Sound Editing – 2 : Attack and Release

Welcome to this second article about Sound Editing. This time we are going to look at two features of all sounds, **Attack** and **Release**. These parameters appear very frequently within "Sound Control" but also always appear as the beginning and end respectively of the ADSR Envelope of a sound.

ADSR stands for **A**ttack, **D**ecay, **S**ustain and **R**elease. Wersi has placed the ADSR Envelope within "Settings" > "Edit Long Wave". If you follow that pathway you will be taken to a screen which contains a button called "Additional Settings". Touching this button will take you to a second screen where you will find the ADSR envelope at the top (including a graph to show its features) and the "Sound Control" parameters at the bottom. There are other parameters on that screen but we'll ignore those at the moment.

Unfortunately, this graph of the ADSR envelope is not dynamic, ie it does not change its shape as the four values change. This is a pity as a graph is worth a thousand words. The only use of the graph is to demonstrate its general shape and the positions on that shape where the four parameter values control it.

On the graph, the horizontal (x) axis represents time and the vertical axis (y) represents volume or loudness of the sound. These axes are not calibrated because there is no universal calibration which would apply to all circumstances. Instead we are more interested in the overall shape of each section. The graph starts when a key is pressed on the keyboard and finishes when the sound has finally died away, not when the key is released, though these may be coincident events as described below.

Let's look at **Release** first as that is the easiest to deal with. The values of each parameter of the ADSR envelope can be between 0 and 127 inclusive. A Release value of zero means that the sound dies totally immediately the key is released – this is very unnatural and is used only for special effect, eg with a synth sound. A value of 127 can mean that the sound continues forever when the key is released so be careful about setting high values for Release – they are generally unusable.

Wersi has ascribed a default value of 64 to Attack, Delay and Release and a value of zero to Sustain. These values seem to have no real meaning until you change them. Only then can you set a value which makes any sense compared with what the sound is actually doing and even then it may not be perfectly clear. Do not expect, therefore, that a particular change you make is going to have the same result each time with each sound. A fair measure of trying it to see what happens is needed. There is also a relationship between the Attack and Release parameters of the ADSR envelope and the same parameters in Sound Control.

We can use any sound to demonstrate Release. For the purposes of doing experimental sound editing in order to hear what happens, you need to ensure the sound is clear of any other applied parameters. I suggest placing the sound you want to edit into Upper Manual 1 (UM1) and Lower Manual 1 (LM1) positions and ensure all other layers are switched off. For both of these positions, place the sound at a Panorama value of 64, apply no dynamic by unticking the Dynamic box on screen two of "Selectors" and ensure that the two Reverb values are zero, not "Inst". Also make Delay and Chorus zero in value. The sound in LM1 will remain unchanged beyond this and will be used as a reference for comparison with your editing ventures. That editing will take place on the sound in UM1.

In the Sound Control panel at the bottom of the ADSR envelope screen, always zero the value of any parameter which you are investigating within the ADSR envelope. (Release and Attack are very common in Sound Control and Decay occurs sometimes. There can also be related parameters which should be ar zero for initial experimentation, such as Velocity Attack.)

Set up any sound in the above way and try different values of Release between zero and 115. Notice the rather peculiar clipped effect of low values and how, as the value is increased, there is more "hangover" of the sound as you release a key. Release provides a sort of inbuilt Reverb to the sound. It needs using with care as it can make a natural sound rather synthetic and give it a ringing quality. Make comparisons with the original sound on the Lower Manual. When you think you have the measure of Release, reapply the "Inst" values of Reverb etc within "Selectors" to your edited sound to hear the result. This may cause you to have to adjust your edited Release value.

What is happening to the graph? We have to imagine this. Release is the final straight line on the right ending at the x-axis at which point the sound is no longer. A Release value of zero causes that line to become perpendicular, showing a drop to zero volume in zero time (or as close to zero time as is physically possible). A Release value of 127 would cause that line to be horizontal so it never meets the x-axis and therefore sounds forever. Sometimes, the ADSR envelope is set up to prevent that happening even with a value of 127. A Release value of 115 gives a fairly long time for the sound to fade. Try higher values than that, with very small increases at a time to hear how much value increase causes how much longer duration of the sound. I know you want to try 127 – on your own head be it!

Attack is actually a more interesting parameter to change. It is the first line on the graph and determines what happens to the sound as a key is pressed. This is where a Dynamic value of zero is needed when experimenting otherwise it may not be clear exactly what is happening. An Attack value of zero is maximum attack – the sound appears immediately the key is pressed. This is related to how quickly the instrument whose sound is being produced responds in reality. A piano, for instance, has an attack value of zero. A stringed instrument is more likely to have a higher value than this, depending on how long the string takes to start vibrating when the bow begins to move. This is obviously a feature of how the instrument is played. A similar situation applies to any instrument which is not percussive, ie does not rely on producing its sound by having its vibrating part hit. Some synth sounds have a very slow attack for a particular effect. A corollary of all this is that a fast piece of music having very few sustained notes requires fairly low Attack values otherwise the sounds will not have time to rise to their full volume before another key is pressed – you could end up playing the piece of music and having no or very little sound appearing at all!

You can turn a slow sound into a faster version by lowering the Attack value. This can work well with synth pads if their "Inst" Attack value is very high and you want to use them in a tempo which is too fast for that value to allow them to sound. Here we're going to try the opposite. There are many Strings sounds in the Wersi database, including various Attack Strings where the Attack value is lower than "normal" Strings. However, there are no "Slow Strings" sounds so let's make one from "Soft Strings 1*".

Set "Soft Strings 1*" up on the manuals as described above, remembering the settings you need to zero. Set "Attack" in both the ADSR envelope and Sound Control to zero (on the ADSR envelope screen, not the temporary "Sound Control" in the "Selectors" tab). It is also advisable to reduce any other Sound Control parameters which relate to attack or dynamic to zero, such as "Velocity Attack" and "Dynamik".

Next, raise the value of Attack in the ADSR envelope to 100 and then gradually increase that value and compare the result with the original sound. There's no single solution to this one – you'll need different amounts of "slowness" for different tempo music so set up several versions of your "Slow Strings" sound. I usually name edited sounds as the original (so I know their source) followed by something to indicate the sound is edited. Here, I'd probably call each edited sound "Soft Strings 1 – Slow x" where "x" is 1, then 2, then 3 etc, with a larger number meaning a slower Attack than a lower number. Save each one when you are satisfied but don't forget to test each one with "Inst" Reverb etc settings also. You may need to go back into editing the sound again to make minor adjustments.

A similar exercise can be done with other strings sounds to see if anything different can be achieved – highly likely. You can also do the same with the vocal sounds (though the scat vocals need their quick attack). The results are best used on the lower manual as accompaniment where they can provide a very satisfactory outcome. Try layering different slow strings at different pitches to have a low pitch sound come in first followed by a high pitch one, or vice versa. Subtle adjustments can be made to Attack within Sound Control to fine tune this within a particular Total Preset. You'll have some disappointments but, once you've set up something which is particularly effective, it will all have been worthwhile.

Examples

1.   A slightly slow Strings sound.

ADSR Envelope : Attack = 91; Release = 109
Sound Control : Velocity Attack, Dynamik, Attack and Release = 0

2.   A slower Strings sound.

ADSR Envelope : Attack = 104; Release = 110
Sound Control : as in Example 1.

3.   A really slow Strings sound.

ADSR Envelope : Attack = 110; Release = 112
Sound Control : as in Example 1.

I've also changed the Release value in each of the above. Of course, that's not part of the Attack effect – it just adds a further bit of interest to the overall sound. Also remember that the "Inst" values in "Selectors" are as found in the Editing screens.

Try making up some slow Vocal sounds – they can be particularly effective.

Tip: All the above is designed to offer an explanation of "Attack" and "Release" within the ADSR envelope. In practice, if either of these parameters is included in Sound Control it's a lot easier to change the value there and leave the ADSR envelope settings alone. Try the effect of changing both the ADSR and the Sound Control values for the same parameter – they do interplay with each other.

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