

Finding Scales on the Fly on the Chromatic Harmonica

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Making the Chromatic Harmonica Practical

In “Analyzing the Chromatic Harmonica Pitch Set” (2019) I set out to understand the chromatic harmonica better. It made a very important first step in analyzing and finding the chromatic scale in C the way it did, but it didn’t provide a framework to start on any note and find any scale on your harmonica in a way that you can do so on the fly.

The chromatic harmonica in terms of teaching theory is one of the most ignored instruments in the world. The teaching theory mostly focuses on reproducing other musical pieces and playing as you’re told. Personally, I’m in favor of teaching people how to make music themselves, rather than reproducing.

In the visual arts, people don’t draw and paint other people’s drawings and paintings only as an education. It’s also not what you start with. You can do a study (a reproduction) of another painter’s painting, but it isn’t going to teach you anything other than technique. It disregards establishing perspective, light sources, dramatization, and composition.

To really understand making music, you need a solid foundation in music theory and you need to understand both the absolute pitch set and how to quickly interpret relative degrees on said instrument. On the guitar you memorize the first two strings for the absolute pitch set and then you have the relative distances between strings based on the tuning you choose.

The chromatic harmonica has a four-hole repetitive pattern that both makes it easy to memorize the harmonica as well as difficult to see the easiest way of finding relative pitch degrees. The repetition of specific tones in various places of the mouth harp makes it difficult to see how to handle the instrument at first.

The instrument has tones that you can address by blowing or drawing on the holes of the harp. When on the chromatic harmonica you press the button, you raise the pitch of the tone played with a minor second or half a scale degree of the chromatic scale. Table 1 illustrates the full pitch set of the chromatic harmonica.

B+s	C#	F	G#	C#	C#	F	G#	C#	C#	F	G#	C#	C#	F	G#	C#
B	C	E	G	C	C	E	G	C	C	E	G	C	C	E	G	C
	1*	2*	3*	4*	1	2	3	4	5	6	7	8	9	10	11	12
D	D	F	A	B	D	F	A	B	D	F	A	B	D	F	A	B
D+s	D#	F#	A#	C	D#	F#	A#	C	D#	F#	A#	C	D#	F#	A#	C

Table 1 – The chromatic pitch layout of the Hohner 64 Chromonica

When you look at Table 1 you can very clearly see the repetitive pattern. Please note that for the action, “B” stands for blow, “D” for draw, and “+s” for “press slide-button”. Since it’s a repetitive pattern, you might also look at it as in table 2, which attributes the same numbers for different holes playing the same tones in different octaves.

B+s	C#	F	G#	C#	C#	F	G#	C#	C#	F	G#	C#	C#	F	G#	C#
B	C	E	G	C	C	E	G	C	C	E	G	C	C	E	G	C
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
D	D	F	A	B	D	F	A	B	D	F	A	B	D	F	A	B
D+s	D#	F#	A#	C	D#	F#	A#	C	D#	F#	A#	C	D#	F#	A#	C

Table 2 – Illustrating repetition on the Hohner 64 Chromonica

As such to look at the relative pitch set, we only have to study holes 1 through 4 and realize that after a hole 4 we get a hole 1 again. That already simplifies things, but they can be simplified even further.

Separation

When you look at Table 3, we’re not only going to just look at these four holes, we’re also going to eliminate the repetition of tones in different places.

B+s	C#		G#	
B	C	E	G	
	1	2	3	4
D	D	F	A	B
D+s	D#	F#	A#	

Table 3 – Further simplifying the Chromatic Harmonica

By eliminating repetitive tones, you can now focus on a very simple pattern, irrespective of what hole you start on. The main mistake you want to avoid that I first made, is to look at the full chromatic scale in just C. The chromatic scale is also relative and you need to see every scale relative to the key you’re playing in.

Step 1 of the pattern recognition is that you note every hole has its tonic, which has a zero (\emptyset) distance to itself and other tones that have a relative distance to the tonic on the hole. The relative distances you need to first memorize are:

- * Hole 1 features a minor third increment : \emptyset to $1\frac{1}{2}$.
- * Hole 2 features a major second increment : \emptyset to 1.
- * Hole 3 a minor third increment : \emptyset to $1\frac{1}{2}$.
- * Hole 4 features no increment : \emptyset .

Step 2 is that you note that every hole's highest pitch has a minor second distance ($\frac{1}{2}$) to the lowest pitch of the next hole : D# to E, F# to G, A# to B, and B to C. When you understand this basic pattern it becomes relatively easy to map out scales in your head, provided you know what absolute pitch you start on and as such what hole and slide-action.

A couple of problems present themselves now.

The first problem is that if you don't play the B, because it isn't a part of the scale you're playing in the key you play it in, or simply because you skip it, you skip hole 4 altogether, increasing the distance between holes. The second is the end of the harp, because you don't have a next hole 1.

Integration

When you look at the absolute pitch set, it's really difficult that you can play some tones in multiple places. The F in two different places, the C# in two different places, and the C in three different places. When you have to memorize it like that, seeing that as the different options you have in discovering relative pitch, it just makes things way too complicated.

It helps when you establish a relationship that satisfies a strict need, so you know why you memorize something, which allows you to place it into context. As illustrated there are two questions you can ask. If I skip over a full hole, can I find the next tone I play also on the hole I'm skipping over? At the end of the harp, can I still play the tones on the highest hole of the harp, without needing another hole?

For every base action that has alternatives, it's also possible to address that action by playing a different hole. For C, when you have determined that you need to play the 1 hole blow without the button pressed in and you skip over hole 4, you could also play this 1 hole blow as a 4 hole blow or a 4 hole draw with the slide pressed in to breach the gap.

The same goes for C# and F. When you have to play the 1 hole blow with the slide pressed in, you could also play it as a 4 hole blow with the slide pressed in. And when you play the 2 hole draw, you could also play it as the 2 hole blow with the slide pressed in.

It will feel to you like you're still playing the same action, for instance the 1 hole blow, but you're playing it on a different hole of the harmonica, in this case the 4 hole blow. Instead of relating it to absolute pitch, you should relate it to the necessary action, that you can also play elsewhere, which in practice equates the absolute pitch.

Practice

How do you play something? If you want to know that, and simply asking how you play it isn't the right question, because it's you that tries to figure things out, you probably need to look at what you mean to play and where you mean to play it. And that's just the theory and

not nifty techniques like fretting the fifth fret on a guitar-string, bending it a little and playing the same pitch on the next equal pitch string.

First you establish in the separated view of the chromatic harp with the relative distances as you now know them, where the different tones are that you mean to play given a certain scale and key. Second, consider practicality : should you stick to corresponding actions presented by the separated view or is it easier to play some tones elsewhere?

Pick a scale. Pick a key. Find your tonic on the chromatic harmonica. Figure out the relative pitches you mean to play to play that scale in that key. Change keys, try different scales, and try to practice finding scales on the fly. Here are four scales that might help you get started in Blues :

Chromatic : $\frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2} - \frac{1}{2}$

Major : $1 - 1 - \frac{1}{2} - 1 - 1 - 1 - \frac{1}{2}$

Mixolydian (Maj. / flat 7th) : $1 - 1 - \frac{1}{2} - 1 - 1 - \frac{1}{2} - 1$

Blues pentatonic : $1\frac{1}{2} - 1 - 1 - 1\frac{1}{2} - 1$

Blues sextonic : $1\frac{1}{2} - 1 - \frac{1}{2} - \frac{1}{2} - 1\frac{1}{2} - 1$

Pick your key. Find your scale. When people say they're playing Blues in major, that means that the soloing instruments use the Blues-scale as their main jive, but they're also allowed to add notes when they feel it's necessary, and the backing groove typically doesn't consist of the major scale, but the major with a flat 7th, which corresponds to the mixolydian mode.

Enjoy!

Literature

Emile M. Hobo (2019) "Analyzing the Chromatic Harmonica Pitch Set" : www.emilehobo.nl * referenced September 3rd, 2019.