Robotnick's Tips & Tricks on TB303

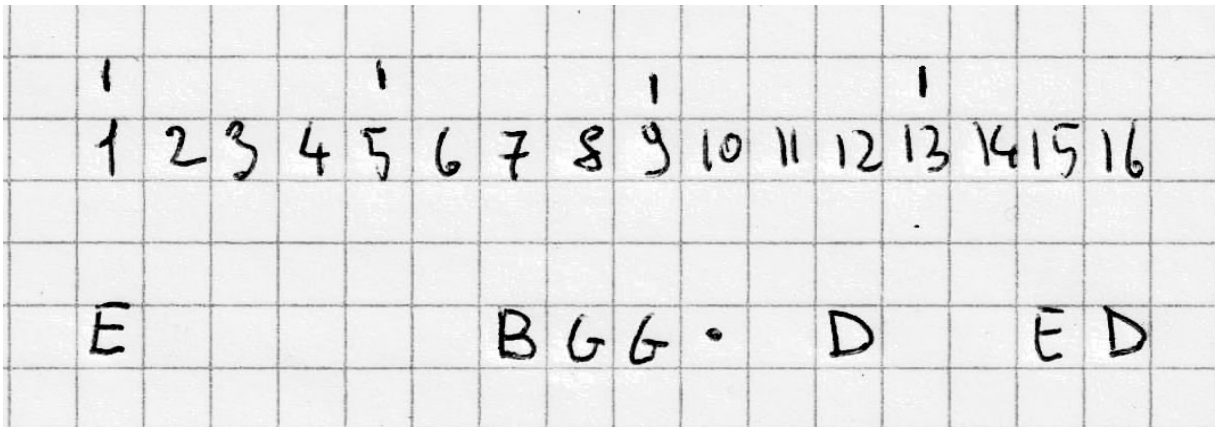
WHY TB303?

While I am writing these notes, I know that dozens of sequencer-machines are available on the market of music instruments , most of them digital , but some analog too , all of them based on the famous Roland TB303 . Moreover if you enjoy working in the box, that is with your computer only, you'll find a broad range of options of software synths. All of them are now equipped with many more functions than the original instrument and most of all with an easier system to write sequences. They also succeed - to various extents - at imitating its sound although not exactly and we'll see later why. So why should we stubbornly insist in using that bloody machine, which is so difficult, unfriendly and inconvenient to fit into a modern set-up of electronic music?
The answer is that it's the apparently complicated , crazy system of writing sequences which actually generates its typical sound: with MIDI programming you can't reproduce the old TB303 classic slide. Which is indeed a slide and not a portamento.
TB303 can also be "midizised" and many did so but I wouldn't recommend it for the above mentioned reasons.

PROGRAMMING TB303

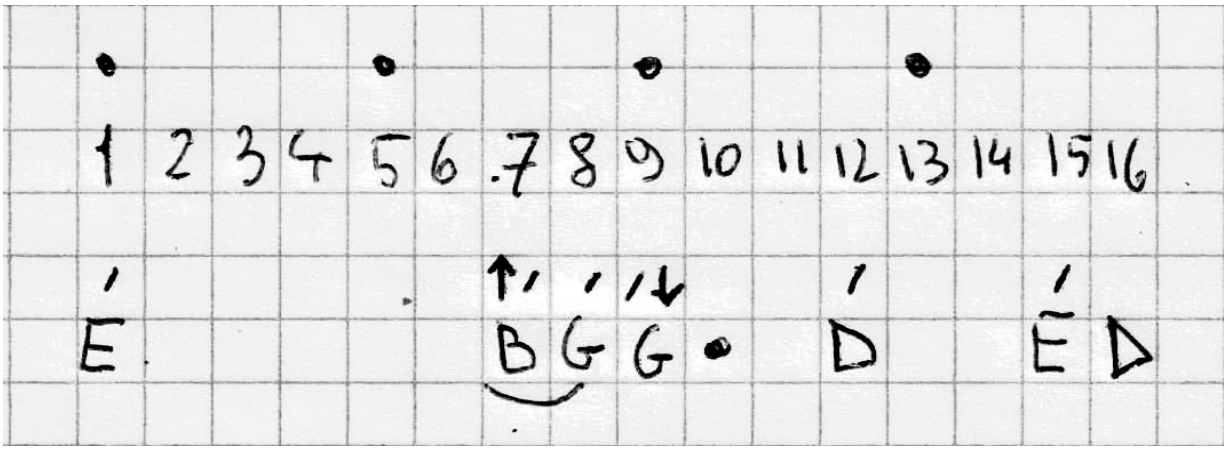
Mr.Tadao Kikumoto, the genius who designed this machine was thinking of an imaginary musician who wanted to practice music playing over a base consisting of BASS-LINE and DRUMATIX. For instance a pianist or a guitarist who would have written the score first and then transferred the sequence from score to machine. So programming is not that complex after all, you might think. But Mr. Tadao Kikumoto had not imagined that his ingenious invention would be used mostly by youths whose music education does not imply they can write/read scores. In the early 80s when I bought it , I could still read scores. But with TB303 I developed a much easier and intuitive system to write sequences, the one I am still using today. On a sheet of squared paper , I number 16 squares horizontally (12 if I want to write in 3/4) and then I put the notes on the corresponding squares. It's essential to use clear signs

to describe the characteristics of each note. I use a dot for the continuation of a note and a blank space for a pause, a horizontal bracket for legato/ slide, vertical arrows for the octave and accent for the accent. Here is an example:

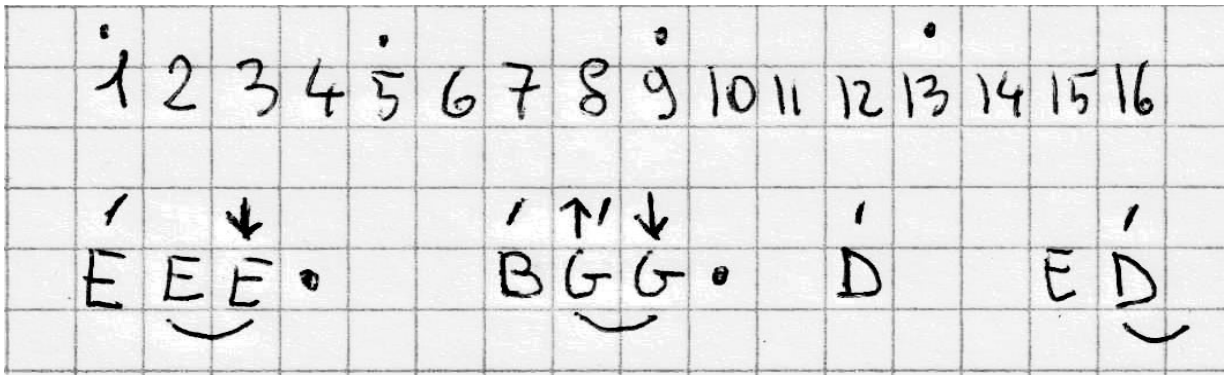


With such a drawing at hand writing a TB303 sequence is much easier.

Here is the same pattern as above complete with accents, slides and octave



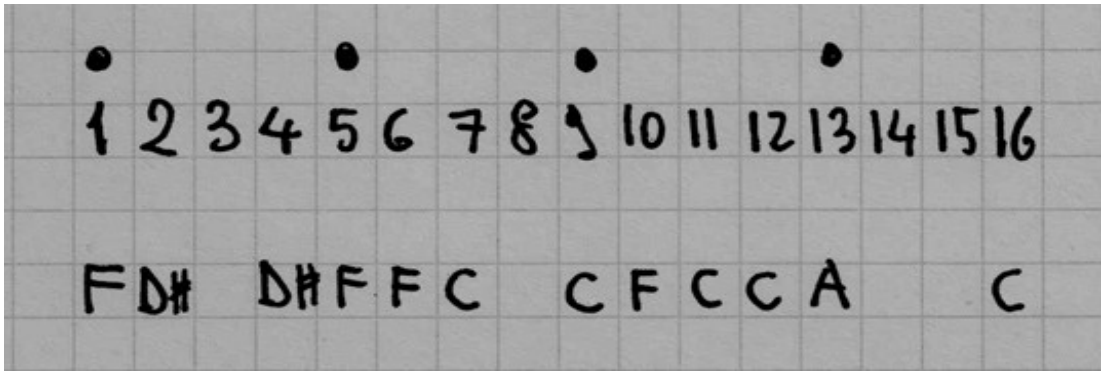
And here is a variation:



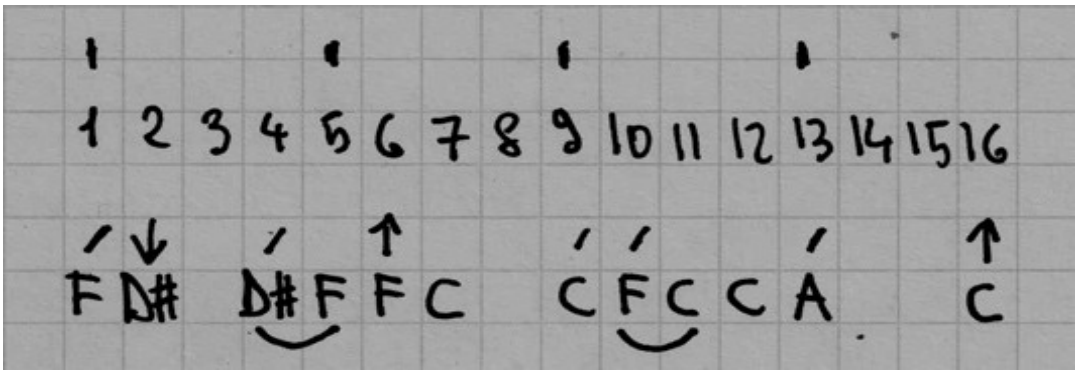
This drawing is nothing but a normal BAR grid in 4/4 you probably are already familiar with through the software drum-machines of your DAW or through one of the numberless synths available on the market. Practice with these until you can place the notes WHERE YOU WANT THEM TO BE with certitude. I used to practice on a TR606.

A PRACTICAL EXAMPLE

Let's now write a pattern in F 7th in early Acid-house style. Let's start by putting the notes into the grid:



Turn the knob to WRITE , if needed delete the pattern by pressing FUNCTION-PATTERN CLEAR.
Press PITCH MODE and play the 12 notes one after the other. When you are done go back to FUNCTION and press TIME MODE. Following the drawing it won't be difficult to write a sequence. Press NOTE twice, press PAUSE once, 4 times NOTE, once PAUSE, 5 times NOTE, twice PAUSE, once NOTE.
Once you have entered the last 16th, your TB303 will go back to FUNCTION. Return to PITCH MODE and press TAP to scroll the notes you entered giving attributes to each one of them according to the drawing below:

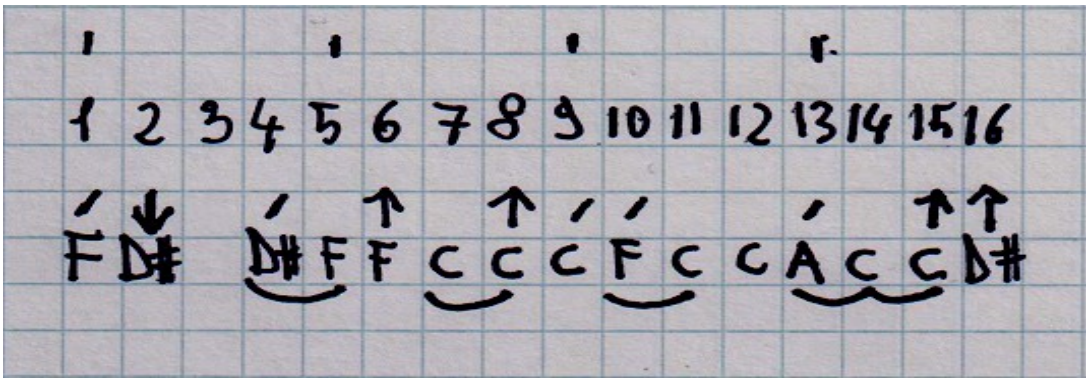


If you make a mistake , you only need to return to FUNCTION and then once again to PITCH MODE and …start again!. Whenever you are happy with the sequence you wrote turn the knob from WRITE to PLAY.

SOME TIPS FOR PROGRAMMING

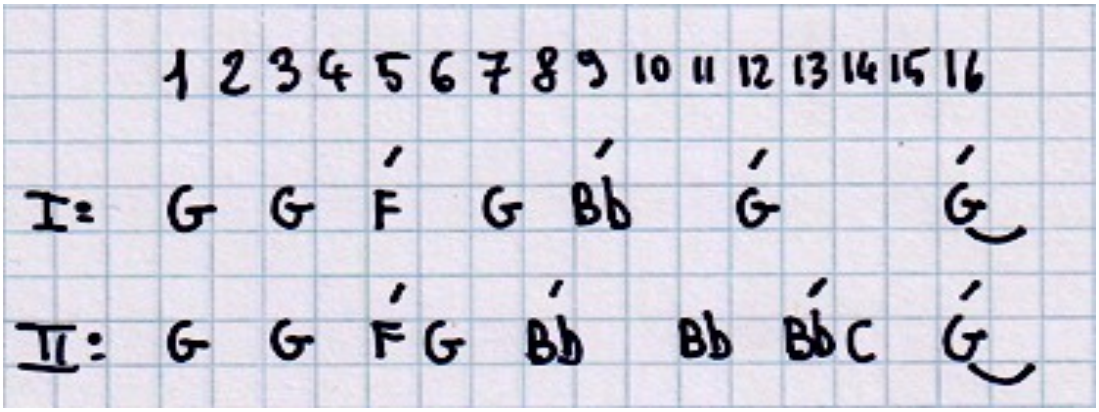
You entered a note , now how can you make it last for 2 or more 16ths? There are two options. The most orthodox: When you are in TIME MODE press the key NOTE and then press the second key (horizontal bracket) and let the note last one or more sixteenths longer. The other one consists in entering that same note into the next sixteenth and into as many sixteenths as you wish it to last , then you move to PITCH MODE and tie them all together using SLIDE. The effect you obtain is quite similar but not exactly the same. In this way you can have more control over the course of a note in time. Let's take a sequence of three tied notes as an example and try to raise or lower the pitch of the central note by one octave. We shall obtain a typical effect of TB303. (Beware , if the two notes to tie are separated by a pause SLIDE won't work). Or in a pattern let's try and fill all of the 16ths with notes and then let's place the legatoes, the octaves and the tones in order to give it the rhythm we want.

Here is a variation of the above described pattern obtained by using this technique. That is by filling the grid almost entirely with notes, entering only one pause on 3 as shown on the drawing below:



The pauses on the 8th, the 14th and the 15th are now replaced by legatoes but , as an alternative, you may replace them with a very low pitch.

SLIDE is also crucial to tie the initial and the final notes of a pattern. So you can give the feeling that the pattern starts one sixteenth earlier, for instance. This effect will be noticeable the second time your TB303 plays the pattern in a loop. **Here are the two main patterns of my track "Problèmes d'Amour"**



THE IMPORTANCE OF EVEN 16THS.

The even 16ths, also called off notes, are very important in funky and house music. If you are using your TB 303 not as BASS LINE but as SEQ/ARP to write some RIFF and enhance the rhythmic movement of your track you will notice that an accent on one of these even 16ths quite often makes the difference in the construction of rhythm. By the way , remember that if you move all of the even 16ths a little bit further, you'll obtain the SWING effect , also called shuffle for instance on TR909. On a TB303 this effect can only be obtained by controlling the SYNC signal from the audio outputs of your DAW, as we'll see later.
Remember that with TB303 it is impossible to construct some authentic grooves where the 16ths are moved back and forth arbitrarily. To do so you need to use another synth, for instance an SH101 where you can program a sequence and then trigger it through an audio output in your DAW.

COPY AND BACK-UP

There are two more reasons why it's worth programming your TB303 starting from a drawing. One reason is that sometimes you maybe want to create some variations, some patterns that sound almost alike but for a few notes, to make the sequence more interesting as well as matching the harmonic progression of the track. Unfortunately TB303 doesn't allow to copy patterns, they must always be re-written from scratch. But referring to your drawing you can re-write them quite quickly. For instance if you wish to create a sequence consisting of similar patterns and run them in a loop, you can use a really smart function of your TB303: press up to four patterns , one next to the other and they will be looped in that order.
The other reason is that the drawing is also your BACK-UP. As you know, sadly the TB303 memory cannot be saved anywhere else. Keeping those drawings (for instance saving them as JPG in the folder of your track) will enable you to retrieve your valuable patterns also many years later. By the

way , even more sadly you can neither save timbres because TB303 uses analog controls. But the question is: what's the use of saving timbres? Every song enjoys a different timbre and if you wish to retrieve one it won't be difficult: the filter controls are standard and the timbre is very much affected by the way the pattern is written.

TB303 FILTER

As I said, it is very simple, its controls are standard: CUT-OFF, RESONANCE ENVELOPE MODULATION with its DECAY and the ACCENT which is the most significant control because it does not only operate upon the width of the WAVE , that is the volume, but also upon the ENVELOPE MODULATION, by enriching the note it is placed on with harmonics. Obviously, as mentioned before, the ACCENT will react differently whether it is placed on a short note , a long one , at the beginning or at the end of a SLIDE. The effects can be unexpected and exciting.
If taken to the extreme, that is if you turn the ACCENT to the max and put it only onto a couple of notes leaving all the others "in the shade" you can give a rhythmic boost to your track and still the TB303 will not prevail, which would be annoying.

CREATE YOUR OWN PATTERN-BANK

It's surprising how a pattern created for a track may perfectly work also for another one. For that purpose you can use the transpose function TB303 is provided with. While you are on PLAY, let the pattern start playing , press PITCH as it plays and select an interval, for instance G, one fifth higher. Your TB303 will keep playing that pattern one fifth higher until you stop it. But no downward transposition is allowed.
When I use my TB303 performing live, I have a lot of fun experimenting with different patterns and transposing them to adjust them to the track. It's a sort of improvisation.

HOW TO FIT YOUR TB303 INTO YOUR SETUP

You just spent a fortune to buy an authentic TB303. How can you fit it into your MIDI system and synchronise it with your DAW? There are two methods; the easiest consists in using a MIDI TO SYNC device, they are manufactured by several companies and are not outrageously expensive. It is the most immediate system. You just need to exit MIDI THRU on your keyboard, enter MIDI to SYNC device which sends a SYNC signal to your TB303. Beware: in case you programmed a SONG, every time you play it again from the beginning you need to press RESET. But if you just wish to experiment with patterns , you won't have this problem. Furthermore if you work with

your DAW it is no longer necessary to program the whole pattern sequence of the song on your TB303 as you can create it in overdubbing or by changing the patterns in a flash.
The only problem in synchronising your TB303 this way is the MIDI itself whose timing is not as precise as that of the sync signal (or CV-GATE) . The shift (which is always different) is actually so limited - especially when the MIDI-SYNC signal is alone and not mixed up with MIDI notes or controls - that your ear can hardly detect it. But if you compare a sequence obtained with MIDI to SYNC with the same sequence obtained with an analog SYNC you will notice the difference. The analog SYNC is somehow more in time, I would dare say mercilessly in time. Electronic music heads know what I am talking about. So if you belong to that tribe , how can you obtain a signal of analog SYNC from your DAW? As you know whatever happens in your DAW is perfectly in time because everything is generated by such a fast CPU that there won't be any measurable delay. On my PC-based system I use a VST plug-in called Silent Way but there are many more , also for IOS. If you use two output audio channels on your audio card (let's assume it has got more than two), one for START and one for the SYNC signal , with a cable made up of 2 mono jacks on one end and a five-pole one on the other you will be able to operate your TB303 directly from your DAW with the same accuracy as with a plug-in instrument. Not only that: this setup will put a remedy to the only fault of the device: the lack of SHUFFLE (swing) , which is so useful for some electronic music genres as you'll be able to program it directly from the dedicated plug-in.

SQUARE OR SAWTOOTH WAVE?

It's a matter of taste. The sawtooth wave is associated with the extreme modulations of ACID-HOUSE and may sound too invasive in other contexts. It may also produce a very asimmetric wave resulting in a loss of potential volume. The square wave is more discrete and perfectly simmetric and allows the resonance "to snap" if necessary in some parts of a song but also to produce a more discrete sound in others.

SO WHY TB303?

Whilst an Italian saying goes: "the bigger contains the smaller" , in the case of TB303 the opposite is true: "the smaller contains the bigger". Having a limited number of options may be frustrating in many cases but not in the case of TB303 where the few available controls produce a sound spectrum which, although broad, never looses the typical character of the instrument. And so it is also easier to use it appropriately.. Furthermore , if you never studied music, learning how to program it will help you to better understand the relation-

ship of notes and rhythm and have more creative options, this time not in the machine but in your own mind.
Don’t put it into your personal museum! Make it run!!!

Alexander Robotnick - Winter 2021