LET'S ALL GET LOOPY!

COOL APPLICATIONS OF THE LATEST SOFTWARE

The history of looping goes back more years than you might think. The idea of repeating a small musical fragment as an integral part of the music process and structure dates back at least to the responsorial music of the middle ages. More recently, composers such as Terry Riley, Steve Reich, Brian Eno, and Robert Fripp have experimented with tape loops and live performers playing loop-like passages as a method of working with repeated musical ideas. Over the last few years, software designers have applied the power of computing to musical looping, and music composers and performers have embraced looping programs as a way to work with sound both in the studio and live.

Looping software can be loosely defined as audio sequencing software. If you've ever worked with MIDI sequencing software, then you're familiar with the concept of recording MIDI data into tracks on a timeline, editing the data, and then organizing the tracks into a composition. Audio sequencing software works its magic by starting with actual audio recordings (loops) rather than MIDI data. You take a number of loops, place them into tracks on a timeline, edit the loops, and organize the loops and tracks into a song.

GENERAL FEATURES. Until just a few years ago, tempo and pitch were tied together. If you sampled a beat pattern at 100 bpm and played it back at 80, the pitch also fell by 20 percent. And if you wanted to synchronize two sampled patterns, such as a kit and a tambourine, keeping them locked together was often an exercise in insanity.

Looping software works by using advanced algorithms that treat pitch and tempo as totally independent aspects of recorded audio. If you morph a loop by a small amount (say move the tempo by 10-15 percent or alter the pitch by a step or two), you'll be hard-pressed to hear any artifacts or distortion in the resulting sound. If you try to stretch a loop way beyond its original tempo or pitch, you may encounter occasional aliasing or audible glitches. But even these audio oddities can create pretty amazing sounds and rhythms; some folks even like the mangled sounds better than the clean ones.

Looping programs let you browse your hard drive for audio files. Depending on the software, files in a variety of formats can be brought directly into the program without any type of conversion. As you might expect, the more formats a software program will rec-

ognize, the more flexibility you've got in picking sounds and being creative. If you do have audio files that a particular looping program won't recognize, you could invest in software designed to translate files from one format into another. Popular translation programs include Awave Studio by FMJ software, Translator from Chicken Systems, and CDXtract.

The software works by defining a master tempo, a meter, and perhaps a key (C major or D minor, etc.) either before or after the files are imported into the program. The software then reads or interpolates the audio file's original tempo and alters the file so that it can be played at the desired tempo and key. While the software won't automatically turn 4/4 files into 6/8, the programs give you the necessary tools to trim audio files so that portions of them could be used for less common meters than the traditional 4/4.

Looping programs have a tape-recorder-style interface for movement. You'll find play, pause, stop, rewind, fast-forward, and record. In addition, you'll find locators such as real time, measure and beats, and markers. Beyond that, looping software adds the ability to add scores of audio effects such as reverb.

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> —Chris Vrenna

delay, distortion, and even high-quality mastering effects and filters. Each program offers a slightly different interface to work with the files and each program has a unique set of tools that can be applied to the loops. Let's take a look at some of the more popular looping software programs.

GARAGEBAND. GarageBand is the newest program of this group, and it's an amazing program for a number of reasons. Perhaps the most surprising thing about GarageBand is that Apple gives the program away for free with each new computer. If you don't have a new Mac, you can purchase GarageBand as part of the iLife '04 suite of programs for 50 bucks!

The main screen for GarageBand is pure simplicity. The top portion shows the individual tracks, each with its own pan control, volume control, solo switch, and mute switch. The middle of the screen displays the transport controls, and the loop browser takes up the bottom portion of the window.

GarageBand serves as a way to mingle your audio loops with MIDI sequencer files and even record your own digital audio tracks. Using a free utility program available from Apple, you can convert loops that were made for ACID into GarageBand loops. Since there aren't any sample-editing tools in GarageBand itself, you'll need to use an external program if you want to do some serious tweaking. But for all of your basic truncating needs, GarageBand will fill the bill all by itself.

There are two types of instruments included with GarageBand: "real" instruments and software instruments. Software instruments are those that use MIDI data as source material for their sound, while so-called real instruments use pre-recorded loops. One of the very

coolest things in GarageBand is that MIDI and audio files are way more flexible then they might seem at first glance. You can create a real instrument track and then drag a soft instrument's loop into that track. The program will interpolate the audio data for you. How cool is that? You can also drag the same audio loop into different "real" instruments and get totally new sounds. For example, dragging the "Classic Rock Organ 01" riff into the Solo Sax instrument will give you a drastically different sound then dragging it into the Clean Jazz Guitar instrument.

When you run out of ideas using the loops, instruments, and effects that come with the program, you can pony up another 100 bucks and get the JamPack, which offers over 2,000 more loops, 100 more software instruments and audio effects, and 15 new guitar amp simulations. That's a lot of loops for the loot.

REASON 2.5. Reason is a complete electronic production studio, which includes a moderately sophisticated sequencer for recording MIDI information and a number of high quality synths, drum machines, samplers, and effects. You loopers will especially love the incredible Rex file player called Dr. Rex. Rex files are loops that have been embedded with special headers that define the loop's tempo, time signature, and length. The files also include markers that define individual slices inside the loop. When a Rex file is loaded into the Dr. Rex sound module, each slice is played in relation to the master tempo.

Reason is simple enough to learn in an hour or two, and deep enough to keep your creativity going for years. What really makes the Dr. Rex module such a powerful tool is its ability to alter a loop at the global level and

tweak each individual slice's pitch, pan position, volume and decay. On top of that, Dr. Rex has a large number of synth-like controls for amplitude and filter envelopes, mod and pitch wheels, and programmable response to changes in velocity – perfect for drummers!

Reason is such a powerful and flexible program, that there are many methods of performing loops in real time with a multipad or electronic kit. The easiest method is to play the slices by MIDI note numbers. Reason automatically assigns each slice its own MIDI note number starting from note number 36 and moving up chromatically (for example, slice seven will be note number 42). Using this method, you can play loop slices in their natural order, or move within the loop by firing slices out of order. This affords the ability to play loops and still be able to improvise around the sound set that the slice concept provides.

It's easy to create a file that has multiple instances of Dr. Rex players, each with its own effect processors. By assigning each Dr. Rex player to a different MIDI channel, you could control the interaction of up to 16 loops.

If you want to tweak your loops in real time, you can assign MIDI commands and continuous controllers to just about any editing parameter inside of Dr. Rex, i.e., you could send your hi-hat controller output to alter the pitch of a slice or the filter frequency.

Another technique for playing with loops inside of Reason is to create a loop with Dr. Rex, using all of the audio-altering tools that are available, and then activate the program's "export loop as audio" menu command. Once you've made an audio recording of the loop, you can then load it into Reason's NN-19 or NN-XT samplers. From that point, you can create multi-loop patches and control them

Photo by Bill Munyon

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just as you would inside any other type of sampler. The NN-XT sampler can layer multiple loops under the same key and put them under velocity switch control. How cool is that for working with loops?

If you want to create Rex files from your own playing, or change the slice positions of an existing file, you can pick up a copy of Propellerhead's "ReCycle!" software. After loading in an audio file, you can set your own loop points and slice positions. You can even

add some very cool effects and signal processing to further refine or destroy your looped creations.

LIVE 3.0. There is really nothing else quite like Live. The program is an audio sequencer and a loop player. What makes Live so unique is that it has been designed to serve as a real-time front-end interface to control audio files. While the main screen may seem to be a little crowded at first, the program is very easy to use. Sampled loops are loaded into slots on a

grid. The grid is set up with mixer tracks running in a vertical orientation. Any number of mixer tracks (with any number of clips) can play simultaneously, but a single mixer track can only play a single clip at a time.

Live will let you assign any MIDI message to a clip, and will fire that clip in trigger, gate, toggle, or repeat mode – all useful when playing the program from a drum controller. Each clip can be programmed to fire in synch (at a number of different quantize settings) with

Discover Your Inner

the other clips so that the timing is always 100-percent perfect. Or if you prefer, you can turn the synch off on a clip-by-clip basis, and fire a clip at the exact instant that you strike a pad. Imagine having a series of grooves that will always lock to each other and never fall out of synch while you fire one-shots behind the patterns. If you've ever done any DJ work, you'll find that Live will support your creative ideas here as well. You can drop an entire song into Live as a clip, along with several extra hits and effects that go along with the tune. Since Live will support an unlimited number of clips, you can place your entire set or even an entire night's material into a single file and pick and choose between them on the fly.

Every track in Live can support an unlimited number of audio effects. The audio chain moves from the left side of the screen to the right side, making it very easy to view, adjust, and rework the effects. In the effects area, you'll find all of the necessary tools such as reverb, gate, delay, chorus, and multi-band EQs. For more contemporary sounds, you can drag some more esoteric effects into the track such as erosion (modulates the input with filtered noise or a sine wave), vinyl distortion, resonators (five parallel resonators that are perfect for giving Vocoder-like effects to drums), redux (reduces a signal's sample rate

and bit resolution), grain delay, and a powerful auto filter to create moving filter effects that can be synched to tempo.

Live is the only program that will let you improvise with a song structure in real time. You can do time stretching, song arranging, loop editing, fx processing, and even digital recording in real time while the sequencing portion of the program records your every alteration. Then, just as with a MIDI sequencer, you can go back and further edit the sequenced data to tweak your real-time performance.

While the newest version wasn't available at press time, Live 4.0 should be on the shelves by the time you read this. Live has undergone a number of revisions over a short amount of time, and each new release has proved to offer significant advantages over previous versions – 4.0 should be no exception.

Several drummers are using Live for its interaction abilities. Suzanne Vega's drummer Doug Yowell says, "I am able to use its elastic capabilities to run sequences of music that can now breathe along with the artist in a natural way. If the artist I am working with decides to change the form of a song during a performance, it's no problem to change scenes and follow them as though the program was another

musician interacting with us."

ACID PRO 4.0. ACID has a long and illustrious history – perhaps seen as the "old man" of the sampling world, but the program has done well in keeping up to date with the current needs of looping artists. Several programs on the market today owe their interface ideas and organizational concepts to the ground broken by ACID. Sonic Foundry first published the program, but Sony Pictures Digital has recently picked it up. If your requirements include a large library of sounds, ACID has the largest user-base available, and a tremendous number of loop libraries.

In many ways, ACID is as easy to use as GarageBand, but offers an in-depth group of tools that makes it a fully professional product. The list of features is long and sophisticated: unlimited number of tracks, automated volume and pan envelopes, the ability to extract audio from a CD, and a huge number of great-sounding built-in effects.

In addition to automating volume and pan with envelopes, many of ACID's effects can use envelope shapes to control a number of parameters. Effects can be chained together and, if necessary, you can adjust the chain order to get additional variety, i.e., putting a reverb after a delay creates a different sound than putting the reverb before the delay.

rummer.

C ome on. Admit it. You want to play the drums! It's a natural thing, and it's good for you, too. Feeling stressed? Play drums to relax. Want to meet interesting people? Try a drum circle. Need to improve your grades at school? Drumming helps there, too! In fact, studies have shown that drumming can have a positive affect in education, relaxation, socialization, inspiration and gratification.

So, discover your inner drummer. With so many styles of drumming and so many types of drums to choose from, there's never been a better time.

Because deep down inside, everyone is a drummer.

ACID lets you work with your tracks in a number of different ways. In addition to copying, cutting, and pasting, you can edit using ripple edits (the program will shuffle events when you cut, paste, or delete them), and join, split, and trim events. Pitch shifting events up or down is as easy as hitting the plus or minus key on the computer keyboard. ACID supports an unlimited number of tracks, and you can record audio or MIDI directly into a track. If you've got software synths in your toolbox, ACID will route a MIDI track directly to that synth.

One of ACID's biggest features is its ability to load and synchronize video into a file. If you plan to use looping software to create a soundtrack to video, ACID is one of the strongest solutions. The program will generate MIDI time code and MIDI clock, as well as trigger events from MIDI time code, so that it can be synched with other audio programs and external hardware.

CREATIVE APPLICATIONS. These powerful compositional programs let the novice or professional craft music from the smaller building block of audio files. They can create entire songs in a matter of minutes, letting you quickly react to your creative ideas and expressions without having to toil over each and every note. If your keyboard chops are lacking, you may have difficulty recording a MIDI sequence or digital audio that reflects your ideas. Using loops, you can quickly audition files off your hard drive until you find one that comes close to your mind's ideal. Once you've found it, you can drag it into the software and make any necessary adjustments.

Grammy-winning artist Chris Vrenna, one of the founding members of Nine Inch Nails, is currently touring with his quasi-solo project Tweaker. Their latest release *2 A.M. Wakeup Call* was created in no small part by Vrenna's interaction with the looping program, ACID. "I don't start with the drums

anymore," he explains. "Now, we'll start with something more melodic. Clint [Walsh, his musical partner] will bring in a guitar or bass line. ACID is great for quickly trying different feels and different tempos to see where things work the best. We don't have to spend hours to test new styles or grooves. We might even start with a chord progression and then find the right groove for that. Sometimes, the drums are the last things that I'll do."

King Crimson's Pat Mastelotto also uses looping programs for creative sound production as well as for live performance. "If I ever come up short of ideas," he muses, "I just drop the filter pan or resonance effects onto a sample clip and new melodies and rhythmic possibilities are presented in seconds. Recently I've been doing some fly-in gigs in Europe and Japan with TU, my side project with Trey Gunn, and the gear I can handcarry is very limited. In an effort to keep things both well prepared and spontaneous, I've been setting up a MIDI template in Live to create an environment that corresponds to my Roland HandSonic. I keep the HandSonic volume down and use its pads and knobs to start/stop audio clips and adjust levels and effects in Live. I interface the two units with the little M-Audio MIDI Sport 2x2 and then when I want to go back to using the HandSonic with its own sound, I just depress the USB button on the interface to disengage that trigger path."

Several of these programs have their own dedicated websites for users to trade both ideas and complete musical compositions. These sites contain tons of information that can help you get the most out of your software. You'll find online versions of the manuals, video tutorials, and even bulletin boards where novices can ask questions and advice from more experienced users. The sites usually have an area where users can post their own song files – always interesting.

For example, one of the best ways to learn Reason is to download songs from other users and analyze how they, and the sound modules racks, have been constructed. Acidplanet.com has a following all its own. Many musicians use the song-sharing portion of the site to gain an audience for compositions created with or without ACID software. It's an engaging and vigorous site for composers, performers, and potential collaborators.

Each program is a powerful tool on its own, but when they're working together toward a single goal, the possibilities are mind blowing. If you're not familiar with the ReWire protocol, it's a system, developed by Propellerhead Software, which allows for transferring of audio data between different software programs. Using ReWire you can combine these programs with each other or with additional programs such as MIDI sequencers, soft samplers, and digital audio recorders. ReWire takes a good deal of computer overhead, so you might want to check with the manufacturers of each software package to see what features are supported in ReWire and the processing horsepower required to run the programs together.

GET GOING! One of the biggest advantages of working with looping software is the tremendous number of files that are available for purchase from soundware publishers, and for free (and legal) downloading from the Internet. It's also very easy to record and create your own loops from scratch.
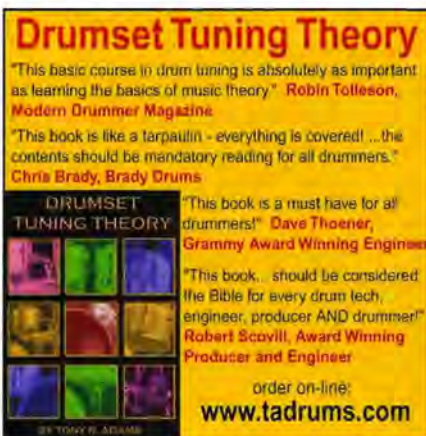
Each of these software packages offers a free demo download from their websites. If you really want to have some fun and feel the tremendous power that these software packages can give you, download one or two of the demo versions and give 'em a spin around the block. I promise that your inspirational juices will bubble over and you'll realize how these tools can make you a better, more creative, and perhaps a more marketable musician.