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Ever since the lecture with Robyn (Tileyard Education, 2021) involving an exercise to record every day sounds in the house, I felt an urge to become as creative as possible with samples. Designing a sample pack with common items and familiar sounds from the bedroom allowed me to not only demonstrate my originality in this assignment, but also it heightened my production skills when coming to processing the sounds. The pack ranges over seven octaves but includes all of the repeated sounds on each 12 noted spectrum with a different kind of processing which provides unique, variant textures. Notes incorporate the sound of: a pillow hitting a desk (C), an umbrella being opened (C#), a slap of a hand on skin (D), a camera taking a photo (D#), a pair of scissors being closed (E), a knife being scraped (F), a notebook spiral scratch (F#), a book being flicked through (G), a ruler creating vibrations on a table once applied with force (G#), a squeaky chair (A), a water bottle being shaken (A#) and a spoon hitting a ceramic bowl (B).

Each sample was recorded with an Aston Spirit microphone through a Komplete Audio 6 audio interface. This is a decent condenser microphone however not the best, and certainly not the most efficient for recording these samples. Perhaps the Shure SM81 would be a better option (GearsLutz.com, 2014) given that this pack being specifically for percussion. The Aston Spirit microphone is used more so for vocals or guitars rather than with percussion. Once recording I realised quickly that capturing audio in a student halls wasn't the best idea. Constantly people would make noise in my corridor and even at times there were roadworks from outside that seeped into my microphone. Even though these sounds are obviously not heard in the final take, it was an annoying issue that I tackled by recording late at night when everyone was asleep. Other ways in which I could have handled this would have been just to record in a proper studio and make use of the vocal booths that are available in Tileyard. Not surprisingly, a technical aspect of the recording process was to constantly adjust the input level on my audio interface, according to the type of sound that I was recording at the time. Particularly with loud

sounds, such as the pillow hit, I had to ensure that my levels were set correctly to prevent clipping.

Editing the files once they were all recorded involved me choosing the right takes and then picking the best one, cutting the takes so that the samples start exactly where the sound starts and ends, adding a fade in and out to avoid all audio regions making any clicking sounds and gain staging to make sure that all of the samples were peaking at the exact same level.

From this I then processed the sounds starting with an EQ. I used the Pro Q3 from FabFilter to implement the method of subtractive EQ on each sample. Cutting the low and high end of each sound simply eliminates any unneeded frequencies. Additionally, a bell curve was also used to cut the low-mids around 300-400hz to remove any boomy or boxy-sounding frequencies. Boosting certain frequencies in the high end around 10k-16k with the PuigTec EQP1A from Waves created more spark and gave clarity to each sample. This particular EQ was used because I like the sound of its unique curve shapes. This plugin enabled me to have more of a specific, shark fin shaped curve for more accurate boosting when requisite (Youtube.com, 2019). Another method of subtractive EQ was used with the Waves F6 dynamic EQ. With this plugin I cut certain frequencies - specifically the sharp resonating ones - that sounded too piercing. Applying the threshold, range, attack and release options allowed me to tell each sound when and how to act. These are attached to the percussive sounds mainly, such as the pillow or umbrella. An 8 millisecond attack setting was used to remove the “boominess” of the track due to it being treated as a kick. The release was set to about 160 milliseconds to ensure that the tail of each sample was still enhanced after the sound had been compressed. Gullfoss from Soundtheory (Soundtheory.com, 2021) was another dynamic EQ that I used to ‘recover’ frequencies that were covered by other frequencies that were too low in the mix. Accuracy is the main reason I chose this dynamic EQ because Gullfoss is capable of changing its frequency response more than 300 times per second. Some of the higher frequencies were accentuated by using the ‘brighten’ knob, which helped shape the tone to my taste. I struggled for a while trying to EQ the takes without erasing too many needed hz, but in

the end it was easier removing the majority of frequencies first and then recovering them back with this plugin.

Preventing the proximity effect of certain sounds (due to my microphone being too close to the objects when recording) was achieved by utilising the F6 dynamic EQ. I selected the lo-shelf option, set the threshold and arranged when I wanted to cut out the parts where it overpowered within the sound.

Compression was used on the most punchy, percussive samples to add a snap to the initial impact with the fast attack. The release brings the audio back in at the end to enhance the tail of the sound. Parallel compression was also used on the sounds that crack such as the umbrella. Applying the CLA-76 compressor to the bus was done because it is the only compressor that has the 'ALL' function on the ratio. In possessing this setting on the sample it permits the audio to have an impressive click where the volume drops almost instantaneously. With the fastest option on the attack knob as well this compresses it straight away, heightening the punch. For a final snap on the samples I also added a limiter to acquire 2-3db of reduction when it hits the ceiling. Lastly I blended the highly over-processed sound from the bus with the original to my taste.

Smack Attack is a transient shaper that I used on the more percussive sounds to make them punchier. Increasing the attack knob as taught in a tutorial (Youtube.com, 2018) emphasises the beginning of the sample which gives you more of a 'click' sound - similar to a hard compression. Subsequently this takes the initial punch of the sample and increases/decreases it to my need, so I increased the attack on the transient shaper and adjusted the density knob to obtain a more powerful sound. A selection of the samples had too much of a tail so I had to use the sustain knob in this plugin to shorten the audio, resulting in a more tight sound. Tweaking the duration of the attack and shortening the transient whilst "pinpointing control" (Waves.com, 2021) over the transients' shape gave the sound more of a snap with Smack Attack. This enhanced the crack of the samples and perfected certain qualities that my compressor could not do. In order to not destroy the initial sound I used the dry/wet button to blend the processed signal from Smack Attack with the original source so that it doesn't fully affect the original sample.

Infected Mushroom Pusher from Waves was the exciter plugin I used to add much more presence. Adding presence with the Magic button animates the sound to give a particular brightness to any audio. Fresh Air from Slate Digital boosted high frequencies to further shape the tone as well, adding sheen to the samples. Using presets on the Sculptor from Izotope as a base was done to match each sample with what you may associate them with (such as the scissors sounding like a hi-hat) in regards to an actual drum kit MIDI sample pack. Once the appropriate preset was assigned I would then use the knobs to brighten and dampen the sounds of each sample. The spectral shaper helped to completely transform my audio and further shape the tone that I desired.

Frequently when coming to effects I started with Thermal from Output. Like with Sculptor, I picked each preset and then tweaked the sounds to my fancy for my stylist choices. Chorus, flanger, filter, compression and phaser were the main effects that I used from this plugin. The circular XY Control that is linked to distortion parameters and multi-stage effects processing within this plugin allowed me to access the true ideas which I had planned in my head for each octave. Certain octaves have the obvious copy of the original signal with a modulated delay from the flanger and provide quite interesting variation for each sound. I learned how to truly manipulate sounds in this plugin from a tutorial online (Youtube.com, 2020) which demonstrated how to go about processing with all of the key features in great detail. Despite chorus, flanger and phaser being rather similar, I made sure that the samples had some kind of extreme or subtle disparity from each other octave in order for every one of the notes to feel fresh for the consumer. This idea came from the Drip plugin which is designed to give your melodies and chord progressions instant flavour “with just 2 clicks” (Drippugin.com, 2021) rather than having to mess around with plugins for hours, resulting in you losing creativity. Implicating this method I thought would provide a modern touch to just a standard sample pack and also give the chance for other consumers to feel inspired without even having to load up anymore plugins. Too often have I opened up sample packs such as something from Certified Gold or Create Cuts (Expansions: Komplete) into my DAW and I like the sounds, but have to process them so that they fit to the tracks that I imagine them in. If I feel this way it must only be right that other people feel the same as well.

One thing that I didn't mention previously about Thermal was that it allowed me to design my own envelopes. Assigning the envelope to the drive, chorus and other effects with simple or complex shapes permits me to delve in further with creating intricate and unique sounds. The stages options allow me to maximise my distinctive sounds. For example if I wanted to add distortion to a sound I would use the stages option inside Thermal to limit the frequency spectrum on where I wanted to add distortion to. This would be done so that I don't add distortion below 200hz - because warping the low end would sound unpleasant. Setting a frequency range from the stage button to tell it what effects you want to have authorises me to obtain a clean low end but distorted top as to wherever I please.

Another tone shaper I implemented into my samples was Torque (Waves.com, 2021). Using the focus button, I slid it to where the sound is most resonant and whatever part I wanted to effect would then either be pitched up or down with the other nob to give either more treble or bass, thus changing the tone. Effects become amplified with the Torque trim nob to change the pitch of the sample. This allowed the sounds to have more of a crisp and personalised touch to the tone.

Replika XT from Native Instruments was a delay I used to also add variation to my sounds. The modulating special effect section gave me a further insight on tweaking the effects, as well as adding lo-cut and hi-cut on the delay. Deciding a speed on the delay (such as straight or dotted) and using feedback made certain samples much longer in length. At first I saw this as a possible issue just from a neat perspective because having each sound the same amount of bars would make sense. However after some thought I didn't think that it would be problematic to have some effects longer than others. The same processing here with the delay goes for the reverb (Raum: Komplete). Unique features from this plugin involve the Diffusion nob which makes the reverb sound smooth or harsh and the Dampen feature, which made the high frequencies pass or be cut on certain sounds. At times there were issues in certain audio files where the reverb worked in some of the samples in the octaves, however it would generate some of the sounds to become messy and unclear; thus taking the professionalism out of the question. After hours of trial and error I finally found a perfect balance of the effects for each octave and overcame the chaotic clutter of the sounds.

Being as every sample needed to be at the same level, I had to first go through each of every seven octaves of every individual sound and find the loudest one. Once that was completed I used the Limiter to push every sample to become aligned with the loudest one. The ceiling was set at -0.1 to avoid clipping and using the threshold I increased the volume of each sample. Comparing each of the same samples (such as the pillow: C-1 to C5) was done to make sure that they were even in terms of volume. I did the same with every the other note respectively. However the notes in one octave are not equal in volume due to me comparing only the samples in their own octaves. For example the intensity of the squeaky chair does not match the volume of the water bottle shake note. This would be something that I would accomplish for next time to add a professional and proper quality touch to my pack. Similarly to when I matched each sample in its octave I would do the same with the limiter but with every single sound so that the end result would have every note the exact same volume.

Once the limiting was done in the processing stage, I bounced all of the files to the highest quality. This was done by selecting 24bit with a 48000 sample rate and a realtime mode bounce with a 2nd cycle pass. This achieved the industry standard bounce for efficient quality.

The final part was adding the WAV files into Kontakt. I selected 'New Instrument', clicked on the wrench key and dragged the audio files into the mapping editor, then arranged them by samples spread over seven octaves. Clicking the Monolith option when saving the virtual instrument was implemented so that the patch and samples are in one single file. Originally I sent the file to one of my peers as the Patch Plus Samples option, which gave me the Kontakt file with a separate folder which included all of my samples. Not knowing this I only sent the Kontakt file which meant that they had nothing to physically play once hitting notes on their MIDI. Luckily this was discussed quickly and after a revisit of the pack and watching a tutorial (Youtube.com, 2014) I managed to figure out where I had gone wrong.

One flaw in these samples is that they are all in mono. There is no stereo information due to the recordings that were recorded with my microphone, resulting in everything being in the middle. Plugins such as the Doubler from Waves or Imager from Izotope

could fix this problem. The Doubler duplicates a track, delays the sound slightly and pans both sounds left and right. The problem with this however is that it projects two sounds rather than one. This would not be effective for a sample such as the pillow hit or anything that is short and snappy because then you'd hear two sounds one after another. Samples such as the notebook spiral scratch are lengthy enough for this plugin to give the audio space and make it sound interesting. So the Doubler could be used to solve this issue for some of the mono sounds, but not all. Microshift (Soundtoys.com, 2021) is a widening and chorus effects plugin which takes a dry sample and constructs it to transmit stereo information by using pitch shifting and a delay that varies over time. This information could have been used to create stereo width which would then allow the sounds to no longer be mono. This can also be applied with other effects like reverb or a chorus.

After collecting my samples and playing them back I noticed that there was a lot of hiss and unneeded noise in the background of each recording. I recorded each sample quite close to the microphone because I didn't want to capture a lot of room noise - however there was still some bleed left. Despite there being a difference in the clarity of the sound, the proximity effect was introduced because the microphone was slightly too close to the objects. As mentioned before already, the dynamic EQ was implemented to counter the proximity effect. Additionally I used the FabFilter Pro G gate to cut the noise as soon as the sample finishes so that there is no noise at the end of each sample. I learned from Sean Divine's method (Youtube.com, 2018) who states that it provides a "subtle cover" at the tail of the audio. The RX8 (Izotope.com, 2021) was finally used in this part of the processing to extract certain noises from the recordings as well. Both of these plugins helped me to achieve a clear and articulate sound for all of my recordings.

Referencing a percussion kit would have been a good idea when coming to finalising the processing of my pack so that everything would have the same clarity and volume as something which is already professionally released. Next time I would certainly use one of Kyle Beats' packs as previously mentioned as an allusion to my work in regards for a more masterful clarity of sound. I would have compared my sample pack to the Flex Kit or Karma Kit (Kylebeats.com, 2021). I was inspired by some of the sounds in these packs

due to them having bizarre textures and interesting, processed percussion sounds - so it would only have made sense to discuss, compare and possibly research how he created his sounds for further inspiration.

Another thing that I could have done to improve my pack would have been to cover a larger amount of octaves with varied sounds. Mine only covers seven octaves, whereas I could use at least two more for a larger selection of unique sounds. Furthermore, from this point, a more clear organisation of each octave in regards to a drum kit should have been done for next time as well. I mean this because certain sounds in some octaves possibly fit better with other samples from another octave. Organising the entire samples into, for example, a kick being on C, a snare-type sound on D, a hat on F# and so on, would have made the kit more easy for the consumer to work with and understand. This is heard through most packs such as the standard Electronic Drum Kit section in Logic with files such as 808 Flex or After Party where there is a kick on C, a light percussion on C#, a powerful snare on D, a clap on D#, a rim shot on E, a low tom on F, a closed hi-hat on F#, a mid tom on G, a slightly open hi-hat on G#, a high tom on A, an open hi-hat on A# and an effect/percussion on B.

Initially I had sent the Kontakt file to my colleague and he pointed out to me that the samples, particularly on the F note (knives) and B note (squeaky chair) were all varying a lot in terms of volume. What I had done was basically miss out a few of the samples when gain staging and limiting in the processing stage, which resulted in my sounds having a vast change in volume when they were played on the MIDI keyboard. Luckily my friend pointed out to me exactly which ones were wrong and so I responded to this immediately by going back to the samples in my Logic file and processed them properly. After sending the correct file (bounced monolith) and improved samples with matching volume, we were both happy with the end result.

Upon reflection of my created sample pack, another option would be to record more sounds rather than to have the same, repeated ones per octave but only process them. Even though this would ruin one of my USPs of the pack, it would be a better idea to design the sounds so that they are more commercially viable. In my opinion, only 5% of the audio

samples are actual decent sounds whereas the rest are not amazing, being as this was more of an experiment. These samples are more for left-field, abstract music rather than commercial music. This isn't necessarily a bad thing, however if I wanted this to be successful and do well in places that sell packs such as Splice, then I would need to put much more time and energy into the pack. Studying kits on Splice such as the Murda Beatz Quarantine Kit (Splice.com, 2021) or Decap - Drums That Knock (Splice.com, 2021) could help to inspire me for future reference when attempting to make really successful pack sounds. The clarity in these sounds may be from using hardware as well as just VST plugins in their software also. If I ever got a chance this potentially could be something else that I'd do in the future. Perhaps I could rent a studio and use proper hardware for an impeccable finished result of my processed sounds. Even if I disregarded the preceded idea and kept the same aim of different sounds in octaves, I would still next time at least try and become even more creative and rig certain sounds with guitar pedals such as chorus, tremolo, wah and delay and many more as well as using other types of physical gear.

A process that I hadn't thought of until using the pack was including velocity changes. Luckily Kontakt gives the option for each sample to have velocities from 1-127 applicable in the consumers DAW, however certain aspects that you get in other packs/instruments have more than just velocity and volume changes. Some instruments, when pressing with force on the MIDI keyboard, will not only make the sound louder but also provide timbre changes. (Youtube.com, 2019). In being able to do this I would have to somehow record each of the 12 samples in more than just one way. Perhaps, if I recorded myself hitting the pillow on different surfaces such as the wardrobe, the desk, the bed or the carpet, I would obtain different timbres varying from hard to soft respectively. I did not have time to go back and do this, however this would indefinitely make the pack much more intricate.

Despite all of these corrections and ideas for improvement, I still feel as though this was a successful instrument. I have clear unique selling points, the instrument works and I would definitely use at least a couple of these sounds in a track in the future.

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