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MUSIC PRODUCTION and PERFORMANCE With the MOTIF

Understanding the Sample SLICE function

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Working with Sample Loops: Slicing and Dicing

The sample Slice function on the MOTIF works when you need to match the BPM of different loops. Slice is an edit JOB that prepares a sample to be tempo adjusted – independent of pitch change. It allows you to ‘time stretch’ loop phrases up to 8 measures in length. There are three main slicing algorithms in the MOTIF: Beat, Phrase and Quick. Mastering the use of these algorithms will greatly improve your musical results. Read through the different types and determine which algorithm best serves your needs then try different sensitivity settings within that algorithm. As you gain more experience slicing audio it will get easier to recognize which algorithm to use and what are the proper settings to get the best results. You will find it works on most all sampled data including vocals and sustaining instruments. Make a COPY of your original wave and experiment with the copies until you find the algorithm that will give you flawless results - Then execute it on your original. If you are an impatient person this will be difficult because it does require that you be willing to experiment – through experimentation you will find ultimate enlightenment.

There are a few things to understand about the SLICE function. Its purpose is to allow you to change the BPM of a sample loop without changing its pitch in Pattern mode. This is accomplished by dividing the sample loop into a number of time segments based on the particular analysis type selected. Each time segment (sample slice) is assigned to a successively higher MIDI note number in a user sample location. This sample location is “local” to the Pattern that you create it in and is accessible via the MIXING/Voice screen as bank 63/50; that is, MSB = 063/ LSB = 050. During the processing of the sample a small bit of audio is extrapolated and added to the end of each sample slice increasing its length so that it will not leave a gap when the BPM is reduced. A MIDI note event is placed in a user Phrase that will accurately trigger each time slice when the Phrase is played back – to a

resolution of 480ppqn¹. This user Phrase is automatically ‘associated’ with the sample voice so that any time the Phrase is recalled the MOTIF will automatically select the correct sample program. Anytime you have a group of audio loops that you want to use together, use the SLICE function to prepare the loops. You can create as many sample loops as you need in a Pattern (up to a maximum of 128 per Program). You can playback a maximum 16 time-stretched audio loops at a time - one per track. It is necessary for each sliced audio phrase occupy a track – because it requires the map of chromatic slices. Phrases can be recalled in Sections and selected on the fly. Sliced audio Phrases can be combined and re-sampled at the new tempo.

Another reason for slicing audio loops into segments is to create a ‘construction kit’ from the sounds within the loop. You can have the SLICE function break each hit onto a separate note so that you can use it like a drum kit – play the individual hits and record a pattern. Still another reason is to change the timing or to change a specific sound within a loop. Once you have broken a loop down into individual events on separate notes of your keyboard almost anything is possible. For example, it is possible with the Groove Grid function to adjust the feel and/or timing of the sliced loop. You can even change the velocity of note events – it is possible to remove a snare drum, for example, and replace it with a completely different snare from the MOTIF. Mastering the SLICE function is well worth the time it will take. Experimentation is the name of the game and understanding the parameter setup is a very important key. Let’s begin.

There are **two methods** to prepare sample loops for BPM time stretching. The first is to sample using the SLICE+SEQ sample type. This sample type will step you through the process in three steps. Once you have stopped sampling, the MOTIF will deliver you to a page where you can adjust the loop Start and End points. Once you have satisfactorily looped the

¹ PPQN is pulses per quarter note. Each quarter note is divided into 480 parts. Each measure of 4/4 time is 1920 clocks per measure. 120 clocks is a sixteenth note. 240 is an eighth note and so on.

audio, you press [F2] for the SLICE Job, where you apply the settings to chop up the audio. The second method would be to just simply select the Sample Edit Job number 12, SLICE, directly. You would do this if you imported the sample or you sampled several audio loops one after the other and would prefer to slice them *after* you sample them all. Either way the function is the same. You must record or import, then trim and loop, and finally Slice and dice.

There are 8 different SLICE types. It is very important to select the correct one in order to get useable results on the current data. Because the nature of each bit of audio will be different, you must be willing to go through a 'trial and error' process. A clear understanding of the TYPES will be very important. Here are the types: Beat 1, Beat 2, Beat 3, Phrase 1, Phrase 2, Phrase 3, Phrase 4 and Quick.

Quick is very similar to the algorithms used by the SU700 and SU200 and will mathematically divide the sample loop into musically equal parts according to the BPM. It is important that the sample be properly trimmed (Start and End Points) – this is true in all the slicing algorithms. No intelligent analysis or processing is used and therefore the processing time is very 'quick'. The trade off is that since no analysis is done, unless the loop is in perfect metronome time, your results may not be musically satisfying. If you have a 2-measure loop and you set Sub-Divide to 16th notes you will have 32 slices.

The **Beat** type and **Phrase** type, described in detail below, use **intelligent** analysis of amplitude, rhythm and tempo, which will require more time to process but deliver better more controllable results. Take your time working with SLICE – it is a deep and flexible tool.

Beat Type 1, 2, 3

These algorithms are best for percussive and rhythmic samples like drums, rhythm guitar and slap bass. Some use beat divisions and some do not. Read carefully.

Beat 1 is the most basic type. This slice algorithm will utilize an amplitude envelope and analysis, **not** beat divisions of the sound. This algorithm will create a new note for each audio burst. The Sub-Divide

parameter has no meaning in this algorithm. Try this algorithm first.

Beat 2 employs a faster time for attack processing (FIT) Fade-in time. Slice algorithms have attack time that will cut the samples without click noises. If the rhythm is quick, slower attack processing will have undesirable results. If the rhythm is slow a smoother attack will be preferred. So there will be several choices of attack processing times (Fade In Time). Beat 2 uses **only** amplitude envelope, so it is the same as Beat 1 with a faster FIT. Therefore, Sub-Divide parameter also has no meaning in this algorithm. Use Beat 2 if Beat 1 gives you 'clicky' results.

Beat 3 uses amplitude envelope **and** beat division of the samples. If the algorithm detects a large amplitude peak *near* the 'beat' of a subdivided timing mark, like a quarter note or eighth note etc., the algorithm will slice at that point. Fade In Time is the same as Beat 1 type.

Phrase Type 1, 2, 3, 4

This type is good for sustained sounds or sounds with long decays; vocals, solo instruments and pads. Also recommended for sounds and tracks of drums mixed with other sustained timbres and drums loops with long cymbals, etc.

Phrase 1 is the most basic type of this category and should be tried first for the sustaining type of sample. This algorithm uses both amplitude envelope **and** beat timing analysis for its slicing.

Phrase 2 and 3 are very similar to Phrase 1 except for the FITs. The shorter FIT for types 2 and 3 may be more appropriate or effective for more rhythmically punctuated phrases.

Phrase 4 is unique in its extrapolation between slices of the sample. All algorithms on RS/Motif will apply some extrapolation on the end of the slices (tails of the samples) to create a smoother sound for slower tempos. On the SU products, slower tempos caused gaps between the sliced samples. Extrapolation fills these spaces. Phrase 4 applies "other" extrapolation algorithms to pad the release portion of the sample. You will find this type of extrapolation is most suitable for

vocals and solo instrument sounds. FIT is the same as Phrase type 2.

Other settings

In addition to setting the slicing type, you must set the **Sensitivity** setting. To get the best results select a type and try several 'Sensitivity' settings until you get the results you require (the higher the sensitivity setting - the more slices that will be created). With proper settings you should be able to create audio that can function cleanly at any practical BPM. You can audition your results before committing (see below).

The maximum length of an audio loop that can be sliced into segments (Slice+Seq) is 8 measures. The number of segments created by the slicing will be determined by the MOTIF after analyzing the audio data. This is why it creates a new Sample Program - to hold the key map of audio segments. The maximum number of slices that can be created is limited to the number of notes on a MIDI channel, 128.

The only difference between selecting SLICE+SEQ as the sampling type and executing the SLICE job is *when* you have decided to do it. They are the same (they refer to the same function).

Prepare your Loop by setting the LOOP START and LOOP END Points. Before you can effectively SLICE you must master loop creation.² The rule is that all audio to be sliced, must loop. All loops must be **perfect** because there is no such thing as an imperfect loop...it either loops or limps!

Setup for SLICE

Here is procedure for slicing for setting up the SLICE function parameters.

The SLICE page lets you set the following:

- **Measure** - set this equal to the length of the loop. By telling it the length, the Motif can then perform its calculations. If this is set improperly your result will be either too fast or too slow.
- **Time Signature** - set this appropriately for the music. If this is set improperly your sample will be divided accordingly.

² Looping can be done on-board the Motif or externally with TWE or any wave editor.

- **SUB-DIVIDE**³ - set this when you are using an algorithm other than Beat 1 or Beat 2 (which ignore it). It will help determine where it decides to place a slice musically. If the music is basically an eighth note feel try dividing it to that value. **TYPE** - select the type based on the kind of loop you are dealing with. In general, there is plenty of 'air' in drum loops (space between the hits) - therefore Beat 1-3 work best on percussive, start-stop kind of loops. Phrase 1-4 work best on data with sustaining elements, like held notes or cymbals ringing etc. "Quick" divides without any analysis at all. **SENSITIVITY** - 5 is most sensitive and will cause more divisions. 1 is the least number of divisions. If you get a click at the start of a sliced segment, reduce the sensitivity. And try again. (DO over). The Slice function is not completed until you have auditioned and approved of the results.

Make your initial settings based on your own best 'theory' of what will work on this sample. At first you will be straight out guessing - later you will develop a sense about which algorithms and setting will do the job based on the audio data. It comes with experience.

When you have made your best guesses **execute** the task. Although this is when the MOTIF will do its analysis and create the slices and key map - it has not saved it or completed it yet. You get to say whether you like the results. And this is an important step.

When completed use the following **AUDITION** methods to check your results.

1. **Audition method 1:** Press and hold the [SF1] AUDITION button and monitor the results. Try changing the tempo to audition it at the BPM you think you will be using. The Motif will let you audition at the new tempo.

³ Question: Why does the MOTIF say "(1/4)" when you set the divide to 16th notes?

Answer: It is referring to how it will divide 1 beat at the current time signature. It will divide 1 beat into quarters when the time signature is 4/4. If the time signature is 8/8, then when you set sub-divide to 16th notes you will be dividing each beat in (1/2) and so on. The number in parenthesis is the division of 1 beat at the current time signature.

2. **Audition method 2:** Play the keys. The Motif will map the notes chromatically up the keyboard. Play these notes individually and determine if you have too many slices (meaningless portions of a hit) or too few slices (too much data on a single note). If you are going for a "construction kit" (breaking the loop down to individual drum hits) you want clean, isolated hits per note. Set your Sensitivity to correct your number of slices. Lower Sensitivity for fewer slices, and higher Sensitivity for more slices.
- If your results are just horrible, reset your parameters to improve your results and do it again. Be methodical and organized in your setup, that way you do not have to repeat a setting that does not work. The selection between Beat and Phrase is pretty clear. The 1, 2 or 3 levels have to do with different attack times. If you get a big CLICK as one of the notes, try a FASTER attack type (higher number). Use PHRASE 4 on critical sustaining type data.
 - When you are satisfied with the results press [F6] OK. This will keep the data. If you do not push OK the Motif will dump the data.

The MIDI data that the Slice function creates will be housed in a new numbered USER PHRASE and can be recalled on any track, in any Section of the current PATTERN when you need it. The MOTIF will automatically create a new Sample Program – it reserves the entire Program because it can create a great number of slices. Not to worry, as mentioned, you have 128 User Sample slots per Pattern and 128 per Song (more than you can use). And as part of the Integrated Sampling Sequencer – the MIDI Phrase is automatically associated with the audio Sample Program – recalling the Phrase recalls the samples. Sliced audio samples can be copied and moved around just like any other sample.

If the SLICE results are usable, press the [F6] OK button to add the new Phrase to your User Phrase library (256 User Phrases per Pattern). It will map the samples across the MIDI keyboard in ascending order, chromatically. Each note is then given a time-stamp (measure-beat-clock

location), a gate time (duration) and a velocity (100). *Where* the note (burst of audio) occurs is part of what is analyzed. You can view and edit this note-on data like you do every other MIDI track – Press [PATTERN], then press [EDIT] to see and edit the event list. Additionally, you can use the GROOVE and SWING functions to alter the playback – like you do every other MIDI track. Be careful, if you quantize this data you will be changing the original timing relationship.

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