Wayne's FruityLoops Music-Making Lessons

Lesson 1: A Few Basics and Some Genres

1. Getting to Know the Grid (Step Sequencer)
2. Making a Hip-hop Beat
3. Inna Dancehall Style
4. Techno Techniques
5. Recap: Some Steps for Beginners

Lesson 2: New Sounds, Timbre, and Melody

1. Fleshing-out Patterns: Adding New Sounds, Changing Timbres
2. More on Melody
3. A Word of Caution: the Taste of Space

Lesson 3: Form

1. Basic Song Form: Duple Groupings, Layers, and Breaks
2. The Turnaround
3. Verse/Chorus
4. Intros and Endings

Lesson One: A Few Basics and Some Genres

In this first lesson, we will learn how to build rhythmic patterns using a loop-based, music creation software program called Fruityloops. We will begin by focusing on what is called the step-sequencer, a tool that allows one to sequence sound files along a grid.

Getting to know the Grid (Step-Sequencer)

The grid can contain as many boxes as one desires (go to <options>, then <song settings>). Grids of 16, 32, and 64 boxes--i.e, large multiples of 4--are the most common and the ones I would recommend trying at first. Each sound (a .wav file) is stored in a separate channel, of which one has an unlimited number (it starts you with 4). Fruityloops comes with a large and varied soundbank, consisting mostly of synthesized sounds. With a .wav editor (such as Cooledit or Soundforge) and a little imagination, however, the sky is the limit.

Fruityloops allows you to listen as you edit, making composition a real-time activity and allowing your eyes and ears to guide you through the creation process. I would recommend listening as you go, so that you can get immediate feedback on the changes you make. (The <spacebar> is a good shortcut for starting and stopping).

Let's begin by considering a simple three-channel, sixteen-beat grid:

In "traditional" (i.e., european art music) terms, we could consider each little box to represent a sixteenth-note, which one can designate to stand as a "rest" or an "attack." Sixteen-sixteenth notes equal one whole-note, eight-eighth notes, and four quarter-notes (or beats).

Loaded into the channels are a kick drum, a snare drum, and a hi-hat cymbal: the three basic percussive elements in most genres of popular music, from hip-hop and rap to house and techno, r&b and funk, rock and pop, dancehall and roots reggae, drum and bass, jungle, trance, electro, etc.

All of these musics have forms based on repetition--on looping--and they all have thier own conventions. Learning the conventions of a particular genre of music is the easiest way to begin producing music in that style. Once these conventions are mastered, one can break the rules as much as one desires in order to express an original voice.

As one can see, the grid changes color from blue to red every four boxes. If we look at a 16-box grid as one four-beat bar, each change in color signals the beginning of a new beat (or quarter-note). For example, if we place a kick drum on beats 1 and 3 and a snare drum on beats 2 and 4, it would look like this:

This basic pattern is often a good one to begin with, as many genres share its placement of kicks and snares. See if you can count along: 1, 2, 3, 4, 1, 2, 3, 4 . . .

What, then, makes this pattern sound like, say, hip-hop as opposed to techno?

The answer is tempo--the speed of the music. Fruityloops allows one to control tempo quite easily. You can change the b.p.m. (beats per minute) with a drag of the mouse:

Be aware that Fruityloops always begins new sessions at 140 bpm, which is quite fast, relatively speaking. Generally, techno music ranges from 120 to 150 bpm, whereas hip-hop runs from 80 to 110 bpm, dancehall hovers between 95 and 120, and something like drum 'n' bass can get as fast as 170 bpm. Bear in mind, again, that these are conventions--not hard and fast rules. Nevertheless, such conventions are familiar to people: we recognize them immediately upon hearing them; conventions, such as a snare drum on beats 2 and 4, make us nod our heads and tap our feet.

Making a Hip-hop Beat

Let's begin by slowing the tempo to something more in the hip-hop range. A tempo somewhere in the 90s, along with the following pattern, will sound like hip-hop or rap to most people:

As one can see, I have simply added a hi-hat pattern--accenting every other box, or every on-beat and every off-beat--to the basic kick-and-snare pattern from above. Hip-hop is not, however, restricted to this rhythmic pattern. Many variations exist, and one will often want to play with this basic pattern in order to come up with something fresh.

For example, hear how profoundly the feel of the beat changes if we simply shift the second kick-drum over a bit:

There are various other conventional (and satisfying) places to add or substitute kick-drums in hip hop. Although one almost always wants a kick on beat 1 to emphasize the downbeat, try placing kicks in other places for some nice syncopation. Each new kick adds a different kind of movement to the rhythm. Experiment a bit to feel the difference and find particular places that you like to accent.

Similarly, one usually wants to keep snares on beats 2 and 4 (to produce the proper amount of head-snapping effect on the backbeat), but additional snares can provide effective moments of surprise and movement. One generally wants to avoid a kick and snare sounding on the same beat. Sometimes, however, the effect can be powerful, especially with a kick on 2 or 4 or a snare on 1.

The hi-hat provides a kind of glue for the beat, linking the kicks and snares and providing the kind of steady foundation that enables syncopation. Altering this hi-hat pattern, though less conventional, can sometimes be effective. Alternating between on- and off-beat accents—

—is one way to vary the hi-hat pattern, but such patterns tend to sound better when played with shakers or other types of percussion (which can always be added to or substituted for the hi-hat).

Again, be aware of the importance of tempo or speed. No matter how faithful to convention, a hip-hop pattern will not sound like if hip-hop if played too fast or too slow. Try to keep the tempo somewhere between 80 and 110 bpm. Experiment with tempos in this range to change the feel of your beat, or to match the rate at which you want to rap, sing, or dance.

Inna Dancehall Style

If we keep the tempo in the high 90s and low 100s, we can morph our hip-hop beat into a dancehall riddim remarkably easily. The predominant pattern for dancehall is instantly recognizable with its driving, 3+3+2 rhythm.

First, shift the snares over two boxes to the right (one eighth-note, or half a beat, later).

Next, add a couple additional kick-drums, (place them on the final blue box of each blue group), and dancehall's distinctive beat emerges instantly.

Looking at the kick and snare patterns together, one sees a pattern of 3+3+2: the first kick lands on beat 1, the next three boxes later, the snare lands on the third box after this, then, just two boxes later (beat 3), we begin again. 3+3+2. The slightly assymetrical rhythm plays against the steady underlying pulse to provide some real momentum.

Of course, this is only one possible, though the most common, way to lay out a dancehall pattern. Often dancehall producers dispense with snares altogether, substituting kicks for them, or use many more. At other times, producers will leave out part of the pattern, hinting at it instead of banging it out. One can also experiment with a less regular hi-hat pattern.

One final layer to add is what producers call the “bass,” which rarely plays a "moving" bassline but instead, with a recurring low tone, supports and fattens the basic 3+3+2 rhythm. One can create this “bass” attack by taking a particularly bass-heavy kick drum or a resonant bass sound and doubling the basic pattern.

Techno Techniques

Let's round out our survey of genres by looking at the standard pattern for most techno music. The biggest difference between techno and the genres we have looked at so far is tempo. Generally, techno's tempos range from 120 (for fairly slow "house" music) and 150 (for particularly frenetic techno), and some sub-genres like to experiment with tempos close to 200 bpm.

If we look at the rhythmic pattern, however, we find the same basic building blocks: kicks on the downbeats, and snares on the backbeats.

Additionally, most techno patterns add kick drums to beats 2 and 4, on top of the snares.

Put a hi-hat on the upbeat of each beat (the third box of each color), and the whole thing comes together with a nice buoyancy, as the hi-hats provide some lift, some bounce, in contrast to the pounding, "four to the floor" kick-drum.

Depending on whether one augments this basic beat with minimal, synthesized textures or latin-tinged soul samples will make the difference between creating techno and house, respectively. Slight differences in tempo also make a big difference in the subgenre the rhythms suggest.

Recap: Some Steps for Beginners

1. Put a kick drum in the first box of the grid. This will establish the downbeat and make it easier to build a rhythm with a strong reference point.

It also may be helpful to put snares on beats 2 and 4, the first boxes of each red group.

A hi-hat on every other box doesn't hurt either.

2. Get the tempo 

to a spot where you like it. Depending on the type of track you want to create (hip-hop [80-110], dancehall [95-115], techno [120-150], etc.), getting the tempo right is crucial to producing the right feel.

3. Change the sounds of your drums, if you don't like the way they sound (the default sounds in Fruityloops are often more suited to techno than, say, hip-hop). Next, add more sounds to the mix. Fruityloops provides an unlimited number of channels, so you can add as many sounds as you desire.

Lesson Two: New Sounds, Timbre, and Melody

In our first lesson, we learned how to build rhythmic patterns using a loop-based, music creation software program called Fruityloops. In this lesson, we will continue working with our rhythmic patterns, adding new sounds to our beats and learning how to manipulate a sound's timbre (pronounced "tam-ber"), which refers to the quality, or character, of a particular sound. We will also learn how to manipulate a sound's pitch, making it sound higher or lower, which is essential to composing melodies, such as basslines.

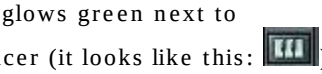
Fleshing-out Patterns: Adding New Sounds, Changing Timbres

Once one has created a percussive texture that one likes, the next step is to add other sounds to fill out the skeletal beat (unless one wants a particularly minimal track) or to replace the drum sounds one is using with different sounds--ones with more preferable timbres. In either case, one has to select sounds from Fruityloops' soundbank and move them into channels in the step-sequencer. Let's look at the basics of adding new sounds.

The easiest way to add new sounds is to drag them into the step-sequencer window from the browser (see below, on the left-hand side). One can drop a new sound on an existing channel if one wants to replace the sound it already contains, or one can drop a new sound in the space below (or in between) the existing channels, where fruityloops will create a new channel to hold it. In the illustration below, I have created a new channel to hold the sound, "bass04h," by dragging it over and dropping it in the empty space below the hi-hat channel.

As one can see in the browser above, I could have chosen to select a new hi-hat, a new kick, or a new snare from a number of options. Fruityloops allows you to click on a sound in the browser in order to hear it. You will find that changing the particular kick or snare drum, for instance, changes the sound and feeling of a beat rather radically. Experiment with different timbres to experience their effect.

Using the bass-sound in our new channel, we can create a bassline by dropping the sound on various boxes along the grid. One common and powerful way to add a bassline to a beat is to match the various drum attacks, both kicks and snares, with bass tones. Observe the way the bass mirrors the collective kick-and-snare pattern in the illustration below:

Fruityloops gives us the ability not only to place these new sounds rhythmically, but to manipulate their pitch as well, making them sound "higher" or "lower" to us. First, pick a channel to edit with the piano-tool, then click on the button directly to the right of the channel that you want to manipulate (see, above, that the button glows green next to "bass04h"). Nest, click on the "piano-tool" in the upper-right-hand corner of the step-sequencer (it looks like this: ), and a series of vertical keyboards drop down to match the grid:

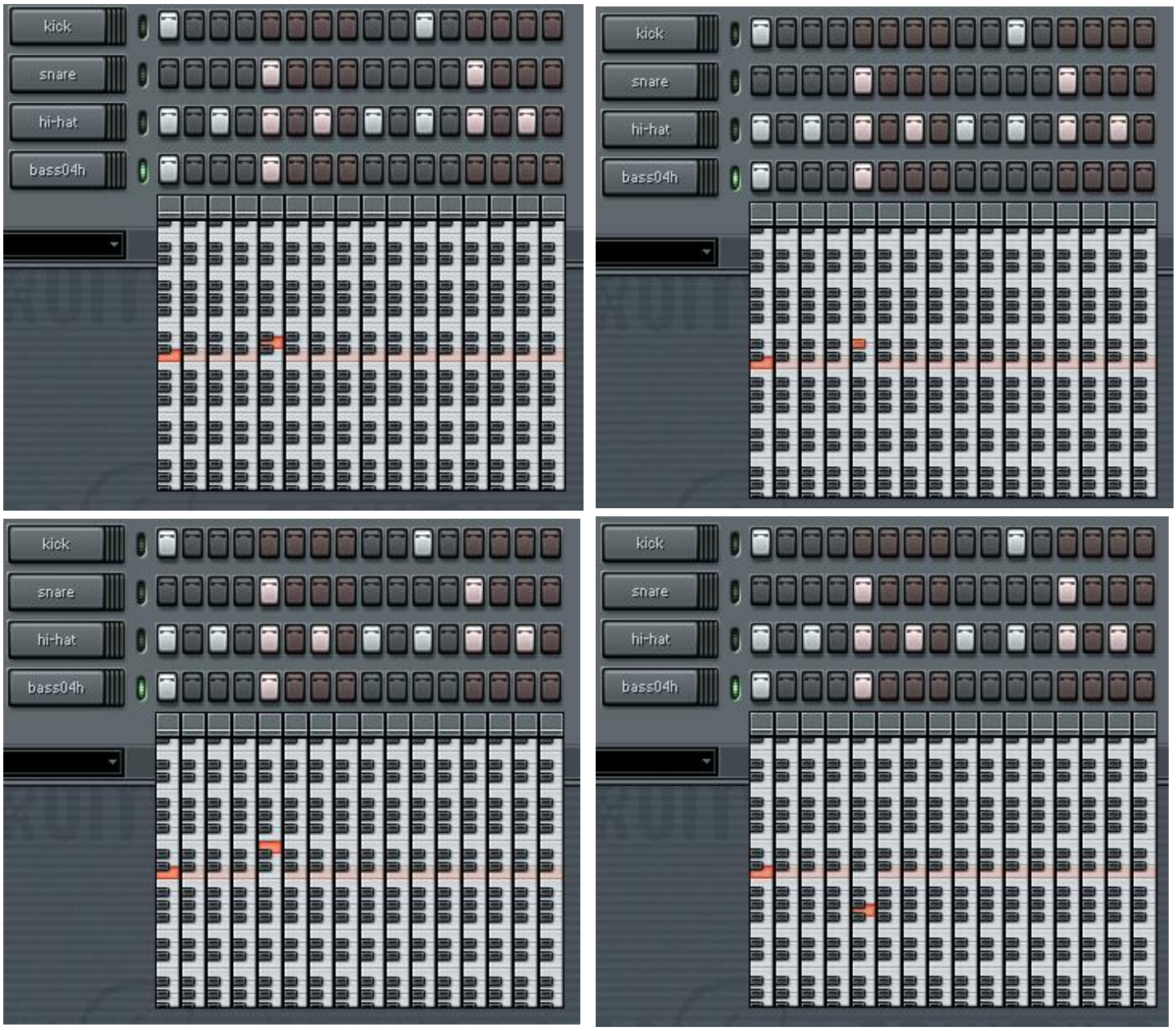
The piano-tool allows one to manipulate the pitch of a sample--up and down for several octaves in either direction. (An "octave" is a basic unit of pitch, based on proportional frequency. The euro-art-music notational system, and the piano itself, divide the octave into a collection of eight-pitches, the major scale, which some may know in the form: do-re-mi-fa-so-la-ti-do. If we include the black keys--the pitches in between the notes of the major scale--that gives us twelve pitches in between each octave.) Here is an example of an octave, as depicted in the figure above:  . The piano-tool turns the keyboard sideways, so that each box has a corresponding vertical keyboard of its own. Despite this strange orientation, perhaps you can see that the octaves extend in either direction from middle-C, which is the pitch colored orange in the first box (and the default keyboard pitch in Fruityloops).

More on Melody

In the illustration above, I simply moved the 2nd and 4th bass tones up a half-step (to C-sharp, the black key directly above middle-C), which produces a nice effect, putting plenty of "pull" on the tone. After several years of musical experience, I am familiar with the various "push" and "pull" tendencies that certain pitches can have in relation to each

other. I believe it is best for newcomers to experiment with the different notes of the scale in order to discover their own predilections.

Experiment by placing a bass tone at middle C on the downbeat (as in the picture above). Press play and listen to the beat cycle around, landing on your bass tone each time. Now, pick another beat, such as beat 2 (the first red box of the first red group). Change the pitch of this tone, going up and down the keyboard until you have a sense of how they relate to each other.



Move on to the next beat if you find a relationship you like. Before long, you'll have a full bassline chugging along:

Don't let yourself become too discouraged or mystified by the piano-tool. Just use your ears and decide what you like. You will learn the implicit "rules" of melody writing--or discover your own--simply by making music that you like the sound of.

Of course, as with the rhythms of drum beats, there are various conventions for composing melodies (pitches occuring in succession) and harmonies (pitches occuring simultaneously). Such conventions are helpful but not crucial to new digital music producers. The ability to edit as you listen, using your ears, eyes, sense of taste, and imagination, is enough to facilitate the creation of original and compelling music. Still, if you are interested in "music theory," which is simply a system used to describe the way people tend to write melodies and harmonies, you can find plenty of resources on the Internet and elsewhere. Be aware, however, that these "rules" are generally based on music composed by old European men hundreds of years ago, and that they will not necessarily produce the kind of tunes you like.

A Word of Caution: The Taste of Space

Fruityloops gives one an unlimited number of channels, so one can add as many additional sounds to the rhythmic foundation as one wants. At the same time, one should also be aware of the temptation to keep adding layers: one can build up a great deal of musical drama this way, but things can easily get too noisy. Appreciating and using space is one of the greatest lessons of music. All of the genres I discussed in lesson one--hip-hop/rap, dancehall, and techno--tend toward rather minimal textures, which serve to highlight the powerful rhythms and emphasize particular timbres. Take a cue from the masters: keep it tasteful--don't forget the power of space.

Lesson Three: Form

Typically, songs or tracks have more going-on than a simple loop repeating over and over again (though sometimes it is amazing how much mileage you can get out of a good loop). Often tracks are composed of a number of different patterns, contrasting and complementary: intro, verse, chorus, bridge/break, ending. Fruityloops allows users to create an unlimited number of patterns, making possible the construction of rather complicated forms, if one so desires.

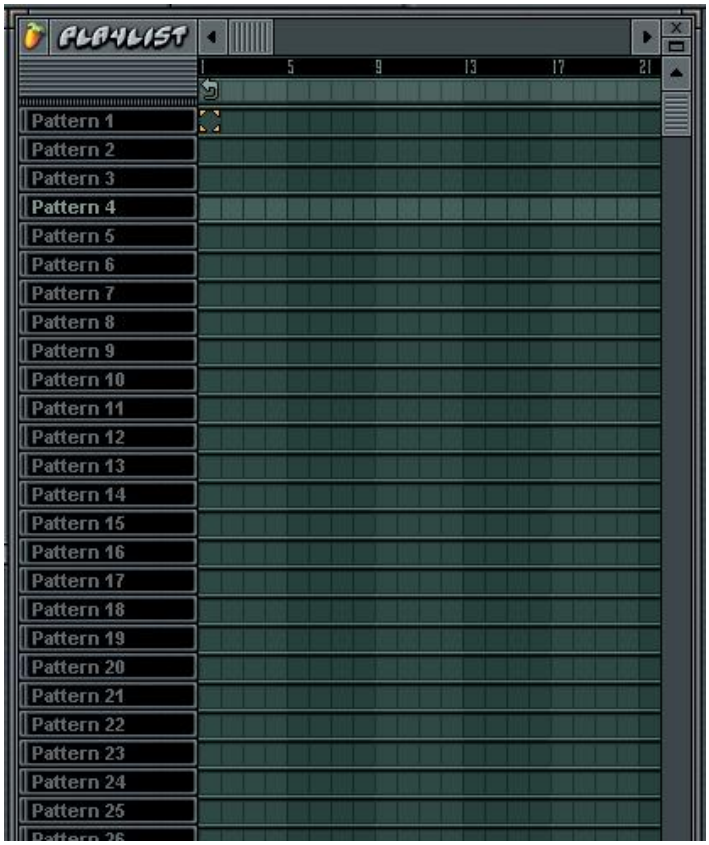
Just as certain conventions are important for creating hip-hop, dancehall, techno, and other genres at the level of the loop, conventions also exist for arranging these loops and patterns into coherent, dramatic songs. By creating and arranging a number of different patterns, we build form.

Below are some basic guidelines that I have learned in my own experience listening to and producing dancehall rhythms and hip-hop beats. Often times producers depart from such conventions, but the conventions are a big part of what makes a song recognizable as familiar. Individual creators will have decide for themselves how much to break the "rules." I simply provide these guidelines as a way to get people making music they like in a short period of time.

Basic Song Form: Duple Groupings, Layers, and Breaks

One of the first "rules" to keep in mind when arranging one's patterns into song form is the familiarity of duple-based structures--that is, groupings of 2, 4, 8, etc. Most songs are structured in even-numbered groups of bars or measures (i.e., four-beat units). For some reason, we really like the sound and feeling of symmetry. Whether or not this is an innate disposition, most of us are strongly conditioned to hear music this way at this point. So, if you want to build an effective track--one that makes people bop their heads or tap their feet, or better yet, want to dance, and one that has some musical drama to it--then you should always keep this convention in mind.

As a reminder of the duple-grouping convention, Fruityloops makes it easy to see the "playlist" (which we will use to put our patterns together) in terms of four-bar sections by alternating between dark and light shades of green:

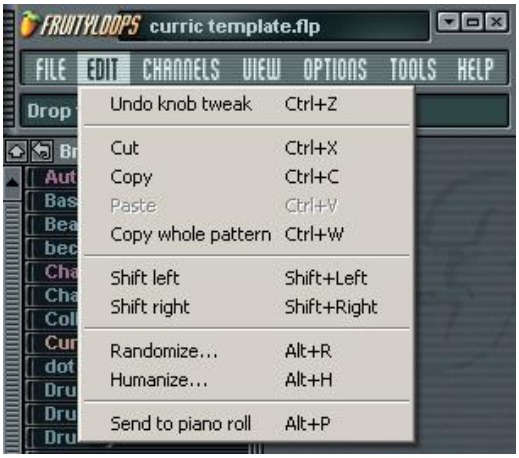


Before learning about the playlist, however, let's examine the concept of form in more detail by looking at a conventional dancehall song-form. We'll begin with a single pattern, "pattern 1," which is always accessible in the pattern box:

Pattern 1 will hold a basic dancehall pattern: the kicks and snares provide the distinctive 3+3+2 rhythm (count the boxes between each hit) while a hi-hat subdivides each beat:

Sometimes a dancehall rhythm will continue without much change to the beat itself. Instead, producers create a sense of form by bringing in and taking out various different layers. For example, we could add a number of new sounds to our basic rhythm, making it a fuller, more interesting, and probably more distinctive track:

As one can see, I have added a bass, some strings, a synthesizer, a shaker, and a bongo to the drum pattern. But I can integrate these new layers more effectively, and build a more dynamic rhythm, if I add the layers more gradually. It might be a good idea, therefore, to remove some of these layers and place them in other patterns. It is easy to cut and paste in Fruityloops. First, select the channels one wishes to cut from and/or paste into. (In the pattern above, the channel containing "synth00" is highlighted--as indicated by the green button between the channel and the grid--and is ready to be cut or copied or pasted into. By right clicking, one can highlight multiple channels.) Then, from the edit menu--



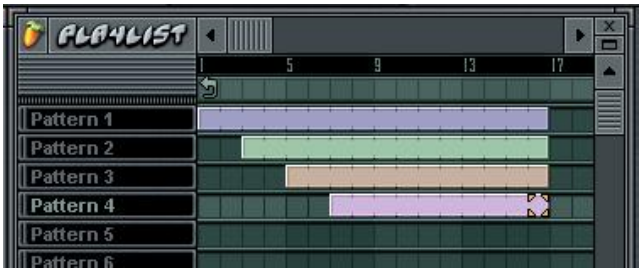
or using keyboard shortcuts (as in many other software programs, <CTRL X> cuts, <CTRL V> pastes, and <CTRL C> copies)--cut or copy the selected channels. Next, use the pattern box to select the appropriate pattern to paste into. Once you have reached the desired pattern, paste.

As you can see above, I have pasted the bassline from pattern 1 into pattern 2. (Often it is helpful to keep the bass in its own channel, as one might want to control the bass individually, bringing it in and out of the song's texture without affecting anything else.)

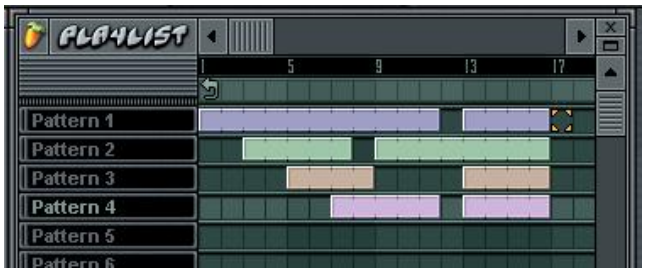
Next, I will cut the strings and synth and paste them both into pattern 3. Then I will place the shaker and bongo into pattern 4.

In order to hear the patterns together in the playlist (as opposed to the single pattern contained in the step sequencer), click on "song" in the control/tempo box:

In the playlist window, I can arrange these various patterns into a kind of form.



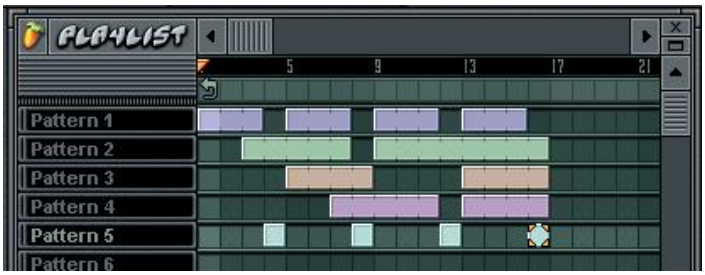
What I have done in this case is to bring in each successive layer, each new pattern, two bars after the previous pattern began. This kind of even-numbered, gradual building is an effective way to create form. While it is important to maintain the duple-grouping feel, however, one should not feel too restricted about the addition or subtraction of layers. Sometimes it is effective to build in a little aesthetic asymmetry by removing layers here and there, adding a degree of surprise to the form. For example:



Although I sometimes remove a pattern for only a single bar (e.g., bars 8, 12), I still uphold the very important duple-grouping rule. Look closely and you will see that the patterns I have subtracted (except in the very even-subtraction of four bars of pattern 3) are always the fourth-bar of a four-bar unit. If we begin on bar one, that means bars 4, 8, 12, 16, and so on, will be the final bars of each four bar phrase. A good way to increase expectation is to remove certain layers in these fourth- and final-bars, letting everything come back in on the downbeat and the beginning of a new four-bar phrase. When this happens, it is often called a **break**--which describes the sudden silence and the return of the main pattern.

Another way to add a break is to modify the actual drum-beat from pattern 1. If we remove the drums shortly after the pattern begins, and bring them in at the very end, we can create a pretty powerful break.

Then, all we have to do is substitute pattern 5 for pattern 1 whenever we want to throw in a break. The fourth-bar of a four-bar phrase is usually the best place to add a break. For example:



The Turnaround

As you can see in the last figure above, the four-bar phrases--at least in terms of the drum line--can be represented, once we add a "break" pattern on every fourth-bar, as 3+1 (i.e., pattern 1, pattern 1, pattern 1, pattern 5). In a sense, what we have set up with such a regular occurrence of breaks is what we might call a **turnaround**. (In fact, if one uses a "break" this often, it can no longer really be called a break. A proper break is one that occurs more infrequently and therefore more strikingly--perhaps only once, or a small number of times, in a song.)

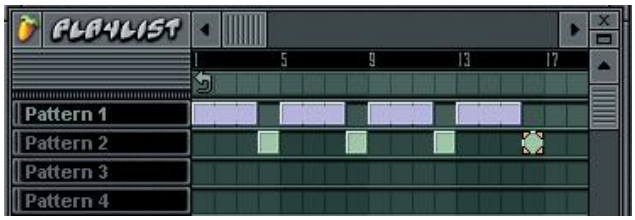
A turnaround is a common musical device in dancehall rhythms and hip-hop beats alike. We could define a turnaround as a figure that answers or rounds out an initial pattern by providing a sense of departure and return, elongating the phrase as a whole. 3+1 is a common way to structure phrases, as is 2+2.

One common turnaround figure in dancehall simply changes the rhythm toward the end of the pattern:

x 3

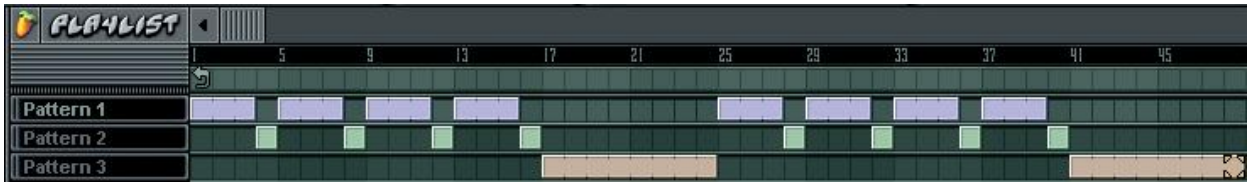
x 1

Thus, for example, a song might be based on a one-bar pattern that proceeds for three bars before being "answered" on the fourth bar with a turnaround like "pattern 2" above. Fruityloops makes it easy to arrange patterns in time using the playlist. here's how a basic turnaround rhythm might look in a playlist:

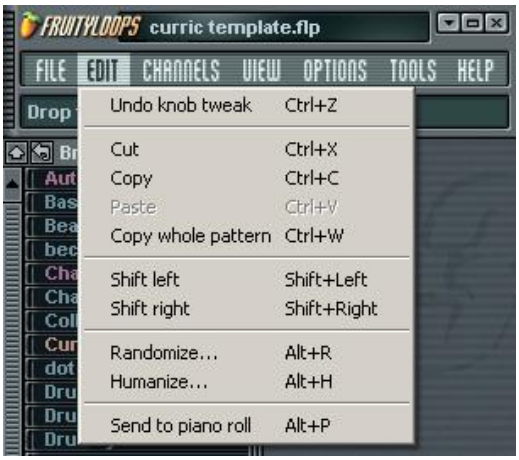


Verse/Chorus

A typical verse-section of a song might continue like this for some time. Sixteen bars is a common length for a verse. When it is time for a chorus, something else needs to happen musically to set it off. Sometimes more voices come in, or a recognizable melody returns, but usually there is some signal in the underlying patterns that create the excitement or release of a chorus. The pattern will typically change for eight bars or so during the chorus section. A verse/chorus based song will thus proceed like so:



The verse and chorus sections of a song are often closely related. Thus, one simple way to create a chorus pattern is to copy the entire pattern for the verse, paste it into a new pattern, and change it somehow. Fruityloops makes it easy to copy and paste an entire pattern. In the edit menu you will find the command "copy whole pattern":



After copying the whole pattern, one can paste it into a new pattern and add something else--more percussion, orchestral strings, horn blasts, etc.--to set the chorus off.

Intros and Endings

Introductions and endings are important, and often quite powerful, sections of a song. There are no rules for creating intros and endings, but

there are some simple and effective ways to generate them.

For example, drawing on the dancehall example above, we could imagine making an intro for the rhythm by beginning with an isolated bassline for two bars, bringing in the drums and everything else with a bang. Here are the basic patterns once again--note that pattern 1 contains the full rhythm while pattern 2 isolates the bassline:

Creating an intro with these two patterns is easy. Let's try the bassline (pattern 2) for two bars, followed by the entrance of the full rhythm (pattern 1) on bar 3 of the playlist.

Another simple but effective way to build an intro is to bring in the rest of the pattern just before the big downbeat, at or around beat 4. The easiest way to do this is to cut and paste from the main pattern. In the pattern below (pattern 3), you will see that I have deleted all but the last few "attacks" of the main pattern (pattern 1, above).

Note also that I have removed the bass, since the bass is already included in pattern 2. Beware of duplicating the same sounds in different patterns and playing them simultaneously. This usually produces unwanted noise and distortion. As you can see below, since they have no common "attacks," I can simply juxtapose patterns 2 and 3 to give the intro some punch:

Endings are a bit trickier. Often producers will avoid the challenge of composing an ending with a simple fade-out (an option which Fruityloops does not make very easy). Once again, one can sometimes find the seeds to an ending in the main pattern itself. The important thing about an ending is to provide some sort of closure, which may or may not mean resolution (sometimes one may want to leave some tension in the air).

One satisfying way to end a song is to create a pattern that has little in it but the final downbeat:

As one can see, I have copied the main pattern and erased all the "attacks" but those on beat 1. Next, all I have to do is make this pattern (here, pattern 4) the final pattern in the playlist:

There are, of course, many other--and more creative--ways to end a song. Often it depends on where the song itself seems to want to go. Use your ears and decide what you like.