The Wersi Sound Factory
Master Classes

Master Class I : October 2012 : Introduction and the Samples Tab Part I

Introduction

Introduction

Wersi introduced Sound Factory as a new, optional Sound Editor early in 2011. As these Master Classes will demonstrate, it allows a level of sound editing never possible before on a Wersi instrument.

These Master Classes are the result of a collaboration between Ian Terry, whose background gives him an intuitive understanding of what Sound Factory is all about, and Colin Moore who knows nothing, though he is acting as your scribe for the Classes so I should stop talking about myself in the third person. Ian is my Tutor and I am his Student. Ian sends me experiments to try. A series of questions and answers then shuttles between us, all of which are documented and retained. From all of that, these Master Classes are then produced.

The whole project is very open-ended and could run for some time, such is the enormity of what Sound Factory can do. If you already own Sound Factory I hope you enjoy the journey with us and that its many features become second nature to you very quickly. If you have not yet taken the plunge to obtain Sound Factory, maybe the results which Ian has produced and which you can hear for yourself, via the many mp3 sound files which are available to listen to, will inspire you to want to obtain it for yourself.
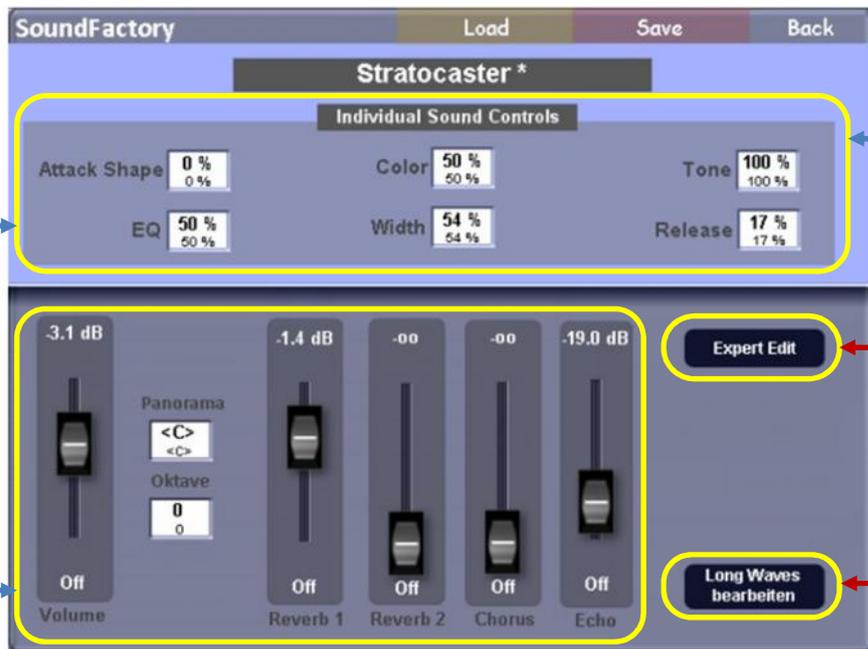
Opening Sound Factory

When you first open up Sound Factory (**Settings > Edit Long Waves**), the screen contains a set of Sound Control parameters and values plus settings for overall Volume, Reverb 1 and 2, Chorus and Echo (Delay), as in the example screenshot below.

Initial Sound Factory Screen

Individual Sound Controls
Values here are as a percentage while in the old Sound Editor and in Total Presets Sound Controls they are presented in a 0-127 range (based on an 8-bit Binary sequence).
To convert (approximately):
% to "Binary" : add a fifth.
"Binary" to % : subtract a quarter.
NB: Changes saved here become the "Inst" values in the Total Preset Sound Controls.

Volume and other Controls
Values here are in decibels (dB), with - representing "off".

Individual Sound Controls
The sequence in Total Presets Sound Controls is the reverse of here. Bottom right here is top in TP Sound Controls etc.

This is the portal to Sound Factory Wonderland.

This is the button to touch to open up the old Sound Editor.
NB: You cannot then return directly to Sound Factory but have to use the **Settings > Edit Long Waves** route.

Enough of the preamble; I'm sure you cannot wait to open the Expert Edit portal and be transported to Sound Factory Wonderland. Go on, then, touch the Expert Edit button!

The Expert Edit Screen : the Sample Tab

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**Expert Edit Button:
The Sample Tab
Screen**

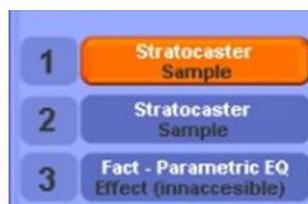</td>
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*Since OAS-7.1 Revision 46 an additional table called "Play-Mode" will be found here.
This will not concern us just yet.*

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**Expert Edit Button:
Other Tabs**

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We shall be staying with this screen for a little while before moving on to other parts of Sound Factory Wonderland (do you hear "Over the Rainbow" playing or is it just me?). Along the top is a set of Tabs: Sample; Filter Map; Envelope; LFO/Matrix; General. Each of these has its own screen but only the General Tab applies to the sound as a whole. All the others apply to the Sample Layer currently highlighted in orange in the numbered list on the left: let's start there then.

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The numbered Layer List and the two types of Layer possible

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 This particular Sound (Stratocaster*) has three Layers, numbered 1 to 3 in the list. That list can contain up to a maximum of ten Layers.

There are two kinds of item which can be put into this Layer list: Sound Samples; Effects.

Here, Layers 1 and 2 are Sound Samples (identical, as it happens and, not at all strangely, called "Stratocaster").

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Layer 3 is an Effect, which in this case is one which the user has no access to edit, as shown by the word "inaccessible" in its box. Some Effects are like this but there are plenty of others, like Reverb, Delay, Chorus, which the user can edit.

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Layering within the Layer List and its significance with Effects

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The reason for there being two identical Stratocaster samples has to do with the parameter values applied to each sample being different, in some respect. We shall come to that later. What is more significant to be aware of at this stage is the number sequence of the Layers. Ian has produced the following detailed and very clear explanation of how this works, though you may wish to leave the actual experimenting described by Ian until after we've covered adding Sample Layers to the list, later in this Master Class.

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If I have a single 'Layer' in SF, which is a sample, it will send its audio to the outputs.
If I have two 'Layers', the first layer's output is passed downwards, it is then summed with the second layer, then that combined signal is sent to the outputs.
If I have three or more sample layers the same thing happens; the outputs of each layer in turn are summed as you go down the list, and then sent to the outputs.

Question: How do I know that the output of each layer is summed with the one directly below?

Answer: We know this happens because of what the result is when we select an effect to process the layer(s) above it. If the signals were not summed, the effect would be present only on the layer directly above the effect, and not present on <u>all</u> the layers above.

Simple Combinations of Sample and Effect Layers

Question: What happens when we use a combination of Samples and Effects?

Answer:
a) With a single Sample Layer followed by a single Effect Layer, the (dry) sample signal is passed downwards and this time (on most of the effect pages) we have control of the mix between the dry audio signal and the wet processed effect signal. The combined (wet) signal is then sent to the outputs.

b) With a single Sample Layer followed by two Effect Layers, once again the (dry) sample signal is passed downwards into the first effect and a (wet) mix of the two is produced. Then that (wet) combined signal is passed downwards into the next effect and once again the mix between the audio and effect can be set/changed. The combined (new wet) result is sent to the outputs.

c) If we have three or more Effect Layers, and a single Sound Sample Layer above them all, the same thing happens.

I could have two or more samples and just a single effect, when as above the samples would be summed in turn and then passed down to the effect. We then 'mix' the product of all of this audio with the effect, and that is sent to the outputs.

Split Combinations of Sample and Effect Layers

Question: So what happens if we use a 'Split Combination' of Samples and Effects?

Answer: Start with a single sample into a single effect for now, for example a Guitar with an effect below it (Chorus or Ensemble will do for now). Once you have sorted out the balance between the dry audio signal and the wet, copy the Guitar layer and paste it below the effect layer. This should be layer three. Change that layer 3 sample to a Piano for example, and add an effect layer below this (Reverb or Delay will do for now).

You may need to read to the end of this Master Class before trying to do this

So what is happening here is that, we can confirm for most of the time, audio signals will pass downwards to be summed and processed. The Guitar has a Chorus/Ensemble effect the total result of which is then passed down and summed with the Piano. That combined signal is then passed to the next effect below (Reverb or Delay).

The point of interest is that the Guitar is the only sound which has the Chorus/Ensemble effect plus the Reverb/Delay effect. The Piano has only the Reverb/Delay as its effect, no Chorus/Ensemble, because of the position of each layer in the list.

If I wanted both the Guitar and the Piano to have exactly the same effects, I would place the Guitar with the Piano directly above/below each other and the effects all together below them.

Importance of the sequence of Effect Layers

The order of sample layers is not important, but the order of effects is important! You can Chorus a Delay if the Chorus is placed below the Delay in the layer structure.

In this Stratocaster example, the "Parametric EQ" Effect has an influence on both samples because it is positioned after those two samples as layer 3. If it were to sit between the two Sound Samples (in the number 2 position, thereby moving the second Stratocaster sound sample down to the number 3 position) it would affect Sample 1 but not Sample 2. This allows a lot of interesting editing because you can move Effect Layers around this list. You can also do a whole lot more with this list, so let's continue our journey of discovery doing just that for a little while - how long do you have, because the process is actually endless?

Important Point

**Importance of having Dynamic and After Touch selected**

You need to be able to audition fully each sound you are creating while in Sound Factory. I suggest setting up a Total Preset called "SF Test". In that TP, ensure Upper Manuals 1 and 2 have, in "Selectors", a Dynamic setting of 4 and the After Touch box ticked. Sound Factory uses Upper Manual 1 for auditioning sounds. Changes you make to the Dynamic and/or After Touch while editing can then be heard when you play the Upper Manual to audition your changes. When sound editing, load the Total Preset "SF Test" first and place the original sound in both Upper Manual 1 and 2. Upper Manual 2 then allows you to make comparisons between your edited sound and the original. Select UM1 and then open Sound Factory.

Changing the Sample Layer List

This enables us to create totally new sample combinations not provided by Wersi directly and therefore we're creating new sounds (but using only existing samples, ie it's an editing process). In your "SF Test" Total Preset, load the sound "Strings Mantovani" [091-000-102] into Upper Manual 1 Selector and ensure that Selector is highlighted. Next, load Sound Factory. Strings Mantovani should be the sound loaded as well. Touch "Expert Edit" to go to the "Samples" Tab screen, which should look something like this (sample colours may be differently assigned – if so, touch Sample 2 to make it go orange):
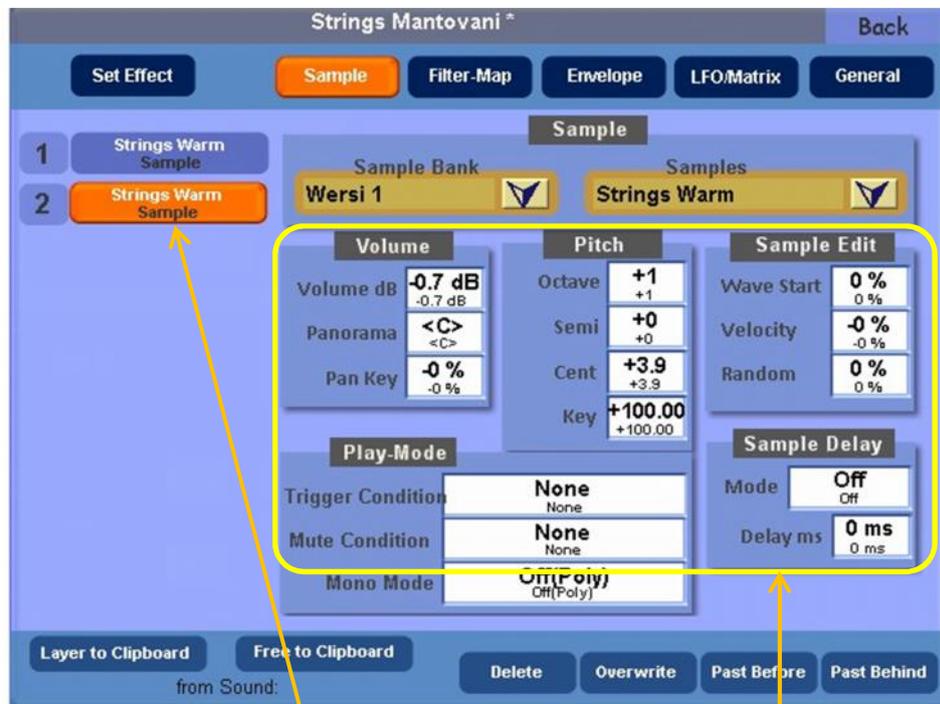
We are concentrating on the Layer List on the left for now. The tables of values to the right we shall be looking at closely later. There are, however, two tables we must include from the start: firstly the one called Pitch. As you can see, there are four parameters in that table but we're concerned for now only with the top one, Octave. There's nothing new here, really. A value of "0" means an 8′ pitch, +1 means 4′ while -1 means 16′ etc.

Secondly, look at the table called Volume. Although there are three parameters in that table we're concerned for now only with the top two: Volume dB and Panorama. Again, these are nothing new, although representing the volume by a dB (decibel) value and not a number in the range 0-127 is a slight difference. The higher the volume figure the louder it sounds, obviously, but in most cases the dB value will be preceded by a minus (-) sign, so the number itself becomes lower for a louder sound(!).

You can also see that there are only two Sample Layers in this sound, each of which contains the Sample Strings Warm. The Sample in Layer 2 is currently highlighted (in orange) so all the values in all the tables on this screen (and all the other screens except "Global") relate only to that Sample 2. Notice the Octave value in the Pitch table is +1 meaning this sample is at 4′ pitch. The Cent value of +3.9 shows a slight detuning has been applied.

Now touch Sample 1 to make it go orange and therefore change all the table figures to its values. Notice the Octave value in the Pitch table is now +0 meaning this sample is at 8′ pitch. The Cent value is now +0 showing no detuning is applied to this sample.

One easy way we can edit this sound is by adding two further Strings Warm samples and set their Octave settings to 2′ and 16′ respectively, to give a rich, full-bodied Strings sound. That's the task of this first experiment, therefore, and it takes us straightaway into the fundamental process of how to add samples to an existing sound. This is a very important place to start. You see, there is a method in the madness, after all!

<div style="background:gray">**Three ways of adding Sample Layers to a Sound**</div>

Ways of Adding Sample Layers to a Sound

There are three ways of doing this, each of which tends to produce a slightly different overall result.

1. Copy the sample from another sound and paste it at the desired position in the Layers of the sound being edited. This needs a bit of forethought in order to know from which sound you wish to copy the sample. Open that sound; copy the sample using Layer to Clipboard; open the sound being edited; paste the sample into the correct position in the layer list using Paste Before or Paste Behind.
   All the parameter values that sample had in the sound from which it was copied, in all tabs, are copied with the sample into the new edited sound.

2. Copy any sample currently in the layer list of the sound being edited and paste it into the new required position in that same list. Then change that sample by using the two drop-down lists at the top right of the Samples screen: Sample Bank and Samples.
   All the parameter values of the original sample are applied to the new edited sample. The new name of the sample will not appear until you have saved the new sound.

3. Start with a sound which may not be at all like the sound you want to edit nor have any of the samples you wish to use. Change each sample using the method 2 above. The Sound Control parameters of the original sound will be applied to the new edited sound, in so far as that is possible, thus enabling rather special control of the final sound.

Method 3 above we shall not be using just yet as it needs more explanation. It is mentioned here for completeness and because it is a very interesting use of Sound Factory, which we shall be treating later. Therefore, let's use the first two methods only for now. In fact, to carry out the current required experiment we need use only Method 2. This does, however, rather beg an understanding of the "Copy and Paste" routine within Sound Factory.

<div style="background:gray">**Copy and Paste in Sound Factory**</div>

Copy and Paste in Sound Factory

If you look at the bottom of the Samples screen, you'll see some virtual buttons called:
Layer to Clipboard
Free to Clipboard
Delete
Overwrite
Paste Before
Paste Behind

Bear in mind that in all computers when you use the "Copy" routine, the first destination of what you're copying is a place called the "Clipboard". Many people, while learning about computers, become concerned that instigating "Copy" results in nothing apparently happening, yet, in fact, the item has been copied invisibly to this place called the "Clipboard". Only one item can be on the Clipboard at any one time and it can be pasted from there to numerous other places until it is overwritten by another "Copy" routine.

If you touch a sample layer to select it (highlight it) and then touch Layer to Clipboard, that is essentially a "Copy" routine. You can then "Paste" it into the Layer list, by highlighting an existing layer in that list first. Touching Paste Before then pastes that layer one position above that highlighted layer (ie it takes on the numbered position of that highlighted layer and moves that highlighted layer down one position). If you touch Paste Behind instead, it pastes that layer one position below the highlighted layer, moving any other layers below that down one position.

Delete is obvious – careful because there's always one layer highlighted! Overwrite is a special paste process which exchanges the highlighted layer with the copied one (a kind of delete and paste – care again!).

Producing the Rich Mantovani Strings sound

Free to Clipboard copies a blank sample called "Free" to the Clipboard – this can then be pasted before or behind a selected layer. Only default values for the parameters in all the tables under all the tabs are then inserted, not those possessed by an existing sample.

A bit of practice is doing the above is now needed. We're going to copy the top (Layer 1) Strings Warm sample twice and put each copy at position 3 and 4 respectively.

- Touch the top Strings Warm sample to highlight it.
- Touch Layer to Clipboard at the bottom of the screen.
- Touch the bottom (Layer 2) Strings Warm sample to highlight it.
- Touch Paste Behind at the bottom of the screen.
- That newly pasted Strings Warm sample should now be highlighted. If not, touch it to make it so.
- Touch Paste Behind again, at the bottom of the screen.

Your Samples screen should now look like this, if you touch layer 3 to highlight it.

Now we're going to set the pitch and volumes of the two added sample layers as well as change the Panorama values of each sample layer.

- Highlight Layer 3 and change the Pitch value to +2.
- Change the Volume dB value to -2.2 dB.
- Change the Panorama value to L64
- Change the Cent value to -3.4.
- Highlight Layer 4 and change the Pitch value to -1.
- Change the Volume dB value to -2.2 dB.
- Change the Panorama value to R64.
- Change the Cent value to +1.3.
- Highlight Layer 2 and change the Panorama value to L16.
- Highlight Layer 1 and change the Panorama value to R16.

Select Back at the top right of the screen. Then, after the screen has changed, select Save at the top of that screen. Give the new sound a suitable name, eg Mantovani Strings Rich, and you have your new sound which you can now use in your Total Presets.

We hope you have enjoyed this first journey into Sound Factory. You can now experiment to your heart's content by adding (and deleting if you wish) sound samples from sounds to create new sounds. Think of some instrument combinations you'd like to have within the one sound which are not currently available. If any sound you use as a starting point has any Effects in the layer list, leave them where they are for now but be careful about the layering effect with regard to effects and how that affects samples described earlier.

You can also now try out how to mix samples and effects according to Ian's description on page 3.

October 2012