of 2 at the edit point in question. If the Triad Root value in display 1 stays the same, but the new change has a (+)Note value of 6, we hear the same triad with an added sixth (an A if we're using the C Major Scale) wherever a pattern value appears

at 8. When you first experiment with this, you will notice that the seven possible (+)Notes follow (i.e. are shifted to match) the Triad Roots when you press keys 1 through 7, but they change independently when you press the keys labeled Q-W-E-R-T-Y-U. If you are Working within a certain Scale, that is to say, modally, you can leave (+)Notes alone, or you can use them to make a slow melody, devoting a pattern or pad to heavily feature value 8, and using Triad Root transpositions to highlight this independent chordal movement. This approach to making music produces chords that make sense musically in modal composing and work in any traditional scale, but do not include any "outside" tones. In order to complicate matters, read on!

pedal points - The fifth bar graph stores information that any Basic Loop can use at your option. Its effect is heard only when you have set a loop's transposing behavior to listen for it. You can assign any note out of the twelve chromatic pitches to accompany the chord generated by each bar and mid-bar data set. In enabled tracks, this pitch is dynamically substituted for the Key root that is normally triggered by note pattern value 1. The other chordal tones remain unchanged. Pedal point substitutions are often heard in the bass lines of popular music. However, here they are chromatically analogous to the optional scalic (+)Notes. They need not be thought of as belonging to any particular type of part, and you are invited to use these tonic substitutions however you wish in your Werk.

To become acquainted with Transposer behavior, try using the Transposer window bar graphs to create chord change sequences. You don't need to use all of them at once; triadic rotation is not necessary if you are making changes to Scale and Key, but (+)Notes are always a helpful enhancement. Keep in mind that two successive sets of information are stored for each chord, one triggered at the bar line and one triggered by a separately programmable mid-bar change count. All four sets interact, so if you are using triadic transposing within a Scale or mode, you should begin with the rest at default values. Similarly, you should default all Triad Roots to 1 if you are making changes to Key and Scale.

Triggered by mouse clicks that change any display values, the **arpeggiator** reports the combined information from all four sets as long as maxWerk is not in play, beginning with the Pedal Point as its lowest note. When you edit or audition the second set of any bar's data, you will hear both sets arpeggiated in quick succession. This serves to confirm your selection point and remind you of the chordal difference. Look for the button labeled **arp settings**, located in the top right corner of the Transposer window, if you wish to fine-tune the play style of the arpeggiator or switch it off altogether.

To the right of the five Transposer displays, a chaser bar moves down the screen to follow the timeline of your Werk. When play is stopped, you can click on the vertical audition strip beside it to hear arpeggios of stored chord information without changing it.

Along the bottom of the Transposer, there are buttons to bring up **chord menu** and **chord map** windows to supplement the main graphics with shortcuts. In the Chord Menu, you can choose from roots arranged in the Circle of Fifths, and press buttons to hear various chord qualities and Pedal Points arpeggiated as you consider them for entry. The starting Key stored for your Werk always appears at the top of the Circle to help you think about chord progressions around it. Both windows have chord entry buttons and key shortcut reminders so you can quickly store Scale, Key, and Pedal Point choices to the Transposer bar graphs.

The Chord Menu's helpful companion is the **chord map**, a music theory-based transposing tool. This alternate interface acts as an editor for any eight bar sub-group, always starting at the current "go-to" bar. It has a set of bar scroll buttons and eight bar/mid-bar pairs of **entry point buttons** that dynamically change their numeric labels to show the editable set. The Chord Map has been adapted by permission from instructional graphics presented by Steve Mugglin at his website "Music Theory for Songwriters". This branching, tree-like diagram of interconnected chord names becomes an active button panel in maxWerk, designed to let the composer explore and create pleasing progressions. They cover a full range of four-note tone sets, some including Pedal Points as alternate bass notes. The **chord buttons** in the Chord Map window

also trigger the Arpeggiator, letting you audition and arrange preset chords for easy entry.

Along the lower edge of the Chord Map window is a chaser bar for the eight-bar set that changes color to remind you when the bar currently in play has moved out of the set shown in the window. Above it, the pairs of bar/mid-bar **audition/select buttons** for the eight displayed bars sound the arpeggiator when maxWerk is not in play. Clicking in the **silent selector strip** immediately above lets you set edit points in without the arpeggiator's feedback.

If you work for a while within one Scale, you will notice that you can add complexity to progressions by layering (+)Note variations and Pedal Points to taste. When you use the Chord Menu or Chord Map, the chord buttons achieve the same kinds of results simple Triad Root editing does, and more, by triggering combinations of Scales and Keys that use the Major Scale as "home" for their resolution. Some complex chords require changes to several transposition types at once. The Menu and Map allow progressions that digress from purely scalar pitches because the variations that use non-scale notes are brought about by changes to Key, Scale, and (+)Note values over a fixed Triad Root value of 1. Of course, you can transition between these two approaches to transposing in the same Werk, but there is no advantage to layering them.

When the clock is stopped, using the audition/select buttons you can review the chords you have entered in the 8-bar group shown. With a press of the **tab key**, the edit-ready point moves forward among bar line and mid-bar changes. Press the **accent key** immediately above it or the on-screen **entry button** to record your last Chord Menu or Chord Map selection at a bar line or mid-bar point. A switch enables **bar hold**, a specialized triggering function that temporarily disables the Arpeggiator and lets you play the current bar of your Werk repeatedly when you click any chord button. Alternatively, you can select and loop any stored chord from the Map's audition button row. Stop play with the spacebar as usual. When you disable bar hold, the Arpeggiator works again.

Mid-bar changes are copied, pasted, and stored along with the rest. By default you'll hear stored mid-bar changes happen on the middle beat of odd Meters; for example, at beat 3 of a 5-count Werk, but you can set the timing for a mid-bar change independently for every bar. The main Transposer and the Chord Map windows have an **edit mid-bar count** button that opens a small window where the beat number that triggers the mid-bar change for any bar can be adjusted.

A **shift/expand** button below the Transposer graphics provides practical editing help. You can choose any data type, define a group of bars, and rotate stored values all at once. The expand function stretches stored chords to twice the original number of bars. The **copy/file** button in the main Transposer and Chord Map windows lets you take values for any number of Transposer bars, along with their mid-bar counts, and apply them elsewhere in the Transposer. You can also save a transpositions-only data file for later import to any bar number. It's advisable to name your saved Chord files with a reminder as to how many bars they include. Chord file names have no extension. They will only load from this window, and should not be confused with a full Werk file.

To focus on editing a particular section of your Werk, there is a key shortcut to temporarily **loop bars**. A button equivalent is found in most windows including the Transposer. They bring up a dialog to enter the number of bars to loop and to specify any starting bar in the 128-bar piece. With a subsequent press of the command key, this section-looping function switches off and linear play is restored. maxWerk reports its current play mode as linear or looping just below the bar counter on the Main Screen.

To summarize the most important points about the Transposer, this aspect of maxWerk lets you build music using up to two chords in a bar that consist of up to four pitches, while referencing the passing tones of dynamically changing information patterns you have arranged in your Werk. You can arrive at exotic chord sequences for your looping patterns by layering changes to the various forms of transposition, without the challenge of having to play the required notes consistently and correctly on your MIDI keyboard.

If this seems like a lot to stay on top of, let's outline the possibilities of composing purely by trial-and-error, using manual scalar rotations from the computer's QWERTY keys. Transpositions can trigger Arpeggiator feedback if maxWerk is stopped, or alter the patterns currently in play. To trigger simple Triad Root transpositions along with a matching (+)Note, use the numeric keypad or the number keys 1-2-3-4-5-6-7 in the top row. The Arpeggiator strums chordal tones over two octaves on key presses and key releases, and the tones when you press and release these keys are the same. Press one of the keys Q-W-E-R-T-Y-U, which represent only (+)Notes 1 through 7, and the (+)Note transposes independently from the last value transmitted by the press of a number key. Release the (+)Note key, and the (+)Note defaults. In other words, maxWerk applies the step value matching the last Triad Root.

With the transpose function disabled and stored data bypassed, you can trigger (+)Notes from the Q-W-E-R-T-Y-U keys just after you trigger Triad Roots from the number keys, for harmonious arpeggiated chord changes. You can also do this while listening to your entered patterns with the Transposer disabled and maxWerk in play. When maxWerk is not playing, the Transposer's Arpeggiator switch or a key shortcut turns off the chord-strum if you don't want to hear it.

The up and down keyboard arrows shift the Transposing Key (not the Global Offset) by half steps, and the lower left section of the Main Screen always shows you the current Triad Root, (+)Note, Scale, and Key, and any Global Offset amount in effect.

With the Transpose function disabled, you can make changes of Scale by means of the buttons in the Scales window if you wish. Because of the tight timing required to do this with maxWerk running, we don't recommend trying to manually shift everything at once to give a live MIDI-driven performance. As long as maxWerk sends note patterns, you may as well let it handle Transposer patterns too while you add a lead part played live.

We have seen now that an underlying principle of maxWerk is to let you build songs in a premeditated or serendipity-driven combination

of any or all transposition types, slipping in a new set of changes whenever you please, with any or all types taking effect at once. It lets you deal separately and independently with loop-making, Automute, Melody, and Improv functions.

Notice that you can enable playback of all stored data types at once by means of the single key shortcut or the Main Screen's button that engages **performance mode**. This shortcut effectively locks out any further changes, but it allows Noodle play. maxWerk's internal sequencer can be told to activate Performance mode and initiate a fully automated play-through of your Werk as it records a standard midifile. Alternatively, you can record manually beginning at any bar number, after activating only the functions you want to include in the saved midifile.

1.10 Melody

Composition in the maxWerk environment can begin just as easily with an idea for a tune as with a sequence of looping notes or a chord progression. If you use the traditional songwriters' approach, melody and transposition data that you develop first can provide a structure that inspires supporting Basic Loops. The best way to discover maxWerk's **melody editor** is by walking through some melody-making behavior. You will see by the status buttons on the Main Screen that opening the Melody window automatically enables Melody play. The Melody track draws from up to five four-bar Blocks. Each of these can originate from notes you enter directly into the main Editor, or you can build a Block from a seed Phrase.

You can hand-enter, auto-generate, or key in one of five two-bar seed **phrases** in a window opened through the Melody Editor. Step resolution per bar is set automatically to 16th-notes totaling twice your Werk's Meter count. Melody notes have a two-octave range before transposing, and the range covered after transposing can be narrowed in the Melody Sound window. You can ask each Block to follow the Transposer or remain constant relative to the other tracks, and you can set each of the five Blocks to its own time base.

maxWerk continuously loops the last Block you select by a key shortcut or a Phrase window button-press. While a two-octave note range is represented, entered note values do not necessarily represent definitive pitches unless you disable Block transposing. By default, they behave like the values in the Basic Loops' Note Editor in that they initially represent starting Scale note positions without any transposing. Their played pitches are determined by stored Transposer data or by value-changing real-time key presses.

To explore Phrases, press a numbered window-access button. Before entering any notes, you will need to unlock the round data-protecting **block lock switch** of the corresponding Block. These are marked with an **L**, and are located to the right of each Block in the main Melody Editor. They appear again in the right margin of the Phrase window. In the lower part of the Phrase window, **play-pattern menus** offer choices for **pitch order direction** and for **chordal tone variation** applied to the values in the two-bar Phrase. maxWerk applies both pattern types to two copies of your Phrase and stores them sequentially in the main Editor, where they comprise a four-bar Block.

We will describe these full Phrase treatments shortly, but for now, let's look at Phrase-making functions, letting stand the default symbols **--> -->** in the first play pattern menu, which indicate no changes in pitch order direction, and **off off** in the second menu, meaning no tone variation. Add some notes into the first bar of the Phrase, and you will see them transfer automatically into a small non-editable representation of the main Editor's display of the full Block. Located just below the Phrase display, this is labeled **block view**. Your two-bar note pattern appears identically twice, reflecting the state of the main Melody Editor that lies beneath this window.

A set of **edit bar 2 buttons** labeled **repeat**, **reverse pitch order**, and **variation**, along with a **shift only** switch and arrow-buttons to shift the second bar alone, let you fill the second bar of your Phrase with a pattern different from, but related to, the first bar. With every new Phrase edit, the full Block refreshes its values according to the currently imposed patterns of pitch order direction and variation, changing in two corresponding places to reflect your input. By

selecting items from the play-pattern menu for whole phrases, you can superimpose some of the functions of the Bar 2 editing set onto the pair of two-bar Phrases in the longer context of a Block. The menu choices for pitch order direction appear as follows:

--> -->
--> <--
<-- <--
<-- -->

To give an example of their use, the second menu choice --> <-- signifies that when bars 3 and 4 of the four-bar Block repeat the seed Phrase, a contrasting pitch order direction is imposed and layered over any pre-existing edits. This function is notably different from the "reversing" direction option found in Basic Loops, in which the original step sequence is simply read backwards. Here, the pitch order reverses but the original pattern of note durations and rests is preserved for a melodically more useful result.

The menu for chordal tone variation offers these choices:

off off
off var
var var
var off

When you choose the second menu item, for example, which reads **off var**, the word "**off**" tells you that the Phrase's chordal tones remain as originally entered in the first half of the Block, or bars 1 and 2. In Block View you will see that because "**var**" is in effect, bars 3 and 4 have changed, and now Scale note positions...

1-2-3-4-5-6-7...are inverted to

1-6-5-4-3-2-7

...in the second expression of the Phrase This creates a pleasing and harmonically compatible alternate figure as thirds and fifths swap along with their passing tones, while the tonic, fourths and any

seventh steps remain the same. Another notable difference here is that this type of tonal inversion around a mid-point does not result in any chordal alteration, as does the function **invert on alt. loops** that is among the Basic Loop Note Editor's options.

*Since we brought up the subject: when you use the similar function in the Note Editor by enabling the **invert alt. loops** checkbox, the value set:*

**1-2-3-4-5-6-7...changes to
1-7-6-5-4-3-2**

...on alternate repetitions. Note the difference between this re-mapped value pattern and the one previously illustrated. In contrast to Melody's "variation" function that inverts chordal tones, the Note Editor's play "inversion" function follows the traditional musician's definition of the term, and changes the resulting triadic chord.

The two types of play patterns work together on the Phrase, and because Phrase and Block information is stored separately, you can edit by hand the resulting sequences in the full Block display. You might wish to remove some notes in the last Block bar, for example. Since any further edits to Phrases will refresh an unlocked Block display, you should engage the Block lock switch and make finishing touches to Block displays last. You can use **copy block** to clone a favorite Phrase before experimenting with new direction and variation patterns, and then repeat any needed finish-work in the Block editor.

When maxWerk generates Phrases, it doesn't provide for value 8, since Melody transposing does not need to reference (+)Notes. While any transposition-enabled Block is in play, the pattern notes you hear derive from the combined pitch-determining data of Keys-with-Offsets, Scales, and Triad Roots. Melody displays have a range of two octaves plus one step, beginning and topping out with the pitch at Scale step 5. Even when transposed, Melodies do not exceed this range, which by default is maximized. The Melody Sound window has **constrain to scale steps** settings that let you narrow the range of pitches by adjusting the octave wrap points.

The **phrase generator switches** offer a choice of simple or lively new patterns to be entered at a press of the **generate** button. This creativity assistant and additional Block output-modifying features of the main Melody Editor window are described in Part II.

1.11 The Block Map

You can create up to five different four-bar melodies in the manner described above, and you can build each on a different Phrase or on different combinations of patterns applied to copies of the same Phrase. While a Block is up to four bars long, you don't have to play any Block all the way through, or even have note data present in all bars of the Block. In fact, you can create a Melody using a pattern consisting of portions read from the start of each of five Blocks. This versatility is possible because you can make a **block map** that lets you play any Block from its beginning (and only from its beginning), starting at any bar in the Werk.

A Block number from 1 through 5 can be stored at each bar of the Map, which looks like yet another bar graph. When a set of Block values is stored and subsequently enabled, maxWerk triggers a new Block with every changed value, and silences Melody when there is a Block value 0, regardless of the lengths of the patterns stored in the Blocks. When the same Block number is entered for more than four bars in a row, that Block will repeat from the beginning; but when a Block's value changes after three bars, for example, you will hear only one of its combined direction and inversion patterns played and half of the next before new notes are read from a different Block. If part of a Block in play has no entered notes, there is silence while the empty steps pass.

Melody Blocks are further embellished in the main Editor, Phrase, and the Melody Sound windows. Part II will show how velocities can randomly walk within a range set for each half-bar, with options for automatic modulation or aftertouch. The main Melody window has checkboxes for each Block to disable transposing or add various harmony lines. There are also settings for octave adjustments and for the delay of all harmony lines by 16th-note steps.

1.12 Improv

To round out this introductory description of features, we'll describe one more specialty track whose settings become part of a Werk file and whose output is recorded in midifiles. maxWerk's **improv** player looks for inspiration to your choices from **source menus**, where you can select up to four existing Basic Loops and/or Melody Phrases. These sources may be important motifs in your Werk, or they may be ones dedicated to Improv. Improv can combine them with the default new generated phrases or fills. For each new musical idea, it picks sections of differing lengths beginning from the starts of its source patterns, and assembles these into a new phrase. It then applies Melody-style treatments to develop and resolve the material. Without asking your opinion, Improv indefatigably composes a new tune after the number of bars you ask for, filtering its figures through a combination of direction and inversion functions. When you select busier source patterns, Improv plays livelier tunes. Using the **style menu** setting, you can stretch these over additional bars to produce more moderate and relaxed lines.

Once enabled, by default Improv pops up wherever it pleases in the stereo field. Improv has a resolution of sixteenth notes, and you can impose a **start delay** in beats. Several more play options similar to those of the other tracks make Improv an interesting companion while you try out chord progressions or simply noodle.

With Automute active, maxWerk can trigger a section of Improv bars and silence them for you at selected points for recording to a midifile. The setting for in/out bar numbers is in the performance-oriented Automute window. However, there is no telling exactly what Improv's note patterns will be. Alternatively, you can start up and discontinue Improv manually during recording; on being dismissed, it holds its last note a little before dropping out gracefully. Get more insight as to how Improv works and its remaining parameters by reading about the similar, but relatively predictable and obedient Melody track, under "More Melodizing" in Part II of this Guide.

1.13 Noodle

You may enjoy playing and recording your controller keyboard along with your Werk. A MIDI device/channel through the program is reserved for this purpose, complete with basic controller and GS phatWerk settings. More about phatWerk is coming up in Part II.

In the **noodle** window two parameters can help your live playing stand out from the sound of your other tracks, whether you have a MIDI controller keyboard or are simply using computer keys. One is a general note **velocity** adjustment, and another is a menu setting to **adjust input MIDI** by an octave shift. The octave shift parameter is the same one you see in Note and Drum Editors, and your Werk file remembers its last setting. There is a companion setting found only in the Noodle window to **double octaves on input**.

Auto-modulation sends a ramp of mod wheel or aftertouch values to any depth you like as each new note is played. One of several GS NRPN controllers can also auto-modulate your noodles, with an option to invert the values it sends for fun and variety.

1.14 Werksync

This collaborators' aid deserves a heading of its own. By activating the **Werksync** button in the lower section of the Noodle window, you can enable sending MIDI beat clock along with continuous controller messages that are understood as transposition commands by a second maxWorking computer setup. A reset from your master Werk sets up the slave to ignore its own Tempo Map and Transposer data, and you can remotely set the "go-to" bar. The operator of a slaved Werk has full normal control when the master is not in play.

If you've made it through the Guide this far, you may be interested to discover the many more features of maxWerk covered in Part II.

II. maxWerk In Depth

We have seen that maxWerk's eleven **basic loops** and two **drum loops** can play patterns up to four bars long. Add to these the three special-purpose tracks - the **melody**, the automatic **improv**, and the **noodle** track for accompanying live play, and maxWerk gives you sixteen MIDI channels' worth of creative engines. There is a bonus **idea** track to layer with any one other as you conjure up Werkmusic.

2.1 Main Settings

After you have customized Global Setup and Noodle settings upon getting started with maxWerk, you'll find that the MIDI thru destination automatically switches as you move between tracks, because the **auto-thru checkbox** is enabled by default. An indicator in the upper left section of the Main Screen shows the current target instrument and MIDI channel. As we have seen in Part I, from the **MIDI-thru** heading in the menubar you can manually change the MIDI target, and if you disable the auto-thru checkbox, incoming notes and other information remain directed to the track instrument/channel last edited or selected for thru play.

On the Main Screen, the **KB map checkbox** appears for the benefit of users who aren't accomplished keyboardists. Checked, it enables one of two **note mapping modes** chosen in the Global Setup window. Each allows very non-traditional keyboarding behavior. When **chords & scales** is selected, above an adjustable split point the pitches of the currently selected Key and Scale, having been adjusted by any Global Offset(s), lock to the set of white keys starting on C, and the black keys are silent. You can use the white keys above the split point for melodic lead line playing while you trigger Triad Root transposing from the remaining white keys. The black keys in the left-hand group trigger (+)Notes when pressed, and remove those (+)Notes when they are released. Starting at C#, the Scale step (+)Notes triggered by black keys are 2, 4, 5, 6, and 7.

When maxWerk is not in play and the Arpeggiator is enabled, both presses and releases of the left hand keys trigger two-octave chordal tone runs. The (+)Note-triggering black keys, however, forget their changed chordal values and restore the (+)Note to the Triad Root's value as soon as you release them.

When you select the keyboard mapping mode called **global key shifts** in the Global Setup window, the stored split point does not apply. Instead, maxWerk enables all controller keys to make simple chromatic transpositions that are suitable for certain musical styles.

The two lower letter rows of your computer's QWERTY keyboard are always in polyphonic MIDI note entry mode in maxWerk. They cover two and a half adjustable octaves of notes in the current Scale, so that you can use the program without any MIDI controller keyboard. They respond to the octave adjustment found in the Noodle and Note Editor windows, and they are not affected by the MIDI keyboard split point.

When Automute is disabled, you can selectively **mute and enable** tracks and see their status by means of the blue LED's on the Main Screen. Also in the lower section of the Note and Drum Editor windows are **mute and solo switches** for the track you are editing. Notice that soloing in an Editor window temporarily overrides any automuting of that track. The positions you set for the pan and volume knobs on the Main Screen become the default values when these controls automatically reset and when you save your Werk.

You will see the Main Screen tempo-setting slider change color when you enable Performance mode. This is a reminder that any Tempo Map saved with the Werk is now in effect. Pressing the **tempos** button next to the slider brings up the **tempo map window**. Here you can store changes to the beats-per-minute values transmitted to maxWerk's timing engine at the start of each bar. When you take maxWerk out of Performance mode, it takes the Tempo Map out of service. maxWerk's tempos can be mapped or temporarily fixed at 60 or 120 beats per minute while midifiles are being prepared for export. Your selection for using the Tempo Map or using a constant recording BPM is a Global Setup parameter.

2.2 Patch Changes

There is a **patch-select button** in each Editor window. When a track is globally enabled for GS use, this button bears the label **GS bank/varia**. For normal MIDI device use, this button is labeled **program change**. The patch entry window that opens for generic MIDI instruments lets you enable any patch change messages required by your MIDI device, which may include one or more types of Bank Select controller.

When a track is globally set up for GS use, the patch-select button produces a window of sixteen **GS patch name menus**. These are divided by general instrument category and listed alphabetically, and they are specific to the model of Roland GS module selected in the Global Setup window. Across the maps for the hierarchy of GS models, there are some differences in the naming of sounds of certain combinations of bank and variation numbers. When this is the case, the name for the later version of the sound has been used. For cross-reference, the GS patch selection window shows **bank and tone variation numbers**, and arrow buttons let you move forward and back through each set of sounds. For GS mode tracks only, **GS patch names** are displayed on the Main Screen immediately below the track name labels for each of the eleven Basic Loops and the two Drum Loops. GS patch names also appear in the Improv, Melody Sound, and Noodle windows.

Global Setup parameters let you enable or disable normal or GS bank and program change messages transmitted via MIDI, both to your devices and to your recorded Werk midifile. When any part assignment is switched off in the Global Setup window, the corresponding patch button reads **track disabled!** and is not functional. If a track is enabled and patches don't change as expected, check the lower left section of Globals to see if the relevant bank and program changes are being filtered from the transmitted MIDI stream. This filtering capability is provided so that you can create midifiles and share Werks between different setups without including potentially incompatible patch selections.

maxWerk does not support program changes MIDI'ed thru from an external controller. The program instead makes unconventional use of this incoming MIDI message type to mute and enable tracks.

2.3 User Scales

We have seen how various **scales**, also called modes or pitch sets, are available for audition in the Scales window so long as the Transposer is not enabled to override your setting, and how the enabled Transposer calls up one or two of its stored Scale sets at each bar. The **user scale editor** lets you compare, enter, and store up to three custom Scales for your Werk, by auditioning and entering for each one seven chromatic pitches from the diatonic set of twelve. maxWerk refers to one of three stored User Scale interval sets whenever it sees a Transposer Scale value of 10, 11, or 12.

Feel free to try using unfamiliar User Scales with non-destructive abandon! You can invoke a suspended chord by storing a User Scale that simply substitutes step 4 for the third. Step values 3 and 4 will sound the same pitch in all note patterns and transpositions. Major and minor suspended's are included among the **extra preset scales** found in the Editor's menu. Some of the others have fewer than seven steps, such as the Blues Scale with six and several different pentatonics. These wrap their pitch lists around to fill the allotted seven value places. Keep in mind that because maxWerk's musical structure depends on triadic-interval harmonies, if you use Scales other than the traditional church modes built in at values 1 through 9, when you make chord changes based on rotation of the Triad Root, your note patterns, Melody Phrases, and Improv patterns as they transpose will produce interesting dissonances.

2.4 Loop Magic 1

As you've seen, the loop displays in maxWerk are vertical bar graphs that represent data patterns read sequentially in a repeating fashion, into which you can place values with the mouse. There are four such editable displays in the Note Editor, two in the Drum Editor, and one in each of the Control and Bend windows.

Resetting procedures to restore note data to default values are clustered by parameter groups for convenience. Resets do not affect the settings for number of bars or step resolution. At the top right corner of the Note Editor there is a **clear all notes** button. In the Offset Note Lines section, each of the three lines has its own clear-button whose color reflects the presence of settings for that line, plus others to reset all routings and velocities. Use the **clear offsets** button to restore the default values of all three offset lines at once. The **play-defaults** button in the lower right window section serves to restore all the settings that determine how you hear the displayed patterns, but it does not change the graphics. Initializing a loop is therefore a multi-step process.

The Note Editor functions described in detail below have settings that are located along the top of the Note Editor window or framed in the rectangular section nearest the bottom.

You can set **step resolution** independently for each loop, and the program fits the steps into their allotted time correctly, so long as your choice from the steps menu is a multiple of the Meter (the number of counts per bar). The multiples listed in the steps menu include sixteenths, 32nds, and in most Meters triplets, allowing in the case of 7-count Meter, for example, 14, 28, and 21 steps. After a little practice making loops, it becomes easy to anticipate the resolution or count-multiple you'll need for a particular effect.

Whenever you modify parameters for either step resolution or **loop length**, maxWerk resizes all four displays to accommodate the new total number of steps; that is to say, step resolution multiplied by a number of bars from one to four, up to a limit of 144 steps per loop. The default size is a one-bar loop of 16 steps. Once you assign a number of steps and a bar length to a loop, if you then proceed to make a note pattern, and later decide to lengthen the loop by adding bars or doubling the step resolution, the existing bar graph data shifts to the left, leaving some empty space to show the extra room created for more. If you reduce the number of steps by reducing the number of bars or by halving the loop's resolution, the end of the loop will be truncated and some entered step values will irretrievably disappear.

The button labeled **expand pattern**, located next to the loop length and step number area at the top of the Note Editor window, opens a sub-window that includes some of maxWerk's handiest features. Options are here for dealing with an increased number of loop steps without disturbing a pattern you have already entered. You can double existing note, velocity, octave, and wrap step patterns using the **expand** function, or you can automatically enter **repeats** of the pattern to fill added bars. (To copy-paste patterns within one bar, instead use the 'repeat a series' function found in the editor's Generator panel.) You can overwrite or build a pattern from scratch using the **uniform time interval edits** menu-and-button interface. Be careful how you order operations, so you don't lose data!

While you can adjust the loop's starting point by using the horizontal **display rotator buttons**, if you want to cycle through fewer steps than those displayed, set the **cycle menu** to drop some end steps and leave the **start mode menu** set to the default **on every loop**. The second menu item, **rotate starts**, tells maxWerk to begin one Meter-count further into the pattern with each repetition. You might set a percussive sound to cycle or rotate its start point against a straightforwardly repeating Drum Loop. Since Note as well as Control and Bend patterns have independently adjustable start steps, you can contrive interactions between them that are unpredictable and interesting. When you choose **random starts**, whatever the number of bars, maxWerk starts each loop from one of several musically useful Meter counts (ones that mark quarter-note segments) in the first loop bar. This has the effect of shifting the pattern unpredictably in relation to your other tracks. When you choose the second or third menu items, the cycle menu setting is reset to "all".

In the lower area of the Note Editor, the **play direction menu** has for its first three items **forward**, **backward**, and **reversing**, which accomplish the obvious. The fourth setting **inverted** preserves the original note duration pattern so that the rhythm of notes and rests remains the same. The loop plays in the forward direction, and the independent value 8 plays normally, but the pitches triggered by values 1 through 7 are reversed. In other words, the referenced Scale changes its order. This setting can produce interesting results

when set off with a delay against a normally played copy of the same pattern in a companion loop. Its effectiveness is dependent on the step values included in the pattern and the durations of notes. Additional direction menu items are **random** and the interestingly repeating **pingpong**. This one is followed by a useful **alt pingpong** variant, which effectively doubles the length of the loop pattern, and a **rdm pingpong** variant that alternates unpredictably with normally played passes.

Alongside the direction menu, the **note trigger mode menu** makes available several principal options plus variations for Basic Loops' behavior. Five selections have quick-access buttons above the menu. They interact with the settings of the **gate times slider**, so they are described together. The modes of triggering are:

play changes mode - maxWerk sends a note-off and triggers a new note with each changed step value or Triad Root transposition value. This is the most "normal" sounding monophonic play mode for the notes entered in the displays, because it can produce different note lengths as well as rests. These are all multiples of the chosen step length if the default gate time setting (off) is used. In this mode, repeating note values that wrap around to the start of the loop without any transposition sustain without retriggering. You can make a persistent drone sound by entering a single value across your loop without any rests and disabling the "transpose" function. Leave the gate times slider set to its default 'off' for normal play-changes mode. A reddish slider indicates that gate times are being imposed, and the green setting indicates randomizing. These effects mask the tied notes in play-changes mode and shorten the durations of single-step notes.

play all steps mode - maxWerk sends a note-off and triggers a new note with each step that is not a rest. Step resolution as well as the number of included rests greatly affects the result of this setting, which is particularly good for rhythmic figures. Play-all-steps mode works well with gate times, for they affect all steps and produce staccato patterns. Shorten the gate time setting to decrease step durations. The fewer loop steps there are, the finer

will be the available gate resolution will be as shown by the slider. A setting fully to the left turns the slider green, and produces **randomized gate times**. Experiment using various gate time settings with the remaining modes described below!

1 random retrigger mode and multiple random retriggers - maxWerk follows all pitch changes, but decides at each step whether to sustain or re-trigger repeating note values. The timing of pitch pattern changes is preserved, but there is variety in the rhythm pattern of the notes.

alt1 and alt2 note filtering modes - The remaining menu choices are based on the principle of selectively triggering passing or non-chordal tones. On alternating loops, maxWerk substitutes or sustains the last played triadic tone at each passing tone, thereby ignoring any passing tones while preserving the basic figure. Passing tones are Scale steps 2, 4, 6, or 7, the pitches that are not part of a triadic chord built on the tonic note value 1. The layered effect of the **alt1 all-steps, alt1 changes**, and the **alt1 random retrigger** choices when imposed on any loop that contains passing tones is that you hear first a musical statement comprised of chordal tones only. It then alternates with a response that has passing tones added. The difference in the **alt2** note filters set is that maxWerk plays the unfiltered figure first. Obviously, these modes can't enhance any pattern of notes that does not already include passing tones.

Strum note-groups mode - new full-duration notes are held until the next note value 0, until the mid-bar point, or until the end of the loop, whichever occurs first. This mode is intended for short held note clusters entered at higher resolutions. To avoid pitches hanging when there is a Transposer change at mid-bar, define the ending point of the group with a note (not velocity!) value 0 immediately preceding the mid-bar step.

2.5 Loop Magic 2

Let's revisit the pattern editor with some added detail. The **notes display** has values that represent pitches of any seven-step Scale. When you arrange these values 0 through 8 in patterns, a value of 0 (a rest) always causes silence, whatever the value in the velocity display below. Values 1 through 7 trigger Scale notes in the various modes of play described above, and their pitches wrap around as you transpose the Scale. Value 8 always triggers the independently transposable note, referred to in maxWerk as a **(+)note**. With a transposition of 1 set for value 8, maxWerk triggers the current Triad Root note because the step with value 8 has a value of 1.

The **transpose menu** in the lower right section of the Note Editor by default reads **normally**, allowing changes to pattern notes driven by all types of stored data or live playing. When you switch to **ignoring triads**, stored Scale and Key changes apply along with Global Offsets as always, but final pitches are based on default, unchanging Triad Root and (+)Notes. Disabling Triad Root and (+)Note data can be useful in a modal piece (one without any stored changes to Scale and Key once the desired Scale has been set) if you want to have some droning notes. It can also help to avoid unwanted pitch shifts if you have a track dedicated to a percussive sound. The third menu selection **with pedal point** switches in for that particular track the fifth data set stored in the Transposer, which substitutes any Scale or non-scale pitch for notes display value 1. While these tonic substitutions can be handy for building an interesting bass line, you may find other interesting uses of this substitution in combination with imaginative loop settings.

The **drum editor notes display** by default triggers notes 35-68, a scheme that works well for GS drum kits and many other MIDI percussion instruments. Each of the two Drum Loops saves a note number offset that can be useful in normal (non-GS) MIDI Mode to allow for differences in percussion sound modules. The vertical-arrow **test buttons** to the right of the display let you use repeated

presses to locate desired kit notes by sound. Holding either button causes a single drum sound to repeat in eighth-note time.

The **velocities display** has nine values that represent: 0 (a rest), seven randomized values within groups of sixteen, and a constant value of 127. Velocity values of 0 cause silence even when they are coincident with the start of a new note. Drum notes can't be tied, and they hold for no more than a full step's duration.

The **octaves display** has nine available values to pair with entered notes, covering the full range of MIDI note numbers. The nine values of the **wrap steps display** below it determine the highest allowable Scale pitch after the effect of transposing that will sound in the designated octave; i.e. the octave wrap-around point for each step. Values transposed above the wrap step will sound in the octave below. You can use wrap step settings in conjunction with Offset Note Lines (described in the next section) to fine-tune chord inversion effects as a finishing touch once you have established your Werk's transposition patterns. For randomized unpredictable octave shifting at each bar, use value 0 wrap steps. To have the wrap step follow changing (+)Notes, use value 8. Note that wrap step values take effect together with changes in octave, and before global changes of Key or the Global Offset map.

Between the velocity and octave displays is a **portamento switch** (control 65), with its own selective **note-filtering menu** for exotic pattern-based pitch effects and a **portamento time slider** (control 5) for each track. Sets of **pan** and **volume** knobs, as we mentioned earlier, are on the Main Screen panel beside the track buttons. Sets of arrow-buttons above and beside the Note Editor displays let you rotate their contents one step at a time. The horizontal **step rotator buttons** have a menu letting you shift values of all four displays at once (the default) or just one. The vertical **value rotator buttons** do not affect notes and velocities of 0, so that rests already entered are not disturbed. Instead, notes and note-producing velocities greater than 0 rotate among values 1 through 8. Similar value rotator buttons (that do not mask value 0) appear in the Control and Bend windows.

Under the four bar graph displays on the right side of the window there is a field of settings labeled **generate patterns**. These let you build a loop in several ways other than the direct method of clicking directly on the displays and amending your edits as you listen to the result. You can jump-start the creative process with a generated idea. A press of the **notes, velocities & octaves button** fills a variable number of loop steps with a pattern of notes and rests for your consideration. Press **repeat-fill** to enter it to the remaining steps of the loop.

You can ask for **new octaves** or **new velos** to accompany existing notes, and the entered note values remain unchanged through both of these procedures. To lend interesting dynamics when your loop is in play-all-steps mode, you can switch new independently generated velocities to appear **on changes** in ascending and descending stair-step patterns that cover the full range of random-value groups. Alternatively, you can use buttons labeled **repeat a series** to conveniently enter patterns of notes, velocities, octaves, or wrap steps. maxWerk automatically copies entered values beginning with step 1 through any dialog-entered number, and repeats the set to fill the pattern without changing the accompanying data types.

There are four menu settings located between the note and velocity displays that together set up patterns to **mutate**. They accomplish this by having maxWerk randomly swap two adjacent note and velocity steps in synchrony each time a certain number of bars passes, while octave and wrap step data remains unchanged. You can hear these mutation swaps, but you won't see them reflected in the displays. You can have mutations occur once every bar to once every four bars via the **mutation control menu**. The **revert menu** tells mutation-enabled loops to go back to their original play pattern after a certain number of bars. Make **in/out bar settings** to automatically activate mutating and revert to the original pattern in the remaining two menus. The pattern-mutating function counts the number of bars between new mutations, not the loop repetitions, so you should take into account as you make the out setting. Be sure too that the frequency of mutating does not exceed the frequency of reverting, or you won't hear the intended effect. Some **alternative mutating styles** near the end of the mutation control menu let you

add in or drop out (mask) pattern data at the rate of one additional step-set per bar. Mutations are not affected by patterns of automuting, but can be especially effective when used along with Automutes to gradually introduce a loop or "devolve" its pattern.

In the lower section of the Note Editor, there is one more field of play controls comprised of menus and checkboxes. First, a menu setting lets you add **random ratchets**, notes randomly re-triggering at their start point as opposed to random steps, to any play style, either once per loop repetition or once every other ('alt') repetition. The **16ths hold on mute menu** directs Automute to switch off this part following a delay setting measured in 16th-note durations. For example, muting a track with a hold-on-mute setting of 2 has the effect of cutting off the last note one count into the following bar.

The **velocities menu**, set to **normal** by default, offers velocity treatments that can create changing effects with each loop repetition. With **cycle** enabled, velocity step numbers increment by one relative to note steps, so that you can create a variable note-gating effect by including velocity values of 0. The selection to **rotate** velocities increments all values greater than 0 with each pass, wrapping them around from 8 to 1. Used separately or combined via the **2 ways** selection, these functions are most effective in play-all-steps mode.

The **pitch menu** shifts pitches harmoniously. The **flip 2-6** setting inverts a subset of Scale notes on alternate loop passes. The option to **rotate up 2** causes triadic tones 1-3-5 and passing tones 2-4-6 to vary within their tone type, but values 7 and 8 remain unchanged.

A setting for the **end bar** is next in line as we move toward the right side of the play parameters panel. A similar end bar setting in the Automutes window determines the point after which maxWerk automatically stops playing all tracks, and for convenience you can set one bar number there that triggers ending behavior globally. However, once you have done this you can set earlier end bars individually by track in the Note Editor. At the end bar for a Basic Loop, maxWerk converts all pattern notes to the current Triadic Root value. You can coordinate end bar settings with delayed

muting and with an extra bar of play globally set in the Automutes window, and thereby bring your Werk to a pleasing resolution.

Affecting only multi-bar loops, the default **start bar** menu setting is that maxWerk should "always reset" the loop whenever the track is enabled, but it offers the option to randomize the next bar it plays.

Lastly, the **track name** button lets you enter up to 12 characters that subsequently appear in the Editor, on the Main Screen track panels, in maxWerk's various indicator labels, in loop-copy menus, and in the Info-text.

2.6 Offset Note Lines

You can add **offset note lines A, B, and C** in the Note Editor and then make settings for each to create various kinds of differences from the graphically entered notes. These counterpoint patterns add interest to any form of music. The **random line** button for each one gives you an endless supply of new ideas for consideration within conservative delay and octave limits, initially using play-changes mode. Once you add a note line, it uses the loop's gate time setting, but by means of its **thru part menu** you can route its notes to any Basic Loop's MIDI device/channel. Each Offset Line is controlled by the automute pattern of the track selected in its **obey auto menu**. These two matrices for MIDI destination and Automute source let you create interdependent decorative patterns or contrasting sonic treatments of parallel patterns. At the bottom of the Offset Lines parameter panel, the **hear this loop menu** with associated shortcut buttons lets you audition in various ways: soloed, together with one other track, or in the context of automutes. If you can't hear a redirected offset line, be sure the edit-audition setting allows for it! For convenience, the **auto** button that lets you listen with automutes has a hidden function: it opens the automute window on a double-click. maxWerk remembers your last audition setting for each loop.

Parameters for Offset Note Lines are as follows: **Line A**, labeled "**triadic**", can be set to sound in unison with the original or a constant third or fifth apart, according to your selection from the

intervals menu. A “random” selection lets maxWerk choose for you among these harmonizing intervals with each new note. Another Line A intervals menu item applies the active (+)Note interval as the offset from each new note, so that the character of the line can change with each bar. This (+)Note menu selection is not among the randomizer's choices, because it calls for advance planning to include value 8's when you enter primary pattern notes.

You can shift all three Offset Note Lines by an up or down **octave adjustment**. A **velocity adjustment** is available that lets you create interesting effects ranging from faint echoes to lines that are louder than the original. You can set a **delay** of any number of loop steps, and choose from three **play modes**. Line A is the easiest additional note line to use because it never sounds dissonant.

You can assign **line B**, labeled “**scalic**”, a base Scale-step tonic transposition value different from the original, and you can shift it by octaves relative to the original and adjust velocities. You can delay Line B by any number of steps, as you can Line A. The last Line B intervals menu item **inv** affords an interesting contrast to the offset pattern of notes that does not by itself cause any dissonances: Scale steps 2 through 6 are inverted, i.e. flipped, before pitch is offset. Fourth interval offsets are unchanged, as are tonics and sevenths.

Line C, labeled “**chromatic**”, lets you transpose the note line by any chromatic interval relative to the original notes, instead of transposing by a certain Scale step. This one is for the adventurous! Line C's randomizer conservatively sticks to a choice between tonics, fifths and (+)Notes, but of course you can change the setting. Experiment with other chromatic steps for dissonant effects. Line C also can be delayed by steps. It has no pitch inversion option.

Note that the choices of “unison” for Line A's base note value and 1 as Lines B and C base note values produce the same effect in all, which is to sound secondary note lines identical to the primary one. This is useful for creating a layered interplay of lines. Note too that along with the main pattern, Offset Note Lines play the dynamically

substituted pitch for note step value 1 when Pedal Points are enabled for that track.

You can enable one, two, or all three Offset Note Lines. You can reduce velocities of the original note line so that the displayed pattern has the effect of being a template for one or more others, as long as you bear in mind the polyphony limitations of your sound module. All three lines may be set to play on alternate repetitions. There are menu items prefixed **alt1** and **alt2** for all three Offset Note Lines let you set any pair to trade off playing on alternate loop passes.

2.7 Keyboard Entry

For those who enjoy composing by taking advantage of happy accidents, auditioning and editing maxWerk-generated loops in combination with randomized Offset Note Lines may prove to be an invaluable creative strategy. But if you already have a motif in mind and would like to enter it yourself via MIDI, you can use the **keyboard step entry switch** or its associated tab-key shortcut to prepare the displays of Basic and Drum Loops or Melody Phrases to capture incoming MIDI notes. You can enter step values from your controller or the computer's QWERTY keys, so long as you are careful to release each note before playing the next one, and remember to repeat-enter notes in order to extend durations. Keyboard step entry for Melody Phrases uses a step resolution that is fixed for that track according to the Meter. Played note values appear in the Melody display only if they fall within the available two-octave range.

To allow keyboard step-entry of notes to Basic Loops and Phrases, maxWerk necessarily activates keyboard mapping to the current Scale, and a number of other play settings revert to their defaults. When you switch off the function, maxWerk restores the status of keyboard mapping to that displayed on the Main Screen. When you use your computer keyboard to enter notes to the Basic and Drum Loops, maxWerk generates random accompanying velocity values.

As each set of step information appears in the displays, the progress bar advances to the next step. While the function is active, incoming values overdub existing ones with each pass through the available steps. To enter a **rest**, press the 0 [zero] number key. You can overwrite the last-entered step of both Basic Loops and Phrases by pressing any MIDI key below the split point and entering another value. Toggle the function button or the tab key (by a double press) to enter notes again from the beginning of the loop.

When you are making Drum Loops, keyboard step entry temporarily disables MIDI keyboard mapping, so that you can play any notes that are assigned to or offset from the range of MIDI note numbers 35 (B1) through 68 (G#4) on your controller keyboard. To place Drum notes into steps with imaginative help from maxWerk, use the **drum pattern generator**, which enters and removes sets of beats independently for each drum kit instrument.

The keyboard step entry button flashes yellow as a status reminder if you leave it enabled while your Werk is in play, and maxWerk automatically disables the function when you exit Editor windows. Note that the tab key takes on an alternate role as the chord entry command when you open the Transposer's Chord Map window.

2.8 The Idea Track

An alternative to keyboard step entry that you can use to help create Loops or Melodies is the live-recorded, no-frills **idea** track. This is a non-editable midifile recorder and player of non-transposing sequences that can serve as a simple motif-entering guide. Once you have armed this track for recording, maxWerk will capture live MIDI input beginning at the designated bar number. Subsequent recordings clear and overwrite any material already present. Your Idea plays back following current tempos to the track selected in the Idea window, layered with any MIDI messages that this device/channel already receives. You can switch off Idea playback or you ready it for automatic triggering by means of checkboxes in the Note Editor and Melody Phrase windows, making it unnecessary to revisit the Idea window for this purpose.

Once you have captured an Idea of any length, you can set it to play starting at any bar number. If you set maxWerk to loop a certain selection of bars that includes the set starting bar, you'll hear your Idea play repeatedly along with any stored loop or Melody information. You might even use a longer Idea track to add an unstructured part to your finished Werk. However, the Idea track is not recorded into your Werk midifile, nor is it saved as part of a Werk file. Instead, you can save any number of Ideas as midifiles, bearing in mind that in maxWerk you can play just one at a time.

If you abandon an Idea recording by switching off playback and subsequently quit maxWerk, the material is lost unless you have saved it as a midifile. Ideas cannot have notes, timing, or other elements changed after they are recorded, but you can of course import Idea midifiles to another application for further work.

2.9 Deeper Drums

The **d1 and d2 drum buttons** in the top right Main Screen panel open an editor dedicated to the two Drum Loops. Its layout bears some similarities to the Basic Loops' Note Editor, but an obvious difference is the larger and taller **drum notes display**. It accommodates a wider range of values, and is bordered on the right with a GS-default-numbered **note number slider**. Here, step values represent actual note numbers rather than Scale steps, and a **note placement guide strip** can help you mark the right spots for hits before you make manual note entries with the **enter button**. As in the Note Editor, velocities have a **set all to value** menu with an associated refresh button. There is also a **repeat a velocity series** button. An octave display is not necessary for the Drum Loops, nor are octave wrap step values needed since transposition does not come into play. To maximize graphic display space, the buttons to open the Controls A and B, Bend, and phatWerk windows are placed along the top edge of this editor .

Each Drum track is monophonic, and the **drum pattern generator** works with only one note (kit sound) at a time. Pattern generating

involves setting three menus below the note display and then using the **add/undo beats buttons** to their immediate right. Once you have set the loop length and number of steps, the generator will decide how many of up to six beats to give you, or it can try to give you exactly as many beats as you want, so long as the step locations it picks are not already occupied by hits. The default setting of the **add beats menu** tells maxWerk to pick a random number of hits, and the options to specify one through six hits follow. Note that once you have entered some beats into the display, the available loop steps remaining may limit the number of new entries despite the number you requested. The second setting, in the **pattern length menu**, takes effect if your loop covers more than one bar. When you direct new hits **to 1 bar that repeats**, the pattern is identical in all bars of the loop. The selection **across all bars** spreads out the generated pattern field. The third, in the **beat placement menu**, defaults to letting new generated hits fall on empty eighth-note steps, whatever the loop resolution. The alternate selection jogs placements by a sixteenth-note to add rhythmic interest. When you first make this selection, a new set of empty slots equal in size to the first becomes available.

maxWerk does not pick the drum instrument number to be entered by the Drum pattern generator--it's up to you to select each kit sound you want by indicating a step value (note) using the vertical slider to the right of the display. As you move it up and down, you'll hear a hit on each kit note at the corresponding display position. The arrow-shaped **test buttons** move the slider up or down one step with each press. Drum hits sound repeatedly in eighth-note time as long as a test button is held down. Press the **add button** to trigger the generator to enter beats playing the slider-selected note. The **undo button** works by remembering the last note value placed by the generator. It lets you remove all generator-placed hits at that display value, so long as you have not manually added a hit at any other value since. To remove all hits of a certain drum sound at a later time, set the slider at the target note value level, press the add button to simply re-select the display value, and then use the undo button to remove all instances of that value.

The Drum Editor has no horizontal pattern-shifting buttons, but instead offers a **starting step** setting. It has the same **step cycle menu** as in the Note Editor. Double-hits replace the faster note-ratchets as a play option. Besides a **solo button**, there is a **both drums button** to solo Drum tracks 1 and 2 together, and another for hearing them **as automuted**. To the lower right of the display is a button that lets you **switch drum parts** quickly to edit the other Drum Loop without closing the window and going through the Main Screen access panel. At the lower left is the same **automute start bar** setting found in the Note Editor. Drum Loops are not given track names; they simply have the designations "drum1" and "drum2".

2.10 Control Tricks

The MIDI **controller number** in the right side section of the Controls A and B windows makes available the full controller range (1 through 120) for selection. If you are Working in a GS mode track, select instead from the **GS Control menu** in the lower window section. The GS scheme for real-time sound shaping uses non-registered parameter numbers (**NRPN's**) rather than conventional controller numbers; hence maxWerk's separation of assignments by type. The **GS base** number-box next to the GS Control menu shows you the default value to which maxWerk reverts when you stop play and whenever the controller is reassigned or disabled. You can enter control number assignments for both normal MIDI and GS modes, and these are both stored together in your Werk file. As with program changes, maxWerk transmits only the control message types appropriate to each track's globally set instrument mode.

Creating Control A and B patterns begins with a setup of messages to be sent either as independent sweeps or note-synced steps, using a row of three buttons in the upper left window corner. Next to these buttons is a **status indicator** showing the current control step mode. The **96 button** sets the step resolution for MIDI events to 96 per loop, an amount that remains fixed over the maximum loop length of four bars. The **trig button**, especially useful for longer loops, allows 96-step control patterns to re-trigger and occupy the time duration of any set of note steps of the same value, so long as

the set is greater than a single step. In a 16-step loop, for example, note values that change after only one step do not trigger a new sweep. Controller re-triggering is based on the entered note pattern, so it uses the same start points whichever mode of note triggering you use. To hear sweeps retrigger over each note of an eight-step pattern, double the resolution to 16 and use play-changes mode. The actual number of MIDI controller events that comprise each retriggered control sweep may be fewer than 96, for they are subject to a default 20 ms. time grain for auto-modulation density that can be adjusted in the Global setup window. Keep in mind that control patterns designed for a primary loop motif will also affect any Offset Note Lines sent to this instrument and MIDI channel.

The last of the three, the **sync button**, sizes the control loop to reflect the total number of steps, i.e. to equal the number of bars times the step resolution. The waveform pattern generator works in 96 or trig modes only, and lets you automatically enter a set of 96 controller events. You can also draw in a sweep pattern or enter step-synced values into the display by hand. You can repeat-enter a numeric pattern just as you can with note, velocity, and octave data. The button in the lower play control section labeled **repeat a series** allows a value sequence entered just once at the loop's start to repeat to fill the entire display, using the 96, trig or sync mode last set. Activate the **value creep menu** to increment all by a certain amount with each pass up to a desired **wrap point**. To enter a pattern by hand with good timing, use the **guide marker menus** to help you create evenly spaced value entries.

When you ask for one to four instances of a **96-step waveform**, you can choose between sawtooth, sine, pulse, triangle, and two types of parabolic curves. Before you hear any results from the selected controller, you will need to enable it via the **activation menu** to the right of the display, which defaults to off. When controller output is disabled, data in the display appears grayed out. The activation menu lets you stop effecting the target device's sound for whatever reason without losing entered settings, and it also lets you invert all control values, changing the background color as a reminder.

The **direction options menu** lets you disable any play direction changes that may come from the Note Editor, so that the controller or bend pattern always loops in one direction. Note that by using the activation menu's options **invert play** or **alt play**, you can effectively flip the display of some control waveforms horizontally on all or alternating loops. Should you then choose to narrow the resulting waveform vertically by adjusting the **compression percentage**, you will need to re-enter the waveform to see and hear the result.

When you press any of the three **follow buttons** in the Control A or B windows for notes, velocities, or octaves, steps are synced to the note resolution, and a pattern similar to the Note Editor's values but vertically stretched, appears in the display. This expansion function processes values to keep them proportionate within the range of 0 though 127, letting you tie controller values to Scale steps.

You can rotate values up or down in the Control and Bend displays by means of right side vertical **arrow buttons**, and all values 0-127 wrap around the range. Instead of including a second set of arrow buttons to move values horizontally, the Control and Bend windows have a **start step** setting to time-shift values relative to the Note Editor's pattern set. The Bend window, with default values of 64, has similar pattern entry functions, but lacks the "follow" function buttons that allow expanded echoing of Note Editor patterns. You can set **GS bend range** by means a system exclusive message. The bend range of non-GS modules must be adjusted outside of maxWerk.

In all three of these windows, you can have maxWerk generate a set of step-synced random values by pressing the button labeled **randomize/latch**, and these appear in the display. When you latch this function via the associated checkbox, maxWerk makes a new set behind the scenes with each repetition of the loop, which is not displayed. The intensity of this effect, as with other step-based functions, depends on the number of steps per bar set in the Note Editor, and is most dramatic at a 16th-note or lower step resolution.

2.11 phatWerk

If you are Working in a GS environment, you can make use of the system exclusive and NRPN GS-synth editing included in the program and saved with Werk files. A **phatWerk** window-opening button appears in the Note and Drum pattern Editors as well as in the Improv, Melody Sound, and Noodle windows. An array of virtual knobs and several menus store GS sound and effect settings for the edited track. Your Roland GS product manual provides an in-depth explanation of these parameters and the types of MIDI messages that produce them.

2.12 Copy / Import

A key shortcut or a right side main screen button opens the **copy** window. You can copy single loops to another Werk location or load a complete previously saved Werk file to a buffer and extract separate components for import to the current Werk. To make this easy, maxWerk lists current track names in the copy buffer's **source** and **destination** menus, as well as the names from any Werk loaded to the imported file buffer. Besides individual loops, Melody Phrases, and Blocks with their play settings, the full Transposer information set along with User Scales may be imported. You should save your current Werk before copying or importing data, as these changes overwrite destination data and cannot be undone!

2.13 More Melodizing

As we have seen, melodies have 16th-note resolution, and global Meter affects the total number of steps in Melody Phrases and Blocks. From any of five **2-bar seed phrase buttons** along the top of the Melody window, you can call up a zoom-in window where a motif or Phrase becomes source material for each four-bar Block.

In the Phrases window, a smaller non-editable representation of the full Block is labeled **block view**. Changes you make in the Phrase display are immediately reflected here unless the Block's **lock switch** is activated. The set of lock switches to the right of each

Melody Editor Block, which have a corresponding button in the Phrases window, are all engaged by default when you load a Werk file. The changeable background color of the full Block display in both the Phrases and main Melody windows is a prominent lock-status indicator. When you work with Phrases, first unlock the Block you wish to edit, so that data can pass from the Phrase through to the main Editor. The main Editor allows partial or complete departures from Phrase-entered lines by direct hand editing of Block sequences. If you re-lock the Block after making hand-edits in the main Melody window, you ensure that further Phrase window edits will not accidentally overwrite the Block.

The Melody track draws on eight **random velocity groups** for each Block, one for each half-bar. An editable graphic below the Phrases display beside Block View represents the full Block's worth of velocity data. The eight vertical bars have five incremental steps corresponding to a constant maximum value of 127 or one of four randomized-value ranges between 64 and 127. Keep in mind that this display doesn't depict velocities of single Phrase notes; ranges are shown for bar sections that may cover several notes! The change between two value groups per bar from which velocities are drawn occurs on the variable Transposer-stored mid-bar count.

Like the other editor windows, the lower portion of the Phrases window contains a **quick mutes** window button, useful whenever Automute is disabled to prevent distraction by other tracks as you develop your Melody. The **idea** window button lets you bring in the specialty track described earlier. Engage the Improv and Idea tracks if you find them helpful, or add helpfully MIDI-mapped Noodle input.

You can enter Phrases using only the mouse, without any help from maxWerk. Alternatively, **keyboard step entry** is available, as it is for the Basic Loops. (See the section pertaining to it above to read more about entering notes into Phrases by means of your MIDI controller.) A difference between the Editors for Notes and Phrases is that quantizing on entry to a Phrase step resolution higher than 16ths is not possible. Melody lines are always heard in play-changes mode, with note-offs triggered by changing pitches.

To have maxWerk's help coming up with a Melody, use the **phrase generator**, which has a line of settings across the top of the Phrases window. A **pattern complexity switch** offers simple and lively (busier) choices. A **phrase length switch** gives you a choice between two-bar figures or a repeating one-bar figure, and lastly there is an activation button marked "generate". When you ask for a repeating motif, four instances of a one-bar pattern pass through to the Melody Block. To generate additional Phrase notes without disturbing notes already present, be sure there are some rests (empty pattern slots) to be filled, and mark the checkbox option to **keep existing notes**. This function lets you decorate a simple Melody figure in various different ways until you have a keeper.

Generated Phrases only occasionally include rests, and with the button to **add a random rest** you can break up long tied notes. Because of the two-octave range structure, there is no practical use for an independently transposed Scale note. Using the set of **edit bar 2 buttons**, you can **repeat** or **reverse pitch order** of the first Phrase bar to cover two. Alternatively, you can substitute Scale-inverted chordal tone **variation** notes for the values 2 through 6 in the second bar.

A pair of pattern menus below the Phrase displays automatically imposes a two-step sequence of pitch order **direction** to fill the currently selected Block, followed by a two-step **variation** pattern described fully in Part I. When you make menu choices, the Phrase data for the full Block is immediately re-processed and sent to the main Melody Editor. These menus apply the second-bar filtering operations to entire two-bar Phrases. Since changes may be optionally imposed on the first Phrase of a Block, by mapping full Block treatments to play in succession, you can make similar mirrored musical behaviors happen over a doubled time frame.

The **copy block button** below the Phrase window displays lets you capture Phrases together with their associated velocity groups and play-pattern settings and edit them differently in other Blocks. Rather than run the risk of losing a winning combination, it's best to experiment on a copy to determine which level of manipulation gives your Melody line the preferred effect. Note that because Phrase

play pattern functions operate over and above second-bar Phrase edit functions, they can sometimes cancel each other deceptively!

Complex or "busier" Melody lines are best created with transposing disabled, so that only changes in global Key take effect. Like Basic Loop notes, Melody notes transpose rotationally, constrained by upper and lower settings for Scale-step **octave cutoff** you make in the **melody sound** window. Melodies have a two-octave maximum range of pitches before transpositions, and these two parameters define the upper and lower step values beyond which the notes that transpose out of range fold back into the nearest octave.

Settings for each Block are in the top panel of the main Melody Editor. You can allow or filter **triadic transposing** as in the Basic Loop tracks, while Scale and Key changes remain in effect. You can shift the **time base** setting of each Block such that it plays in the normal time of four bars (**1**), slows to eight bars (**2**) or speeds up to use just two bars (**.5**) of the Block Map. You can add a **harmony line** for each Block, with fixed, varying, or random chordal intervals. There are base **octave settings** for both the lead and harmony parts, and you can apply across all Melody Blocks a **harmony velocity offset** and an adjustable **delay by steps** for all harmonies. You can also elect to route Melody harmonies to the Noodle track instrument.

Immediately underneath each Block's graphic display in the main Melody window you can have two **lyric lines** of text appear, one beneath each Phrase's pattern, and you can use these for lyrics or brief notes. The **lyric editor buttons** along the bottom of the window let you work with a separately saved text file and refresh the word groups displayed. Saved texts can contain any number of lines, but only the first ten are visible as lyrics in the Block displays.

In the **melody sound window**, you can set a program change along with pan, volume, portamento, and phatWerk settings. You can **duck melody velocities** while Improv is playing, so that Improv takes the spotlight in your mix. maxWerk can automatically generate time-base-dependent **auto-modulation**, which can take the form of either Controller 1 (mod wheel) or Aftertouch. Values will ramp

towards an adjustable maximum level with each new note. To thin maxWerk's **auto-modulation** data, adjust the millisecond interval between elements of the number stream in the Global Setup window. This setting is saved as part of your Global Setup file.

To recap important Melody track features: edits to two-bar Phrases appear twice in their corresponding four-bar Melody Block display, filtered according to the Block's last loaded patterns of pitch order direction and chordal tone variation. Newly loaded patterns of direction or variation act upon the latest state of the Phrase, and the **copy** function remembers the last Phrase version stored for each Block. Play settings and the Block Map further shape this part.

maxWerk's **improv** function, described earlier, uses a modified version of the Melody engine and incorporates a number of similar features. You can tell Improv how long to play each new set of notes, and it will generate another set after the interval you request, at the same time choosing a new pattern of direction and a new variation pattern for note values 2 thru 6. Improv is unlike Melody in that there is no option for a harmonizing line. Unless you set it to pan to center, Improv defaults to **wandering pan**, capriciously positioning itself in the sound field and strolling across and back in steps of sixteen controller values taken at the start of each bar.

2.14 PC-1600 Setup

The "maxWerk" preset for the **Peavey PC-1600** or **PC-1600X** MIDI Command Stations turns this into a useful hardware alternative to the Quick Mutes window. With Automute disabled, you can experiment with track combinations. The faders and buttons layout corresponds to the channel assignments for GS mode. Note that the volume faders operate with inverted values! If you wish to set up a different external hardware device to control maxWerk, simply route knobs or faders to send Controllers 1 through 16 on MIDI channel 16, and buttons to send Programs 1 through 16 on any channel.

PC-1600 maxWerk-control layout:

- Faders 1-11** - volume of Basic Loops 1-9 and Drums 1-2.
- Fader 12** - volume of Improv on MIDI channel 12.
- Fader 13** - volume of the Melody track.
- Faders 14-15** - Basic Loops 10-11 control (See layout below).
- Buttons 1-11** - mute tracks 1-9, and Drums on Buttons 10 & 11.
- Buttons 14-15** - mute remaining Basic Loops 10-11.
- Button 16** - switches all mutes for solo'ing.
- Fader 16** - bar locator.

The Noodle track on channel 16 has volume and other settings in its own edit window.

2.15 Werk Files

Werk files save with the extension **.mWk** automatically added, so the program can identify and load them. There are buttons to save and load individual **basic loop files** and **drum loop files** in their respective Editor windows. These single-loop files include all the information in the Note Editor window, as well as Controls A and B and Bend. Take care to differentiate between the two types of loop and keep them separate from full Werk files. When you import a saved single loop, note that you may need to adjust the number of steps in order to make it compatible with a Werk of a different Meter. Double-check the Thru assignments for Offset Note Lines, stored program changes and controller assignments, and the GS bend range if GS is the instrument mode.

Chord files, which may be saved and imported to the Transposer, consist of data for all of the graphically represented transposition types, along with any mid-bar changes. Chord files may be up to 128 bars in length.

maxWerk can prepare **standard midifiles** (SMF's) for import to other sequencers. The internal recorder can impose a recording **tempo** of 60 (the default) or 120 BPM as a Global Setup parameter. When the program applies one of these fixed tempos during recording, you can restore the most accurate time-stamps of events

once the resulting file is transferred to a full-featured sequencing environment. The spacebar press that stops play also stops recording. If you are recording a fully automated Werk Performance, you can specify in the Automute window an automatic **end bar** to be the last it plays. Without an end bar setting or a manual stop, maxWerk either stops recording by itself after 128 bars, or runs to the end of the last viable bar group if the Subsequences function is activated. After recording finishes, the Tempo reverts to the initial value stored with the Werk, and maxWerk offers to save the midifile with a reminder that you should add the ".mid" filename extension.

In GS mode, maxWerk's parts use the following layout for Basic Loops, Drum Loops, Melody, Improv, and live controller play.

Basic Loops 1-9	MIDI channels 1-9
Drum Loops 1 and 2	MIDI channels 10 and 11
Improv	MIDI channel 12
Melody	MIDI channel 13
Basic Loops 10 and 11	MIDI channels 14 and 15
Noodle	MIDI channel 16

Two more maxWerk files may be saved as text. An **Info-text file** is available in a window of the same name under the Extras menu. Here you can compile and view information that may be useful when your recorded midifile is imported to a full-featured sequence editor. The name of the Werk and a list of track names by MIDI channel are followed by the starting Scale, its intervals, and the names and interval sets for all three User Scales. The Werk's Key and Meter are shown, and then the Subsequences' bar groupings. A listing of stored transposition data and Melody cues makes up the remaining text. Mid-bar transpositions are included with the count on which they occur, and the Block numbers appear of mapped Melody segments. You can add your own typed notes before saving the file.

A set of **lyric lines**, the first ten of which display when opened in the Melody Editor, can also be saved as a text file. This file is discussed under "More Melodizing" above.

III. Key Shortcuts Reference

(+)Notes - see Transpose

Accent - see Chord entry

Added notes - see Transpose

Apostrophe - see Click

Arrows - see Key, Mute, Reset

Arpeggiator -

[**Shift 7**] toggles a function to sound chordal notes over two octaves, for convenience when making Transposer edits or when using the computer keyboard's transposing keys. Enabled by default, it works whenever maxWerk is NOT in play, and its play parameters are adjustable in the main Transposer window. The Arpeggiator defaults to the Noodle track, but you can direct it to any other via the **arp menu** in the menubar.

Automute, Autofade -

[**Shift a**] opens the Automute window and enables both Automute and Autofade. These functions are among those that can be enabled by the Performance shortcut button before maxWerk records a midifile. Note that double-clicking the **automutes** audition button in the loop editors also opens the Automute window.

Backslash key [****] (lower case of the tilde key, not to be confused with the apostrophe) manually toggles Automute and Autofade together. Direction, inversion, and triad tone rotation patterns revert to their beginning state each time a track is enabled automatically or manually. Note that maxWerk recognizes only ones and zeroes in the Automute track pattern entry dialogs.

BPM - see Tempo

Bar 1 - see Reset

Bar locators -

[**Shift a**] opens the Automutes window, and [**Shift t**] opens the Transposer, both of which have buttons for the Bar Locators Editor.

Bar scroll -

[] The square bracket keys, held down one at a time, move quickly up or down through the bar numbers.

Beat clock - see Sync

Block Map -

[**Shift b**] recalls maxWerk's map of Blocks for Melody pattern play, whereby you can trigger and loop five pattern sequences that are up to four bars long using changing Block values 1 through 5.

Block select - see Melody Block select

Chord entry -

With any Transposer window open, the **tab key** [**tab**] advances the edit point into which a Menu or Map selection will be entered. The **accent key** ['] immediately above [**tab**] enters the selected chord.

Click -

The **apostrophe** ['] toggles the metronome sound defined in Global Setup, which plays according to the chosen Meter. A bar-count accent click is followed by optional beat-counting sounds indicating 5, 6, 7, 8, 9, 10, 11, or 12 eighth-notes per bar.

[**Shift apostrophe**] - toggles on and off the secondary click sound.

Clock - See Sync

Close -

While most windows have dedicated close buttons, the **escape** [**esc**] and [**delete**] keys also close most open sub-windows. The Shortcuts window and several others remain open for convenience.

Copy/File Transposer sub-window-

This window for managing sets of transposition data is accessed through the Transposer, and has no key shortcut.

Copy/Import -

[Shift c] opens the Copy window for transfer of loops between any tracks in the current file (copy) or of selectable data types from a saved Werk (import) to any other destination set of the same kind.

Drum Loops -

[Shift f] brings forward the Main Screen to make accessible the Drum Editor window-opening buttons.

[Shift d] toggles the mute/enable status of both Drum Loops together, unless/until their status is overridden by automuting.

Effects - see phatWerk

Entry - see Keyboard step entry

Globals -

[Shift g] opens the Global Setup window. See "Werk Files". Also see Key shift.

Go-to bar - see 'Reset to "go-to" bar'

GS - see phatWerk

Idea -

[p] optionally toggles playback of the imported-midifile Idea track.

Import - see Copy/Import, Copy/File

Improv -

[Shift i] opens and closes the Improv track settings window.

[i] toggles Improv's pattern-generating function over changing transpositions.

Increment - see Bar scroll

Info-text -

[No shortcut] This window is accessible from the Extras menu.

Key shift -

When the Transpose function is disabled, the up and down **arrow keys** shift the Global Offset by semitones.

Key shortcuts -

[**Shift k**] (for "keys") opens a list of QWERTY-command reminders.

Keyboard mapping –

[**Shift 8**] toggles keyboard mapping, enabling the map mode selected in the Global Setup window.

Keyboard step entry –

The **tab key** [**tab**] has two different functions depending on which windows are open.

When you are editing patterns, [**tab**] toggles on and off keyboard step entry of MIDI notes to a Basic Loop, Drum Loop, or Melody Phrase. maxWerk captures and displays incoming sets of values one after another, and values entered over successive loop repetitions overwrite older data at the same step. **Zero** [**0**] enters a rest, and in the case of Basic Loops and Melody Phrases, pressing any controller note below the split point lets you correct the last step entered. Toggle [**tab**] to start over from the beginning of the loop.

With Transposer windows open instead, the tab key serves to advance the edit point, as verified by the bar/mid-bar display.

Locators - see Bar Locators, Bar 1 reset, Reset to "go-to" bar

Loop bars dialog -

[**Shift l**] is a toggle control that enables looping play of any number of bars desired, starting from an entered bar number. Entering bar value 0 or 128 has the effect of canceling the looping command, as does pressing the dialog's cancel button or maxWerk's reset button.

When maxWerk is looping a subset of bars, the Main Screen status indicator located just below the bar counter reads "looping N bars". When you switch off looping, this indicator reads "linear play".

Loop editor - see Note Editor

Main Screen -

[**Shift f**] brings the Main Screen to the front of other open windows.

Map - see Keyboard mapping, Block Map. Other maps are the Tempo Map (main screen) and Global Key Offsets (Transposer).

Markers - see Bar Locators

Melody -

[**Shift m**] opens the Melody Editor and enables Melody play.

Melody block select -

[**Shift** followed by a number **1-5**] sets one Melody Block to loop continuously.

Shortcuts - see Key Shortcuts

[**Shift accent**], i.e. the **tilde** key, toggles the enable status of Melody play, which is governed by the Block Map [shift b].

Metronome - see Click

Mute -

The **right-arrow key** enables (un-mutes) all tracks unless overridden by automuting. This command also enables any GS-mode Werk parts that were disabled via sys-ex commands using Automute window checkboxes. See Automute.

[**Shift d**] toggles the mute/enable status of both Drum Loops together, unless their status is overridden by automutes. See Automute and Quick Mutes.

Note Editor -

[**Option** together with a number **1- 9**] opens Note Editor windows for tracks 1-9. [**Shift f**] brings forward the Main Screen for access to the Editor-opening buttons for Drum Loops 1 and 2.

Noodle -

[**Shift n**] opens the Noodle track window, which contains its various track settings as well as adjustments to your controller's MIDI input.

Numeric keys - see Key, Loop, Transpose

Pause -

[**option-spacebar**] interrupts the stream of MIDI clock ticks that drives maxWerk. Press the **spacebar** to restore the flow of ticks. The Arpeggiator works when maxWerk is paused. Play resumes from the pause point without the variety of resets to the pattern engines that normally accompany the start command.

Play (and Stop) -

The **spacebar** starts maxWerk's internal MIDI clock and all enabled functions at the start of a bar. On a press to stop, maxWerk flushes all held notes for each track and follows up with an All Notes Off command. The Arpeggiator for testing chord progressions works only when maxWerk is paused or stopped.

Performance mode -

[**Shift p**] toggles Performance mode, which is a shortcut command enabling all functions necessary to listen a finished Werk or record a midifile. maxWerk engages the Automute, Melody, and Transpose functions as well as the Tempo Map. Metronome clicks are switched off, and Improv is initially disabled, subject to the Automute window's play controls that allow a section of Improv to switch in and out.

Plus/minus - see Tempo

Pointer – see Bar scroll

Quick mutes –

[**Shift q**] opens the Quick Mutes window for manual track control.

Record notes - see Keyboard step entry, Step

Reset to Bar 1 -

The **left-arrow key** sets the counter to Bar 1 and resets all Werk tracks and Melody Blocks. Default mod wheel and pitch bend values are sent on all assigned device channels, and if the looping function was engaged, linear play is restored. In GS mode tracks, sound settings for all parts are restored to their last-set phatWerk values. The clock is automatically stopped before a reset. The main screen bar counter briefly reads "resetting" while this takes place.

Reset to "go-to" bar

[**Shift slash**] sets the Werk to resume play from the last "go-to" bar. Play automatically stops first, but track functions are not reset.

Scales -

[**Shift s**] opens the Scales window, which includes a preset selection menu and an editor for the three User Scales.

Scroll - see Bar scroll, Tempo scroll

Setup - see Globals

Shortcuts - see Key Shortcuts

Spacebar - see Play

Step - see Keyboard step entry

Sync -

[No shortcut] A Main Screen button toggles sending MIDI clock. Clock and/or transposing notes are sent to an external device only if these functions are enabled in the Global Setup window. maxWerk automatically syncs to incoming start, stop, and clock messages.

Tempo -

[**Shift h**] switches between full (at-tempo) rate of play and half-timed play, which in turn determines the MIDI sync output tempo.

maxWerk displays half-timed play status as a '**1/2**' flag just beside the tempo indicator in the Main Screen.

Tempo scroll -

[**- / =**] The **dash** key and the **equals-sign** keys respectively decrement and increment maxWerk's play tempo. Tempos are overridden when you activate the Tempo Map.

Transpose -

[**Shift t**] opens the Transposer window, where values for Triad Roots, (+)Notes, Scales, Keys, and Pedal Points can be generated, auditioned, and hand-entered into a set of bar graph displays. This window includes sub-window access buttons for pattern editing, the Chord Menu and Map, the Global Offset Map, and the 'Copy/File' and "Shift/Expand" windows for managing progressions. When the Transposer is opened, its functions engage automatically, allowing stored data to take effect at each bar.

[**Shift x**] toggles the Transposing function.

When the Transposer is disabled, the following key shortcuts are operational, enabling manual changes of mode:

The **number keys 1-7** transpose within the current Scale by shifting the Triad Root pitch, and the equivalent value is assigned to the (+)Note. [**0**] (**Zero**) normally restores both Triad Roots and (+)Notes to their default value of 1. Note that during keyboard step entry, [**0**] is used to temporarily enter an empty step and create a rest.

Any key in the set [**Q-W-E-R-T-Y-U**], for as long as it is pressed, transposes value 8 independently of the other step values. These keys assign current Scale pitches from 1 through 7 to all the (+)Note data at value 8 without changing the current Triad Root. Releasing the held key restores the (+)Note to its default, which is always the same as the current Triad Root value.

Finally, the **up and down arrow keys** change the Global Key Offset by half steps.

Contact Information

The author hopes you find creative stimulus in maxWerk, just as we do. To inquire or comment about maxWerk, or for further help and explanation, send email to:

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