

SAMPLECRAZE

THE BEAT PRODUCTION BIBLE

THE DEFINITIVE GUIDE FOR PRODUCERS
WRITTEN BY EDDIE BAZIL

Beat Production Bible: Demo Chapter

This is an excerpt taken from Eddie Bazil's book, '**Beat Production Bible**'. To download the complete book with all audio examples, please go to:

<http://www.mpc-samples.com/product.php/97/the-beat-production-bible/>

4. Working That Beat – The Drum Pattern

To understand how to assemble a beat one must understand timing. In fact, timing is the most crucial aspect of any composition as timing determines both style and movement.

To understand timing you need to understand how music is written, at least for the two genres this e-book is aimed at: Dance and Hip Hop.

I am not going to get into staves, clefs, quavers etc, but am going to concentrate on bars, signatures and quantise. Because when it comes to programming, or inputting notes, drum hits into a bar/s then it is crucial to understand what the divisions are and how the notes are laid out. The divisions will determine which quantise values need to be used and how they affect the overall 'feel' of the inputted notes.

So, let's look at what signatures (also known as time signatures), bars and quantise all mean.

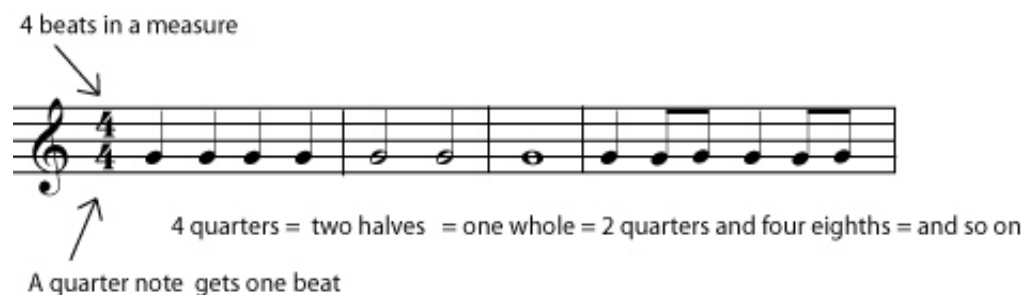
Time Signature and Bars

The time signature (also known as "meter signature") is a notational convention used in Western musical notation to specify how many beats are in each bar and what note value constitutes one beat.

Most time signatures comprise two numbers, one above the other. In text time signatures are written in the manner of a fraction: for example 4/4 which is the most common time signature used.

The number on top is the number of notes per measure, and the bottom number is what kind of note

Hopefully, this image will explain things a bit better:



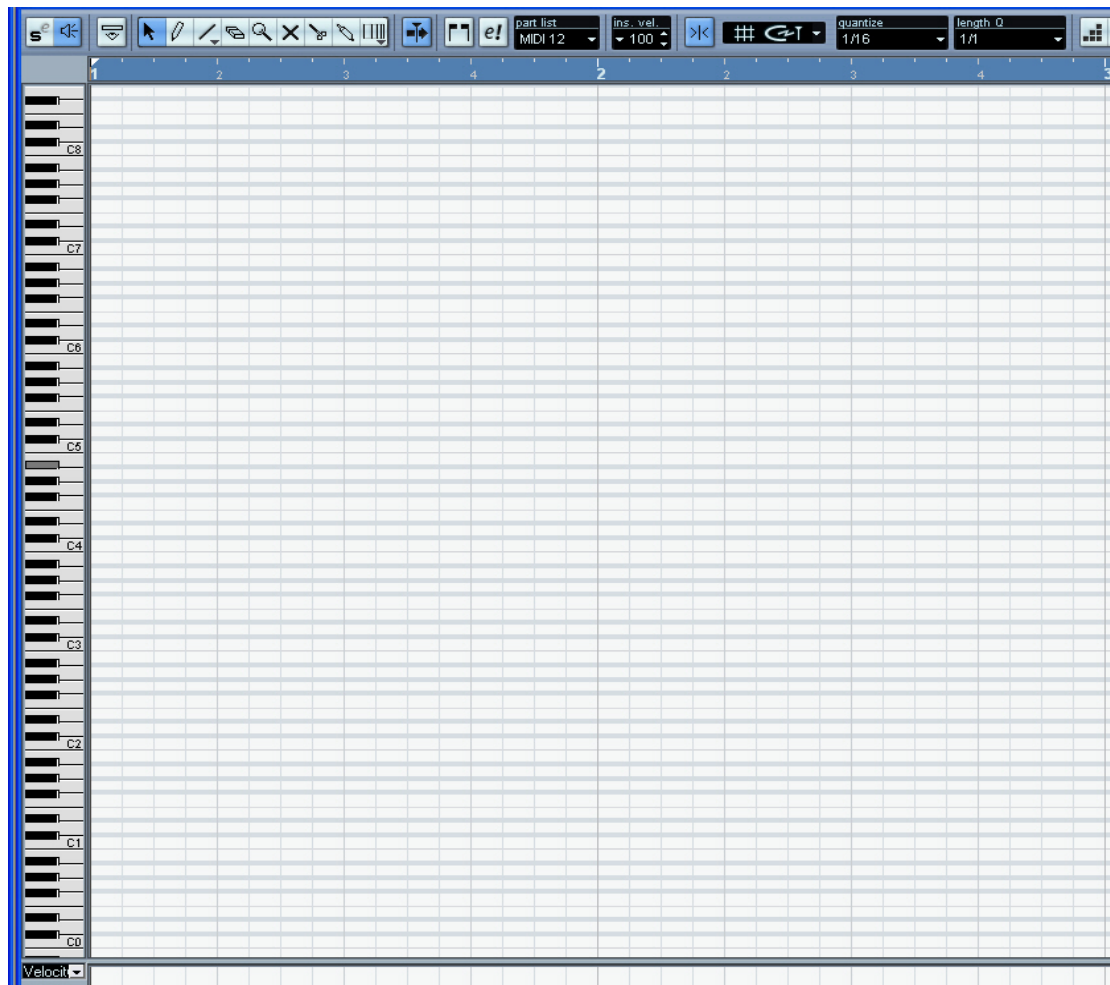
In the image above, you can see that there are 4 quarter notes in the first bar, two halves in the second and so on.

A bar, or measure, is a segment of time defined as a given number of beats at a given duration.

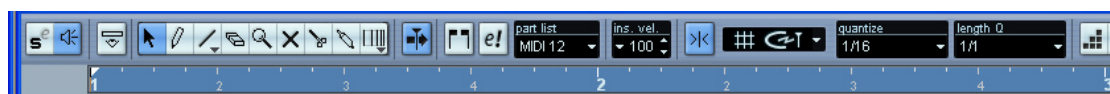
Quantise

Quantisation is the process of aligning a set of musical notes to conform to a grid. When you want to quantize a certain group of MIDI notes in a song, the program moves each note to the closest point on the grid. Invariably, the quantise value determines where on the grid the notes are moved to.

Let us look at this as an image so you can understand exactly how quantise works.



As you can see, I have opened up the key editor in Cubase (you can use the key or grid editor in your own software application), and have chosen 2 bars (1-3) and have selected a quantise value of 16 (evident in the top section of the editor below).

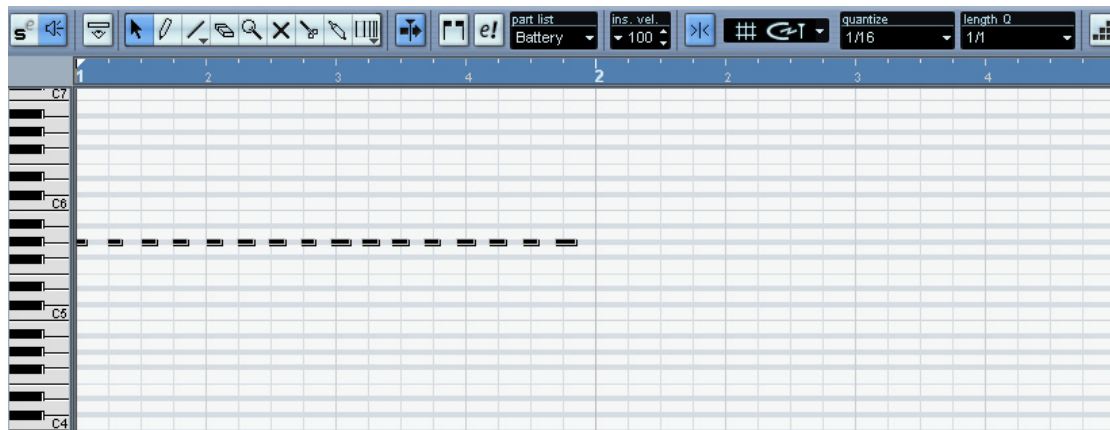


Looking at the key editor image, it is clear that each bar has been 'cut' into 16 segments (count the empty boxes).

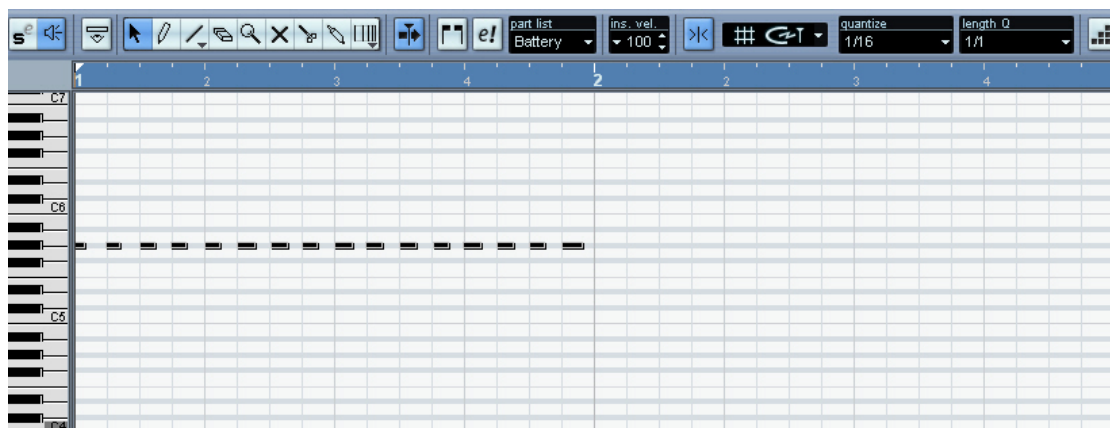
In terms of quantising Midi notes to the grid, you can see that there are 16 available grid points that will be used to determine where the input notes will be moved to. If you were to play some notes into your sequencing application and view it in the editor, you would see where the notes lie. If the notes are not timed well, then by using the quantise function you can move the mistimed notes to the nearest quantise value.

Look at the two images below, one is a 'before' quantise and the other is an 'after' quantise.

Before



After



In the 'before' image, you can see that I have deliberately input mistimed notes and you can see how these notes are either too early or too late.

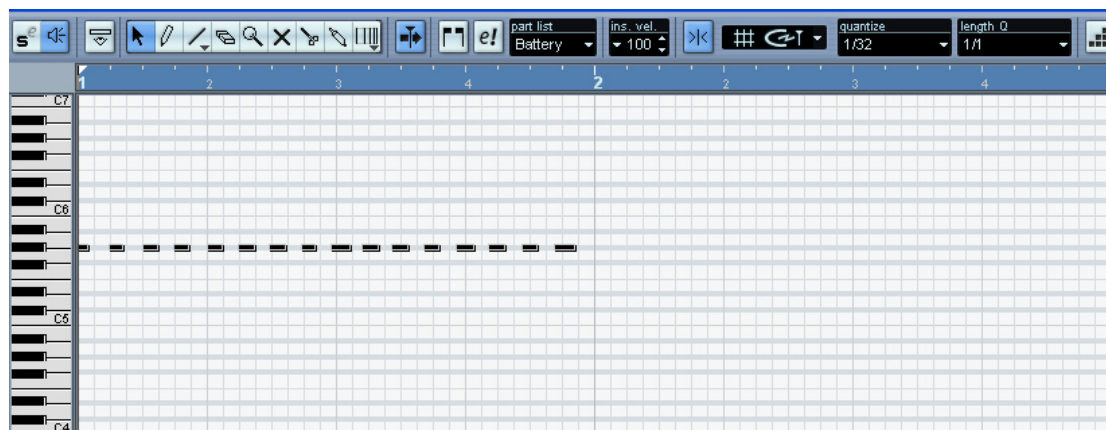
Now, if you look at the 'after' image, I have used the quantise function and quantised the notes to their nearest grid positions. Because I am using 16 values (resolution), I have enough segments to use to move the notes to. This corrects my mistimed notes.

Sometimes, even using 16 quantise can still make the inputted notes sound too syncopated (robotic) and this can take away from the natural feel of 'playing in' the notes. So, to try to minimise the rigidity of the moved notes, we can use higher quantise values.

If we go back to the mistimed (before) image prior to me using the quantise function, and change the quantise value to 32, I will get a more detailed and finer resolution to play with.

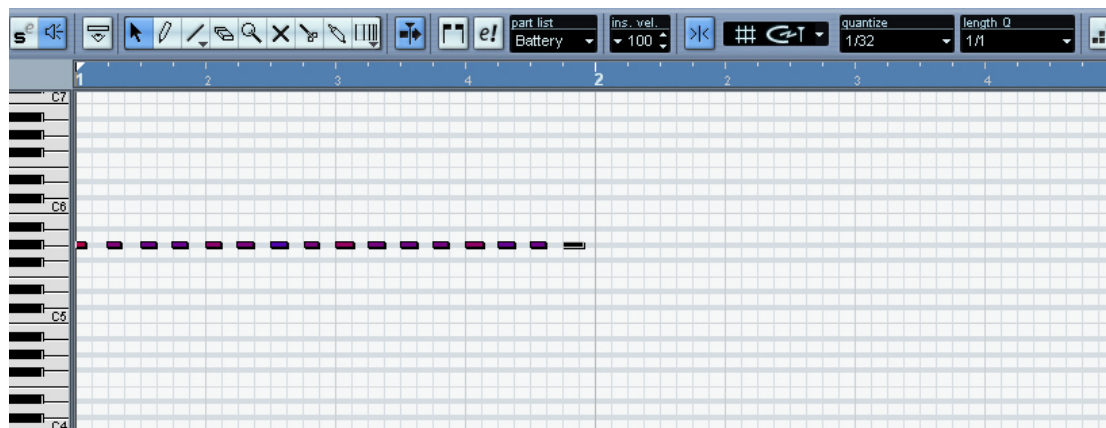
Look at the images below and you will see what I have done.

Before



By selecting a quantise value of 32 I now have more segments to quantise the notes to. This gives me finer and smaller move points. You can see that there are now 32 little boxes for each bar, as opposed to 16.

After



By using the quantise function, set at 32, I have moved my mistimed notes to the nearest 32nd point, as opposed to the nearest 16th point. This allows for finer corrections and makes the music sound far less syncopated.

Most software will allow for even finer quantise values (up to 128th) and afford the user with all sorts of options to further define how the quantise function behaves. Most of these options include:

Swing: It lets you offset every second position in the grid, creating a swing or shuffle feel. Swing is actually a great quantise weapon. It is most commonly used by the Hip Hop fraternity to compensate for the lack of a 'shuffle' feel to the beat. The amount of swing applied to the quantise is determined in percentages. The more swing, the higher the percentage applied.

It is important to remember that the slower the tempo of your track, the more syncopated the music will sound if low value quantise is used. This has caused problems for many songwriters and they usually compensate by using higher quantise values, or working in double time (ie using a tempo of 140bpm for a song that is meant to be in 70bpm). Working in double time is the equivalent of using half the quantise value. For example, a song in 70bpm written in 140bpm

can use a quantise value of 16, which would equate to using a quantise value of 32 when using the original 70bpm (beats per minute) tempo.

The swing function allows for a more 'offset' feel when quantising and makes the music sound more human as opposed to robotic.

In fact, swing is such a potent tool that the Dance heads are now using it to give a little life to the hi hat fills etc.

Grid and type: Grid allows you to pick a note length (for example: 1/4, 1/8, and so on) to use for the resolution, while Type sets a modifier for the note length: Straight, Triplet or Dotted. I will not go into this as you would need to understand about note lengths etc, but what I will say is that the triplet is extremely handy when programming drums and particularly hi hat patterns that require fast moving fills.

Random Quantise: Another feature that can be useful to make your performances sound more in time without being completely mechanical is Random Quantise. Here you specify a value in ticks (120ths of sixteenth notes) so that when a note is quantised to the nearest beat specified by the other parameters in the quantise template, it is offset by a random amount from zero to the value specified by the Random Quantise setting. Basically, this takes away the rigidity of syncopated rhythms, particularly when dealing with hi hats. It allows for a 'random' element to be used, much akin to a drummer's human timing.

Most software will come with many additional tools to refine the quantise function and it's settings. Humanise, iterative, freeze etc all go to giving the user more detailed editing power. For the sake of this e-book I am keeping it simple and only using the functions that most will adopt.

Dynamics

The next most crucial part of creating a successful sounding drum beat is that of dynamics; how a note behaves over time when struck.

Every note has an attack, a decay, a sustain and a release. This is most commonly known as the ADSR (attack, decay, sustain, release). When a note is struck the initial response is the attack, the time it takes for the attack to die down and settle at the body is called the decay, the sustain is the body of the note and how long it continues, and the release is when the note is released.

We can shape the ADSR of any sound thus changing it's dynamics, i.e. it's shape. By using the ADSR of a given sound, we can dramatically alter it's velocity (how quickly the note is struck to optimum level), we can alter the gain (volume) and we can alter the length. By shaping the sound we can customise it's properties to our own needs.

I have often changed the attack of a snare to either give it a more pronounced feel or to give it a softer feel. Hi hats benefit the most from dynamic changes as they are usually played with varying gains and lengths, unlike snares which tend to be more consistent in gain. There are no hard and fast rules here. You adjust a sound's dynamics based on what you require from it within the song's context.

In terms of midi information, you are not dealing with a sound as such but the information used to trigger and release that sound. You are altering the dynamics of the sound through the use of midi messages. Midi is not sound, Midi is a way of messaging note information to the software being used, and a way of

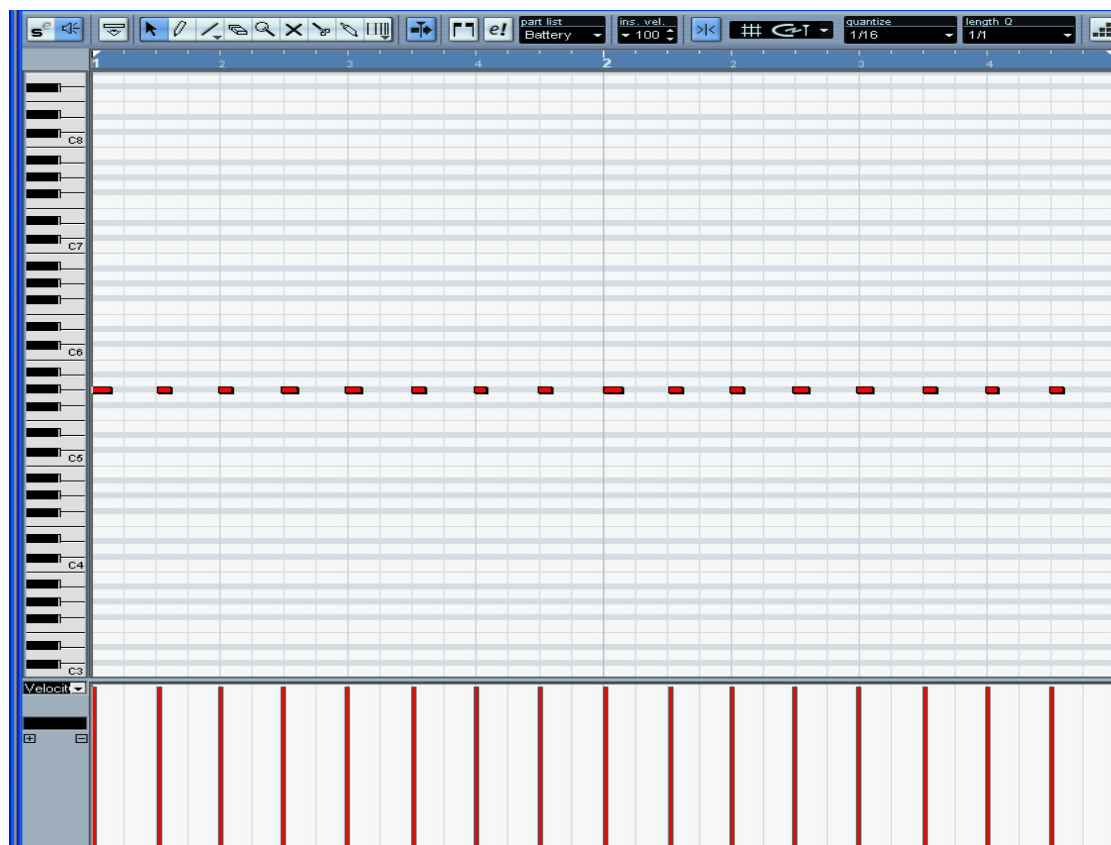
communication between midi devices (MIDI: Musical Instrument Digital Interface).

Example: you use midi to input notes via a controller keyboard and then you use midi to process and edit those notes within your software sequencer.

In terms of drum programming, dynamic control is crucial in shaping the sequence and the notes within it. How many times have you played a hi hat pattern at full velocity (speed of attack and gain) and then wondered why it sounds so rigid? How many times have you played a drum beat using 3 different kicks only to find that there is no dynamic relationship between the kicks and they all sound the same volume?

Using dynamics can alter all the above and make sounds sound more natural or flowing. Let us take a simple example of a hi hat playing over 2 bars in 16th quantise. I have played this at full 127 velocity (0 being silence and 127 being max velocity).

Hi Hat at full velocity



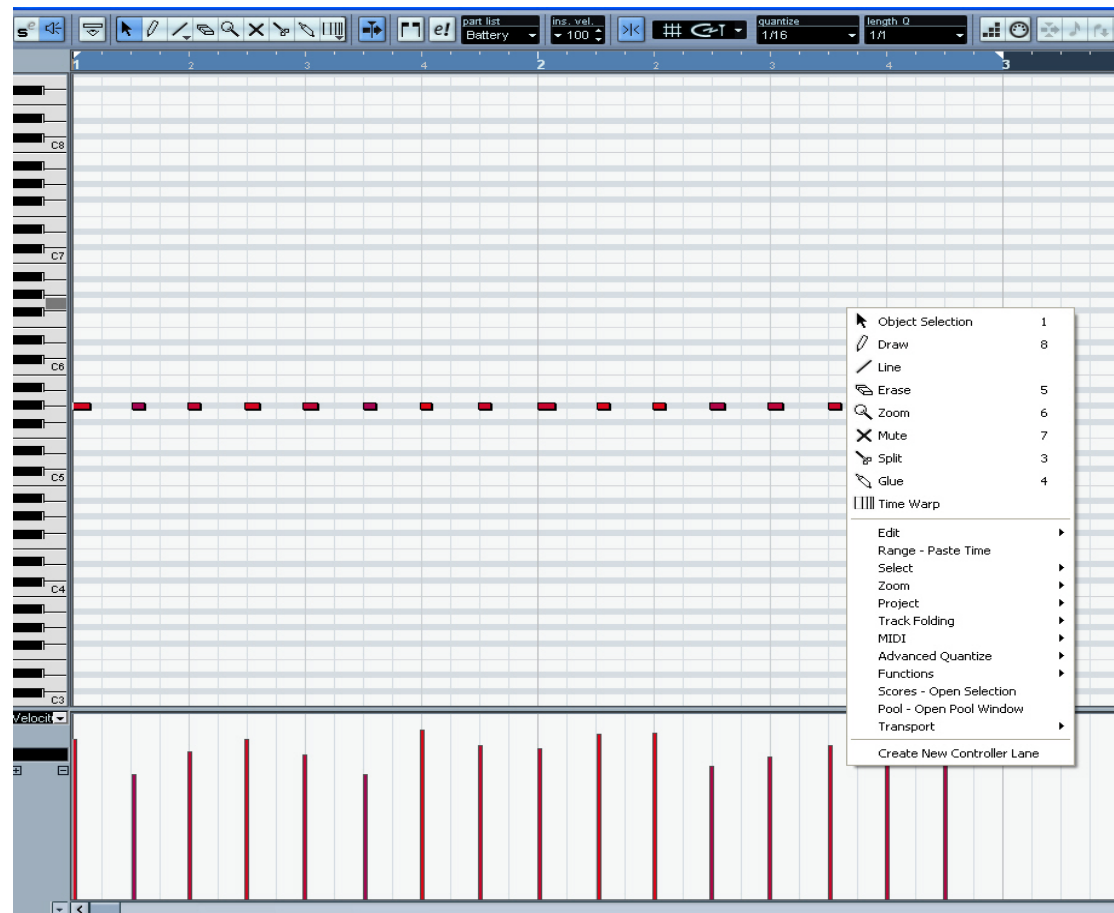
hi hat 16 velocity before.wav

The lines directly below at the bottom of the key editor denote the velocity of each note. In Cubase I have the ability, as almost all software do, to alter any midi event available. On the left hand side right next to the first velocity bar, you will see that the word 'velocity' has been selected. This is the event I am going to change. I could select any other even available from the drop down menu (expression, pan, pitchbend etc), but for this exercise I am staying with velocity.

If you listen to the audio file provided you will hear that the pattern is not flowing in any sense, but rigid in it's velocity and not fluid.

By 'drawing' in a new velocity shape for all the notes, or manually changing each, I am able to allow for more dynamic changes to take place. This allows the listener to remain interested and the brain keeps active instead of switching off due to repetition. Look at the image below with the velocity editing.

Hi Hat with velocity changes (pencil tool dynamic)



 **hi hat 16 velocity after.wav**

By using the pencil tool (draw) from the menu I have 'drawn' the new shape for the velocity of each note. You can do this note at a time or drag the pencil across all the velocity lines at the bottom and shape to taste.

If you listen to the audio file above you will notice the velocity variances allow for a more natural sounding pattern.

Altering the dynamics of a single sound in a pattern will alter the overall sound of the whole pattern. The best drum beat producers go to extreme lengths to get the timing and feel right for a given beat. Even after I have played in a drum beat to kill all drum beats (according to me....pah), I still go into the editor and alter the dynamics to get it exactly right.

For those of you that use hardware sequencers, the thinking and application is exactly the same, only the interface and application might be different.

For example, those that use an MPC will also have velocity control within the unit's tools. In fact, most dynamics can be controlled.

Manual editing

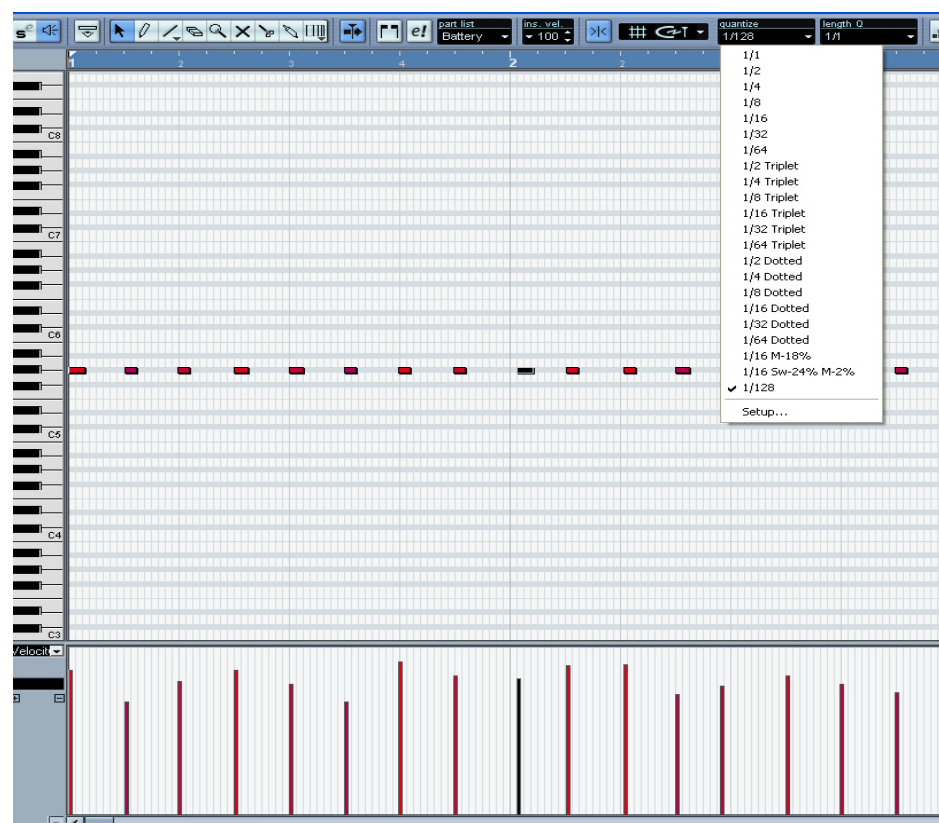
I must say that as a drummer I rarely use the quantise function, and the only time that I do get deep and involved with the quantise is when dealing with very high bpm music like Trance, as the human drumming factor is less obvious and finer corrections are needed to make the parts sound more humanly played.

Personally, I prefer to edit a drum beat manually as I prefer to move certain notes and leave others untouched. This also applies to velocity changes, note duration changes etc. I find that manual editing gives me far more control and flexibility. But, each to his/her own and this e-book is not here to tell you how I like to work, but to help you in understanding what tools and methods are available out there in the vast abyss known as the music industry, a jealously guarded industry.

A favourite trick is to go into the key/grid editor and select a 128th quantise value and move the notes forward or back by 'ticks' (120th of a sixteenth note). By doing this you are not limited to having to apply a general quantise that affects every note, but to apply subtle changes where you feel is required without changing the note positions of the other notes. Usual practice dictates that you select a quantise value, quantise to that value, and then select 128 quantise value and then do the edits. This keeps all the other notes in their correct positions but allows you to move any notes you want.

I will use the existing quantised 16 value pattern and then show you how to alter this by using the 128 quantise value and moving notes by ticks.

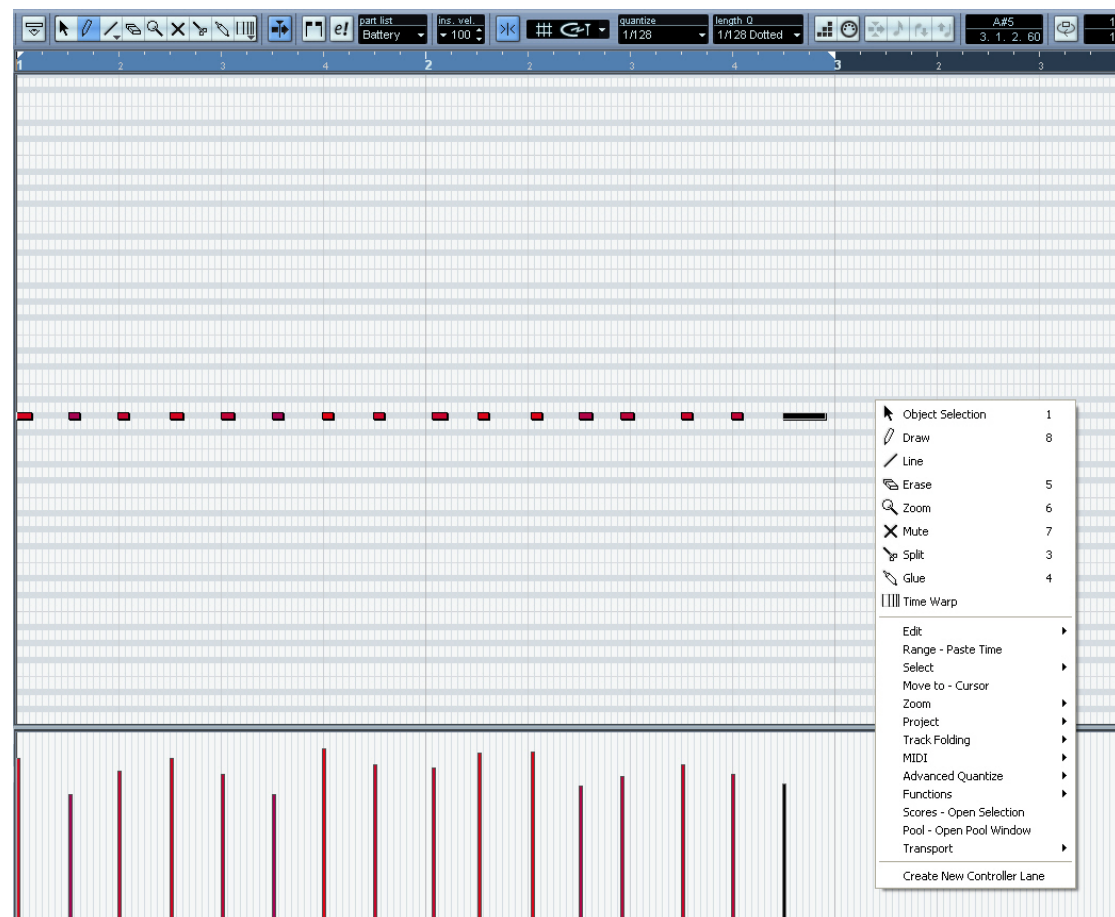
Manual Tick Editing



If you look at the image above you will notice that I first quantised the entire pattern using quantise 16 value, then selected the 128 quantise value and then moved a few notes around by tick increments (highlighted black). This gives me far greater control and allows me to alter note positions without affecting the entire pattern structure.

Changing note lengths is as important as note positioning as a single change could change the entire feel of the pattern.

Editing Note Length



As you can see, I have made the last note in the pattern longer. This can be great for shaping the pattern. You can also make notes shorter which can be a real plus when it comes to adding in ghost notes or having double hi hat hits.

Ghost notes

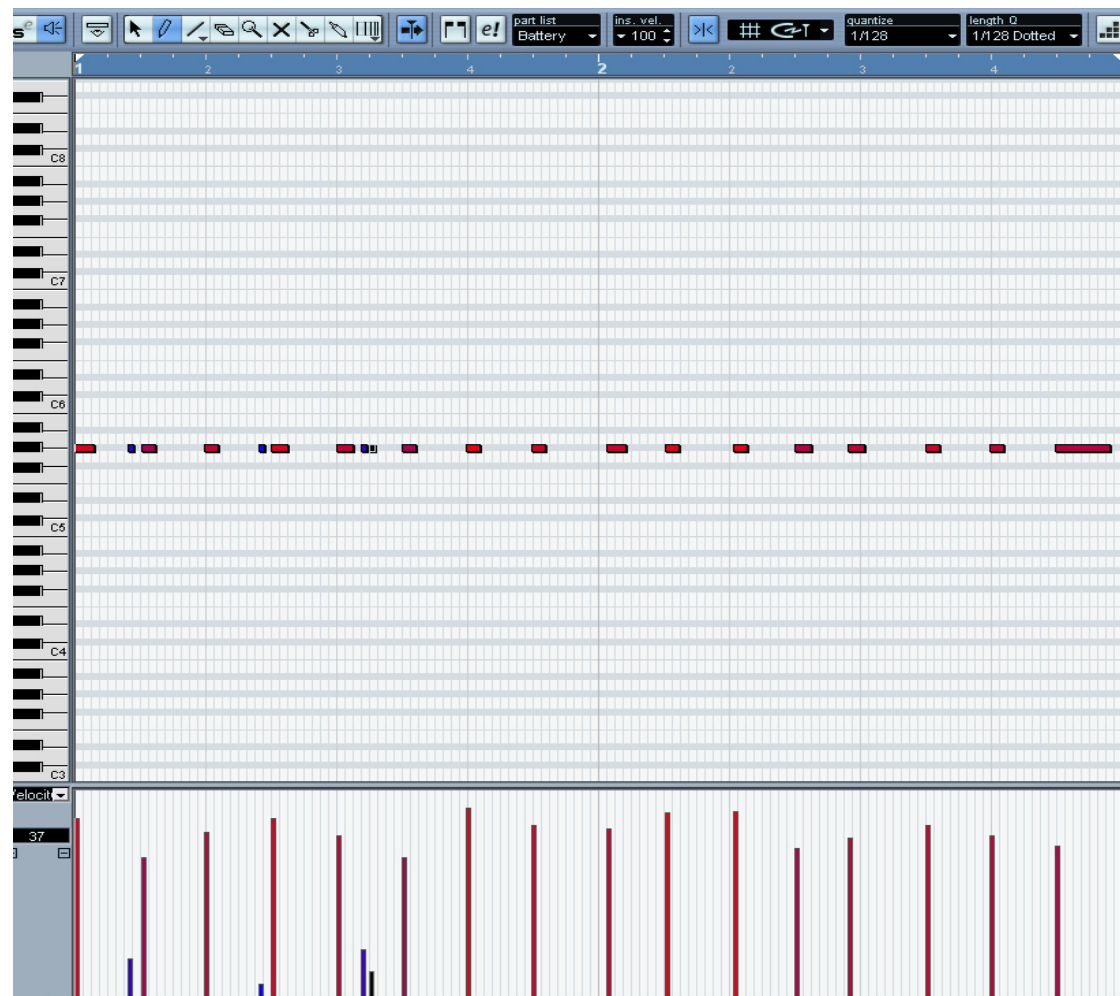
Ghost notes are musical notes occurring in a rhythmic figure which are purposely deemphasized, often nearly to the point of silence. You will often find that ghost notes are used in almost all styles but predominantly in any style that uses acoustic instruments. However, it is also a well tried and successful technique for adding life and body to a drum pattern. The fact that the ghost note is almost silent means that the listener 'feels' it as opposed to hearing it.

Bearing in mind that music is all about perception, this technique is perfect for what we are aiming for. In terms of percussive programming it can make all the difference.

You create ghost notes by either drawing in notes in the key editor, or by playing them in while auditioning back the recorded data. You then need to change the gains of the ghost notes to almost silence. Positioning is crucial here as the ghost notes need to be placed correctly for them to have any effect. However, as with all my advice, try to experiment until you find the right combination of both position and velocity.

In the example below, I have created ghost notes before and after certain notes. I have also adjusted their velocities dramatically.

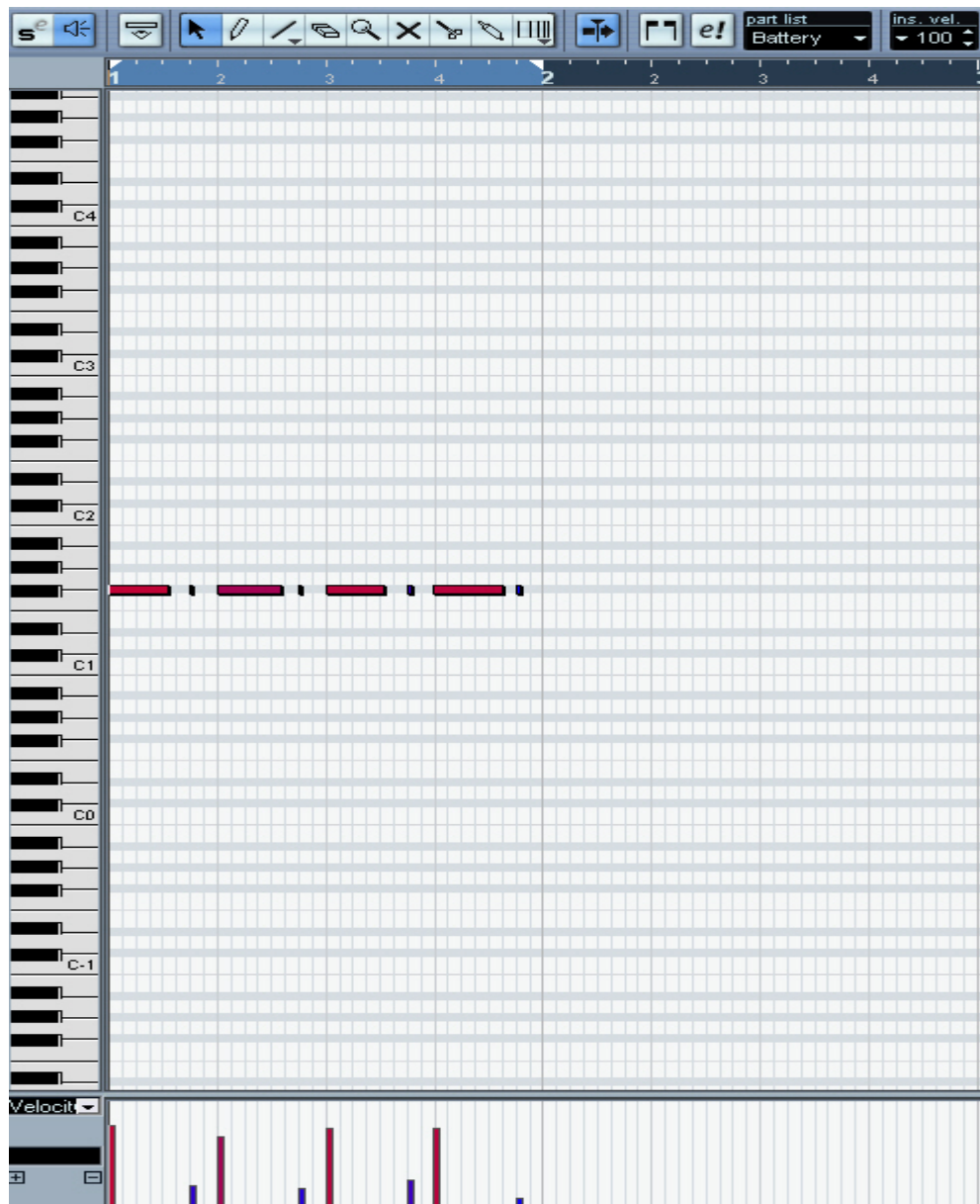
Ghost Notes



The ghost notes are all in black and you can see what I have done to their velocities by looking at the velocity lines below. If you listen to the accompanying audio file you will notice that the notes (non-ghosted) sound both fuller and with tiny echoes. When you apply ghost notes in the right places within a pattern, it can add fullness and artificial swing.

Here is another straight 4/4 hi hat pattern that I have added ghost notes to.

Hi Hat Ghost Notes



 **hi hat ghost notes.wav**

In the above example I have created the ghost notes to give a fuller sound to the hi hats but the important ghost note here is the last one just before bar 2. This is what I call a drop down ghost note. It allows the loop to go back into itself without sounding as if it is syncopated.

Note that the positioning of this ghost note is different to the others. I have also adjusted the velocities of all the ghost notes so that they are barely audible.

The trick to applying ghost notes to any given pattern is that of quantise and placement. With a high tempo track, I will use the 16 quantise to bring all the notes in place, and then apply the ghost notes using 128th quantise. This allows

me to move the ghost notes where I want and by small tiny amounts. Trust me; this makes all the difference when creating more fluid drum patterns.

It is important to bear in mind that tiny little changes can have a huge impact on an overall patter, so start off by making small changes and then auditioning the results and then making further changes if needed.

Pan

The secret to a natural and big sounding beat is that of sound placement. Nowadays, I hear some dire examples of how not to pan a sound. In fact, Hip Hop demos have become so poor in terms of mixing that some do not even warrant a listen irrespective to how good the compositions are.

I am confronted more and more with demos that have the snare panned to one side of the stereo field. I cannot for the life of me begin to understand why anyone would pan a snare sound hard right or left bearing in mind that all the 'drive' sounds are centrally placed. The bass is always central, the kick is always central and so is the snare. Some very subtle variances in placement can take place for the snare depending on what effect is being applied but even taking this into account the snare is never panned either side of the stereo field by much.

The general rules governing drum sound placements are quite simple. You have either the stage field view of the drum kit or the audience view. Either way, the drum kit has the kick placed centrally, the hi hats and pedal hats just off centre and the snare central.

Percussive sounds can be placed anywhere in the field as long as they sound balanced and are not biased by too much. Balance is achieved by spreading frequencies across the field so as to achieve a natural sounding spectral field. Otherwise, the brain starts to bias it's listening and there is no quicker way to throw a track into imbalance than by badly panning opposing and complimentary frequencies.

There is no point in placing all the tom drums on one side of the field, same as you would not put all the hi hats, crashes and high frequencies on one side. You need to spread frequencies so the brain enjoys the experience and does not compartmentalise the individual sounds.

Extreme panning does not help either. Having a hi hat panned hard right not only sounds wrong but will play havoc with the gains of the other sounds. A sound that is panned centrally will always sound quieter than the same sound panned hard right or left. So, bear that in mind when moving low or high frequency sounds around in the field.

We producers have loads of other nice little tricks to make sounds sound bigger without having to compromise their field positioning. By using certain effects and dynamics, we can emphasise spread (width) and depth. Delays, gated reverbs, Middle and Side, side-chained compressors etc all can be used to great effect in accomplishing a desired outcome.

Understanding how a drum kit is set up on stage is the first step in understanding where to pan certain sounds. The rest is down to how the brain perceives sound and throwing low frequencies to one side and high frequencies to the other side is a sure fire way of being thrown out of the record label's A&R department.

Experiment but keep it sensible. Think from a drummer's perceptive and then wear the engineers hat and make the sounds form a fluid soundscape that is both natural and pleasing.

Today, we have some excellent tools to both shape and move sound across the axis. Having a crash pan from left to right is a great effect that sits well in the stereo field. Having that same crash sound sitting hard right is not. So, do not think I am stifling your creativity. I am not. I am enhancing it by providing you with dos and don'ts.

As a general rule; always listen to your music after you have performed an edit, particularly in relation to pans. Keep the music playing for a good few minutes then decide if it is irritating you, or does not sound natural, or sounds great. You decide.

Drum copies

Another favourite trick is to make copies of the drum sounds you are using to create your pattern, and then to use them at varying velocities and edits to create a more dynamically active pattern.

Basically, as an example, instead of using one kick drum for your pattern, you use copies of the same kick drum at varying velocities and edits. Of course you can just draw in the dynamics of the additional kicks but that will take time especially if the pattern is busy and the kicks are close to each other.

Personally, I prefer to create another copy (secondary kick) of the same kick, place it in another key placement within the sampler I am using, and to then lower the gain and maybe add a filter to it. By using the main kick interchanged with the secondary kick I can add a more dynamic feel to the pattern.

The image below shows what I have done within Battery 3 to make a copy of the kick drum and to treat it by lowering it's gain and adding a filter to it. This is my secondary kick and I will be using it to add a little more dynamic feel to the simple pattern.

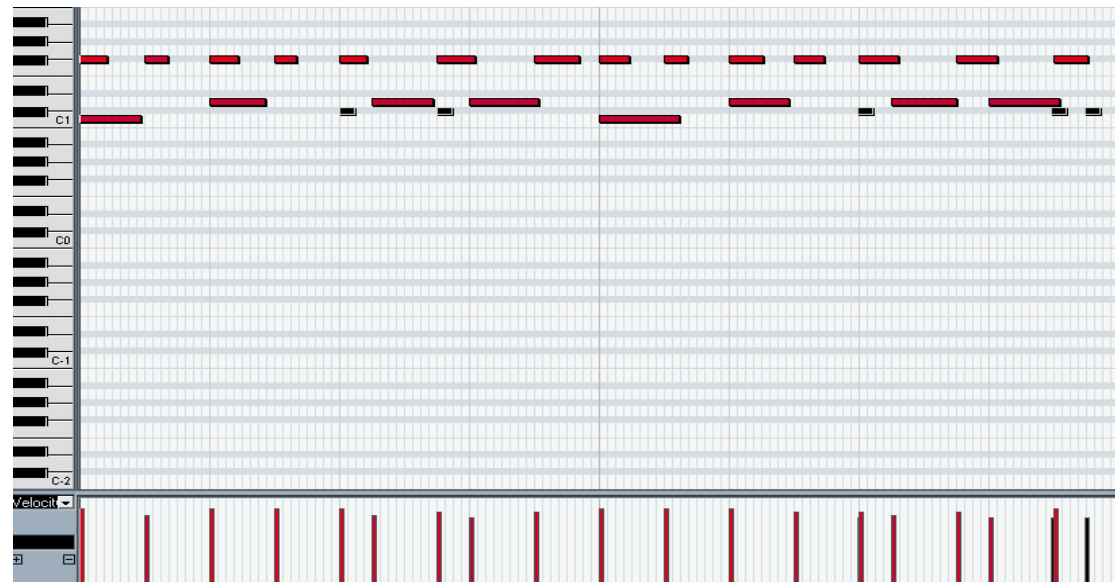
Battery 3 kick drum copy and edit



If you look at row A at the top left of the cell matrix, you will see that I have copied Tim K033 into the next cell (C#1). I have then treated the copied kick sample by reducing it's gain and adding a low pass filter to it and reducing the cut-off frequency. This makes the sound more muffled and deep.

By adding this to my drum pattern I give the pattern a little more feel. The image below shows where I have placed the secondary kicks (highlighted in black).

Secondary kick placement



Note how I have kept the drum pattern simple but by adding the secondary kick the pattern is starting to sound a little fuller.

You can also see the velocity levels at the bottom line bars. I have not drawn these in but played them in. The secondary kicks are lower in gain and are therefore as such by the lines.

Try to create as many variations of the samples you are using as possible. This will give you lots of possibilities in creating different feels for your drum patterns. I always create about 5-8 variations of each sample. They will all exhibit different edits. Some will be run through a high pass filter, others will be beefed up by using a low pass filter or some EQ treatment and so on, but what I always do is try to create a feel for the pattern by concentrating on the timing.

Layering and dynamic layering

This is an area I am not going to explore as I have covered this extensively in two of my other e-books: Art of Drum Layering and Art of Drum Layering Advanced.

What I do want to touch on is multi-layering dynamics. This is all about using many samples at differing velocities to create a natural dynamic much akin to the feel of hitting a a real acoustic drum. Most of the vstis that you are using probably have multi-layered drum patches (presets) and try to take full advantage of this. It makes all the difference when you can hit a drum sound at varying velocities. We have emulated this by controlling the velocity dynamics within Cubase. But if you can create it at patch level then you will have both

better control over the dynamics in real-time and a more natural sounding pattern.

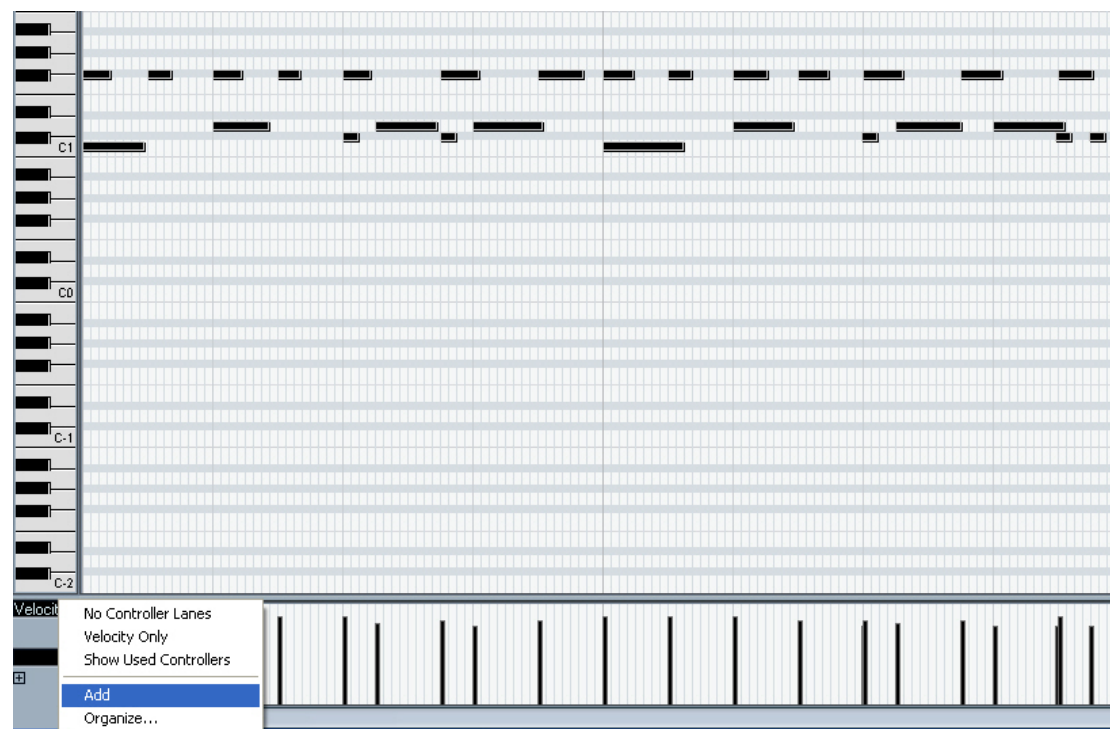
If you do not multi-layered drum patches in your sonic arsenal, then create your own. It really is not difficult, just laborious.

Velocity curve templates

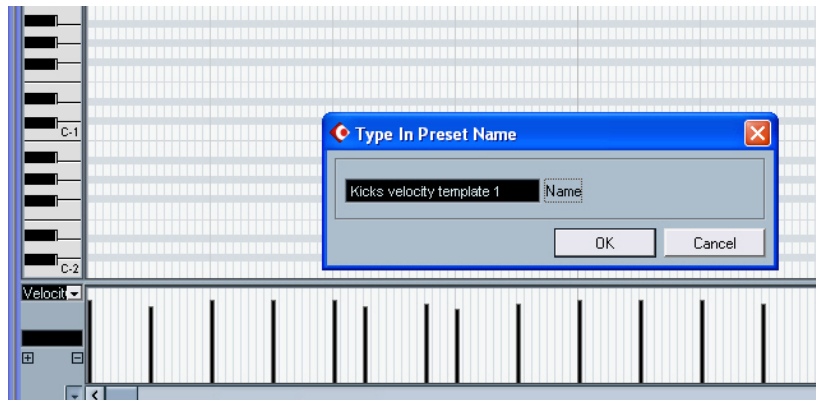
Many software and hardware, particularly samplers, will have this feature. It is a predefined 'playing' template that uses velocity as a method of playing sounds. This is a very useful feature as it allows you to use templates for all manner of instruments patches. For example, you can use a template for percussive playing, or for piano etc. Each template is designed to create a velocity curve for the way the sound is played. Emu hardware samplers incorporate a number of very useful templates. Most templates will be linear and some can be edited.

In Cubase, instead of spending a lot of time trying to edit each and every note via the velocity controller, it is far easier to use an existing template or to create your own. The images below show how to do this. Try to apply the same to your sequencing software.

Adding velocity template



Naming and saving velocity template



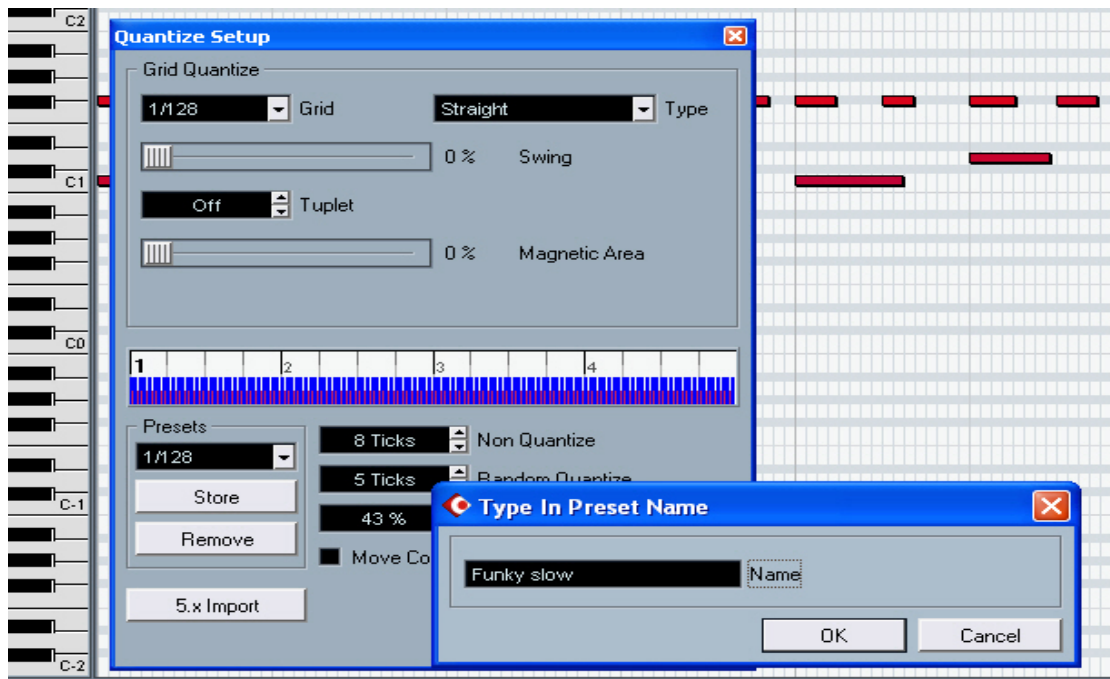
Try to name the template sensibly so you can call it up anytime you choose and use it on another pattern.

Quantise template save

I was going to mention this earlier in the quantise section, but felt there was not enough detailed information to warrant using this function. But now that we have moved notes around etc I feel it to be a good time to suggest you get into the habit of creating and saving your own templates.

The image below shows how you can name and store your quantise edits as a template that you can call up any time you choose to do so.

Naming and saving quantise template



By using Midi-Quantise setup, I am able to edit even further, name and store the current quantise edits as a stored template. By clicking on the window 'Presets' I get another window that opens up where I can name the quantise template. I have named this particular template as 'Funky Slow'. Then I simply click on store and it will be available as a preset whenever I want to call it up.

While we are on this subject, wouldn't it be great if you could extract quantise templates from other sources and use them in your own music? What if I told you that you could extract a groovy quantise template from an audio loop? Would that excite you a touch?

Most decent audio/sequencing packages like Cubase will offer you an 'Extract Groove or Create Groove Quantise from Hitpoints'. Hitpoints are the same as markers. You apply these hitpoints to the peaks in the audio file and then use 'Create Groove Quantise from Hitpoints' in the audio menu. Of course, the software you are using will have different terminology or tools, but they all do the same thing.

You can then use this quantise groove template exactly as you would any other groove template within the quantise menu option.

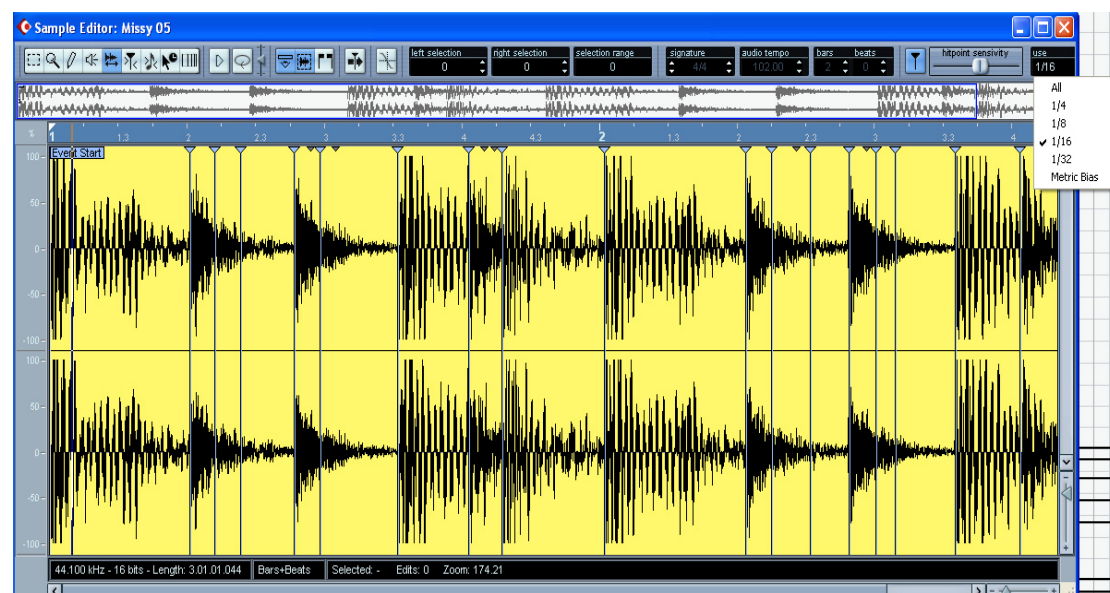
This tool is extremely effective when dealing with drum loops as drum loops have distinct peak points (where the kick, snare, hi hats etc peak), so it makes it easier to extract grooves and create templates.

Additionally, you can import groove templates from other sources and use them as exactly the same as using a pre defined template. There are many companies that now offer groove templates of your favourite quantise templates. MPC drum quantise templates spring to mind.

Here is an example of how to extract and create a groove template from a piece of audio. The principles are the same for most software so try to transcribe the tools and terminology across to your software. I am using a very famous piece of audio; a drum loop from Missy E.

The image below is the opened audio editor menu. The sample is Missy E's drum beat and you can see it clearly (marked in yellow).

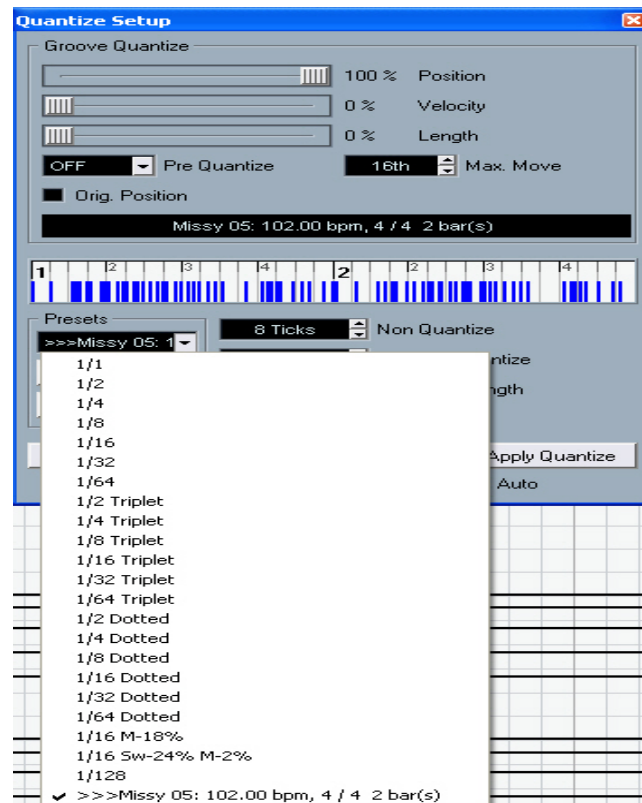
Selecting hitpoints for groove extraction



I have selected the hitpoint function, set the slice markers to 16 (you can select what you like) and have used 'Calculate Hitpoints' from the audio-hitpoint submenu. I have named this drum loop 'Missy-05 102bpm', and that is what will show up in my quantise setup menu. Giving as much information as possible will help you in determining what the quantise characteristics are. Tempo is most crucial here.

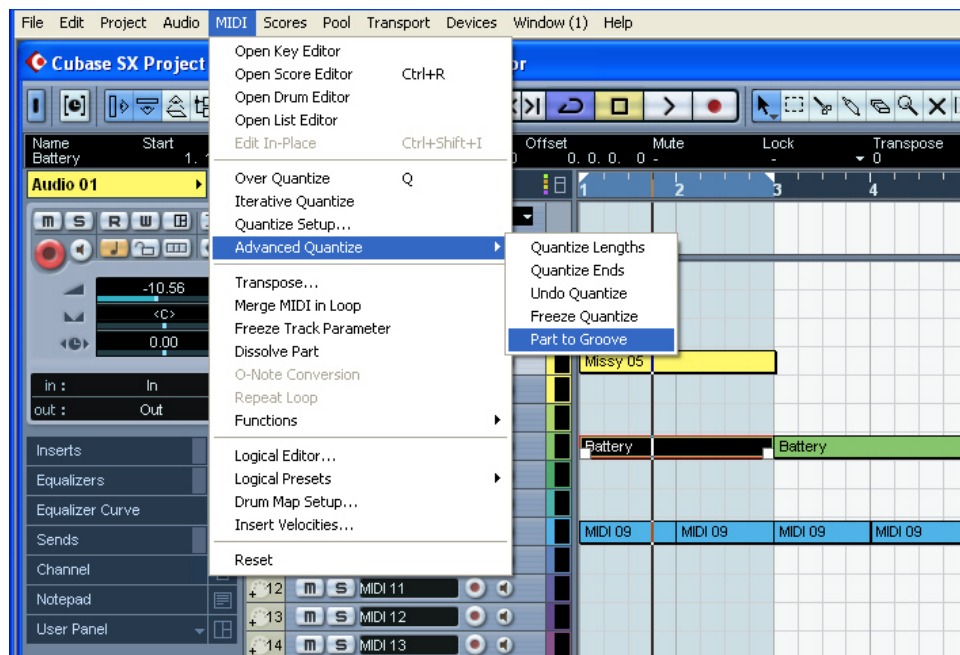
And if you now open the quantise setup menu, the groove has been extracted and stored in the preset section (below).

Extracted Groove quantise



All the timing information is also shown in the quantise setup menu. Extracting grooves, particularly for drum patterns, is a great function and will help you in not only getting your drum patterns to flow nicely, but in understanding how certain edits are made. And, it doesn't end there either. You can also select a midi part and extract a template from that (image below).

Extracting groove from midi part



By selecting the part you want to extract the groove from, you simply highlight the part, go to Midi menu and select Advanced Quantise and click on Part to Groove. Much as the audio groove extraction, the extracted groove will appear in the quantise setup menu under presets.

Now, you are wondering why this is meant to be cool. That is simple. It allows you to load midi files of your favourite songs, extract the grooves and apply it to your music.

Remember that the biggest problem when importing third party midi files of famous songs is that once imported the song defaults to the standard quantise setting within your software. By using the midi groove extraction, you are in effect extracting the midi note information as hitpoints and creating a template from that information. You can thank me later.

Beat Production Bible: Demo Chapter

This is an excerpt taken from Eddie Bazil's book, '**Beat Production Bible**'. To download the complete book with all audio examples, please go to:

<http://www.mpc-samples.com/product.php/97/the-beat-production-bible/>