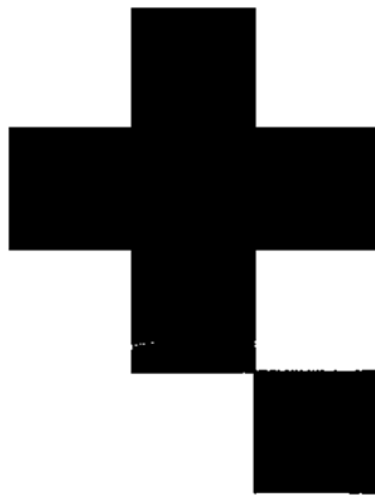


Akshay Parmar
1907846
Development (ADAD7005_LON)
Element 2b
Ciarán Robinson

TILEYARD



EDUCATION

INSTRUMENT ARTEFACT - SHAYSOUNDV1 (SSV1)

Understanding the ways in which the ShaySoundV1 (SSV1) VST synthesizer was achieved shall ensue in this thesis. Looking at various elements will demonstrate the successes and pitfalls during the creation of this instrument. In order to do this, a thorough exploration into seven key areas will follow. This will include the approach to creating the instrument, an overview of how the synth works, details around the issues that were encountered in the creative process, a reflection upon the final results, discussions of potential improvements that could of or have been made, a comparison and contrast against other existing VST synths and finally, user feedback and beta testing. By breaking the above into the following sequence, it will allow for a more holistic interpretation of the whole process from its inception to its completion.

As someone who had never used Max MSP, the initial process of trying to create an instrument through this software was heavily reliant upon the self-education of YouTube tutorials created by people who had already made instruments or wanted to show individuals how to do so on Max MSP. For instance, a series on how to build a synthesizer in Max (Thurley, 2019) was key to creating the SSV1. A thorough breakdown of oscillators, filters, envelopes, delay, panning and presentation were discussed. This provided the foundations for the SSV1 to become a fully-fledged synth in its own right because the videos explained in a very precise manner how one with no knowledge could code a patch together that was not only musical but commercially viable too.

As well as using YouTube tutorials to learn how to use Max, another approach to creating the SSV1 came from referencing synths that had been used in many of my productions. As a Logic Pro X-based producer, my familiarity with stock synths such as the ES2 and the Retro Synth were very helpful in this assignment. Having created many of my own sounds using the oscillators, filters and envelopes from ES2 and Retro Synth, it was from listening to the recurring base theme in many of my previous productions that led to the sound of the SSV1. This was critical in the creation process as it led to the instrument gaining its unique selling point. The sounds used in many of my productions as a base for songs to be written to are almost exclusively high-cut giving the sound more of an underwater feel.

Despite having tried in the best possible way to study some of the key navigations of Max MSP before attempting to use the software, it was still a very important in the approach for trial and error to occur, especially the learning of key commands. For instance, Max MSP's formulas were not the most obvious and one key incident of this was when sound would not play. Searching the database for a speaker icon, one without knowledge would not have known 'ezdac~' would prompt the speaker icon to appear. Although this is just one example of many that occurred during the creation of the SSV1, it embodied how essential it was for there to be a good amount of time to simply test and explore Max MSP before truly understanding how to create my instrument. Undoubtedly, it was possible to create a sound but beyond this stage it was very difficult to move in a productive way forward without having a competent grasp on some of the software's key commands.

Design was another critical element in the approach to creating the SSV1. The plan all along was to create an instrument that would serve as a base for writing songs to and in my own production workflow, synths that appear complicated such as Lennar Digital's Sylenth 1 (Lennardigital.com, 2020) or even Logic Pro X's ES2 and Retro Synth to a certain degree was not something that I would turn to in the very initial stages of production when an artist and producer meet for the first time and have to build a connection from where they can create

further in the studio. Fig. 1 below is the end design if one was to open up the VST in their digital audio workstation (DAW). The colours represent Shay's era, heavily influenced by artists such as Drake, The Weeknd, NAV and many others of the 2010s and still in the 2020s where this melancholic undertone to all of their music has been matched by artistic visions of darker colours and sweeping minor chords. Influenced by his generation and the artists at the top of the music game, as a producer who creates music for similar artists, this synth was purely designed for those looking to join the already vast fanbase and producer-cult in this musical genre/s. Simplicity, a word that embodies the SSV1 is not only a design decision but a viable one with its market always wanting ease of use; and this was done by removing the technological side out of the instrument wherever possible.

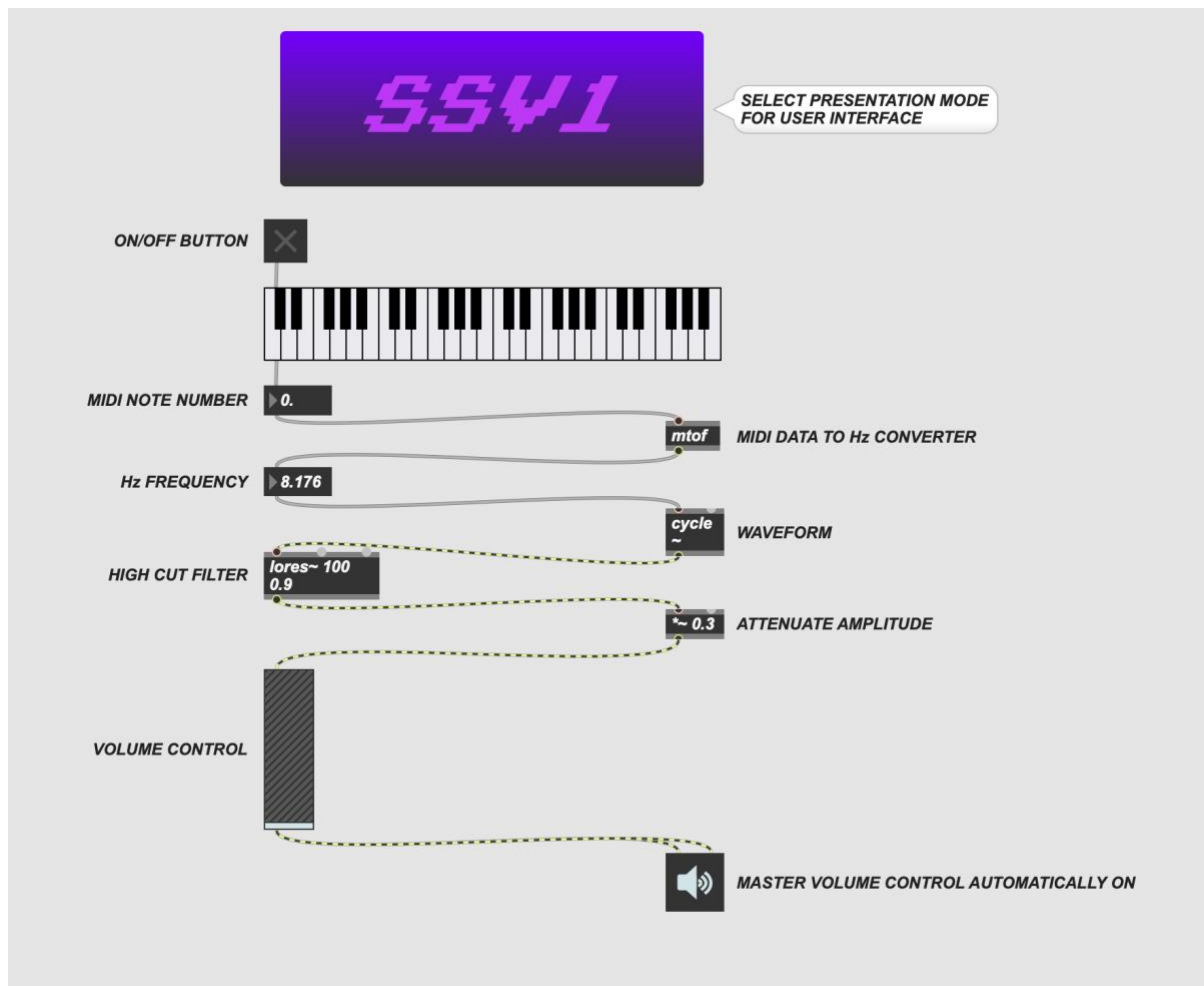
Fig. 1



The SSV1 is very simple to use from a user's perspective. As Fig. 1 shows, it has three elements; the 'X' symbol being the on/off switch, the fader on the right-hand side controlling the VST's internal volume and the keys to play on. Again, simplicity was the key in this design and it indeed shows. It could be argued that for this reason it would be appealing to all ages as a base creator, similarly as if an artist was to sing an acoustic version of their song. This serves a dual purpose, one for being an acoustic template or equally, it could have other melodies built on top of it and kept in as part of an officially produced song. As a MIDI controlled instrument, installation and running of this instrument will be accessible to a wide range of ages and backgrounds with little to no technical experience needed to play.

Looking at the synth from the creator's perspective, again it is comparatively very simple. Fig. 2 (below) illustrates the very minimal yet effective construction of this synth. Based off a simple cycle waveform, the SSV1 is passed through a high-cut filter, or as shown in Max command language 'lores~'. The number after 'lores~' is not scientific in this instance but as a producer who always prioritises the ear first and the technology second, the sound of the instrument was right at this level and thus remained so. If one was to compare the market of other Max MSP synths, it would be clear to see that this high-cut filtered sound is relatively very simple. However, it most certainly maintains to its design brief and this is shown by the way in which the high-cut filter was implemented.

Fig. 2



The 'lo-res~' and attenuate amplitude are key cogs in the operation of this instrument and how it sounds. The reason for setting the high-cut filter at '100 0.9' (see Fig. 2) and the attenuate amplitude at '0.3' was because of the way the sound had been transformed from an ordinary cycle waveform to an edited, original sounding cycle wave. Although it could be argued that there are many synthesizers that feature similar sounds to the SSV1, none can say they were copied in this sense as these figures were measured by pure feeling. As a consequence, these two aspects of the instrument are essential to its operation, essentially providing the basis for the sound.

Details of issues that were encountered in the process of making the instrument came predominantly in the form of technical issues and in particular, the continual sequence of coding followed by a wrong outcome. For example, when faced with a wrong outcome regarding the sonics of the instrument, on several occasions I had to go back through every code to understand why certain components were not working and trialling each element by taking it out and putting it back in again or searching for a completely different key command by clicking 'n' and looking it up inside Max's database. Nonetheless, this was a crucial element of the creative process because it taught me more about Max MSP and its formulas. In addition, it gave me the skills necessary to end up creating the SSV1.

Another issue that was encountered during this process was trying to configure MIDI to the instrument. It was not clear that ‘mtof’ in the ‘n’ key commands would trigger the conversion necessary for MIDI notes to be interpreted in hertz (Hz) which would then channel down into the oscillators, filters and amps. To combat this, using the help bar in Max MSP and reading the notations helped me through this. The idea of getting this instrument to be MIDI-friendly was essential given the design brief of this synth was to be easily playable for producers using keyboards of any kind, whether that be physical or the musical typing as seen in Logic Pro X and many other DAWs.

This instrument does not by any means transform music into a new sound. However, this instrument embodies the type of plugins which are specifically designed to help a producer improve her/his’ workflow and thus if one is to consider the design brief mentioned above, then the SSV1 applies well. This is arguably one of the easiest VSTs out there (see Fig. 1). An on/off switch and a volume fader being the two only components needed to operate the instrument. The reflection from this is that though some may argue that this is too simple for a modern-day VST, it will be disputed here that in fact this is what 2020 producers need as more and more people try to produce given the whole market’s equipment being affordable to almost every household in a *developed* economy. The SSV1 serves to help those who do not come from technological backgrounds or equally do but want music to feel as organic as one could possibly want it to when recording in the studio on a DAW. Therefore, the dual-control interface is suitable for this design and its target market.

Furthermore, the sound itself is versatile. When playing the SSV1, the sound is bright, warm and filled with bass all at the same giving the listener and producer when playing a very well equalized sound prior to mixing. Also, given its equal bass, mid and tenor range, the V1 caters to a wide-range of genres from Trap, Hip Hop, R&B, UK Garage, House, Reggaeton and Dancehall. As a result, the foregoing effect of this equal sound makes the instrument very commercial. Its simplicity is the key for this as is the case with many other favourite instruments. The SSV1 does not try to be the sound of everything, rather it does its own sound well so it has its own pocket in the market similarly to other VSTs like Sausage Fattener (Dada Life, 2020), though not an instrument, a plug-in that does a great deal with its dual-button interface.

The title of the synth means that the SSV1 could have a chain of VSTs that follow it. Consequently, it would be interesting to include some more filters and envelopes but that could be done in the SSV2 should there be enough demand for the first plug-in. In this sense, the SSV1 is a good start, beginning in a small manner but palatable enough for users to gage an idea on whether they like the experience. Then from there, depending on its likeability, it could grow and evolve into different lanes, whether that could be simpler VST designs or more complex ones.

As for improvements to the SSV1, it could be contended that the need for more editing features to the sound would have made this instrument more appealing. For example, as Fig. 1 shows, there could have been further chains below the high-cut filter which would have given users the option to envelope the sound or equally, to add more waveforms. By adding these features, it would have given the user more of an ability to manipulate their own sound from the instrument. Nevertheless, it is important to note that these additions were considered in the creative process but ultimately left out because of the advancement of DAWs to a point where sounds can be modified in a multitude of ways. This can be done through modulation,

equalizing, delay designing, adding reverb, pitch shifting, reversing and many more additional effects.

Another way in which the SSV1 could have been improved is by being physical as well as digital. By this one means that the VST version of this could have been made into a real hardware instrument because of its simplicity and aesthetic appeal as a physical instrument. The SSV1 (Fig. 2) is certainly very appealing as a synth on a screen and in a physical sense. From a commercial perspective, it could perhaps grow the interested market as it would now appeal to not only technologically based producers but those who trust hardware more. This has certainly been a trend in the market of late with leading companies such as Native Instruments (Native-instruments.com, 2020) and Arturia (Arturia.com, 2020) releasing this dual-capacity.

Although the design brief in this creative process was centred around simplicity, some may argue that this was an instrument that was too safe in its design. Some of the most popular synthesizers like Lennar Digital's Sylenth 1, ES2, Retro Synth, Nexus (Refx.com, 2020) and Omnisphere (Spectrasonics.net, 2020) all have huge libraries of sounds for users to choose from and in the cases of Nexus and Omnisphere, their vast libraries are key to their success. These libraries can make some producers get lost in one synth for many years because it makes them feel like they have all the tools that they need at their disposal. While this could be something that boosted the potential longevity of the SSV1, it still nonetheless could be argued that the synth is fit for purpose and offers the producer a quick and easy plug-in to load up when trying to find inspiration in a songwriting session or when meeting an artist and in need of keeping the session alive.

When comparing and contrasting the SSV1 to existing commercial instruments, this very simple design is a key unique selling point. While many other synths by well established companies feature this recurrent theme of mass component capability, the market for synths with an already defined sound that is immediately commercially viable is slim. The producer in 2020 still wants to experiment and tweak their own sound. Whilst this process should never be eliminated from a producer's skillset, it is equally important for producers, particularly in a commercial setting to have access to speeding up workflow through certain instruments. A very frustrating idea for a producer is when they have an idea but cannot translate that to the artist quickly enough and then the session ends up hitting a plateau. This instrument serves to be one of hopefully many in the future that producers in the commercial scene can open up whenever they walk into a session and create their best ideas at a base level and then elaborate with the likes of Lennar Digital or Omnisphere afterwards. The SSV1 serves purely to stop ideas being stunted and therefore has its own place in the market.

The target market for this instrument are producers creating in genres that are heavily inspired by R&B undertones such as Pop, House, UK Garage, Dancehall, Reggaeton and Afrobeats. Omnisphere and Nexus are two leading VST synthesizers in 2020. Leading on from the previous point regarding the complexity of these synths, this evidence demonstrates how the SSV1 can work in a collaborative way alongside Omnisphere and Nexus in a producer's arsenal of sounds and not as what was first feared as being a choice between one or the other.

Following a chronological sequence of events, the user feedback from beta testing the instrument was important in various ways. The first constructive criticism was about the sound itself. For example, in the early stages of creation, the issue was with the cycle waveform and the level of high-end notes it was sounding out that would hurt the user's ear. To tackle this, I

incorporated the 'lores~' command and ensured that the disruption of the high-end notes would not play out again by testing the keyboard myself by holding the note at its highest velocity and then tuning the high-cut filter until the irritable frequencies were removed. This was a key point in the instrument's development as it ensured that through the production, quality of sound was always levelled against the highest velocity note rather than there being the potential for testing without considering this nuance.

Another issue raised from users came from wanting the sound to be more complete or in other words as one. For instance, after implementing the high-cut filter through the 'lores~' command, it was apparent to this particular user that the sound still felt disjointed as if there were in fact two separate sounds playing at the same time. In the very early creative process, the attenuate amplitude was used to mix multiple waveforms together but as the process progressed I realised that I only wanted the cycle wave to play. As a result, I removed the attenuate amplitude, but it was this element according to the user which caused a separation in the sound. From my perspective it sounded very similar, but the user felt a difference. To make sure that this would not be a problem given the uncertainty in the scenario, it was best to include the attenuate amplitude for good measure as it was not hindering the sound. Once again, if it was not for the testing by others then these seemingly acute details could have potentially had a major effect on user satisfaction post-release had they not been addressed.

The last feedback issue was the lack of being able to bring back some of the higher frequencies in the instrument. However, this would have meant re-introducing some of the sharp frequencies that were affecting the first user. Ultimately in this instance, it was decided not to follow the user's advice because the design brief was very clear about making this a VST for creating inspiration and moods in a song. Equally, it was deliberate to remove high-end frequencies for vocals to sit clearer as well as giving the whole feel of the sound more of a R&B base filled with emotion. Nonetheless, this feedback will be taken on board for the SSV2, should this materialise and can be something to add as a new feature in the next instalment.

On the whole, the SSV1 did a very good job at staying relevant to its design brief despite all of the necessary adjustments needed to satisfy consumer needs. It could be said that the approach to creating the instrument was reasonable considering the lack of experience with Max MSP. Being able to see how others like Thurley had created their sounds was very helpful and most importantly, allowed the SSV1 to have its own unique sound. Therefore, this was arguably the critical factor for making the instrument a commercially viable product. The referencing of existing synthesizers such as the ES2 and Retro Synth enabled a better understanding of the necessary components needed in a synth to morph an original sound. Though more synths could have been referenced, this approach was key to researching the market as well as how the SSV1 would be built. Combining these two approaches above with a trial and error testing phase was essential and helped with understanding how to navigate around Max in a more comfortable manner. The instrument is very simple to use but that was the ultimate goal for this design and so in this way, from an evaluative perspective, it did not fail. In addition, the inner creation was designed with sound at the fore and technology last and with this overview throughout it allowed the music to come out on top. When it came to the issues encountered when creating the instrument, the un-coding and re-coding sequence was beneficial to understanding the software more and therefore resulting in the desired sound becoming a reality. Without these mistakes it would not have led to the sound achieved. Also, with the MIDI data, that too was dealt in an appropriate fashion and added again to the commercial appeal for the SSV1 given the majority of the market having this option enabled. Although there could be many improvements to this instrument, the same could be said for any synth

released on this format. Nonetheless, by listening to all of the user feedback and analysing which ones would work for this design was very important to maintaining the instrument's uniqueness. So, to name it V1 has also alleviated any of the improvements that could have been made because it enables the creator of the next instalment to factor these in. So, overall, the instrument satisfied the brief as well as its potential consumers at this early stage in its inception.

BIBLIOGRAPHY

Arturia.com. 2020. *Arturia - Your Experience, Your Sound*. [online] Available at: <<https://www.arturia.com/>> [Accessed 24 March 2020].

Dada Life. 2020. *OUR PLUGINS*. [online] Available at: <<http://www.dadalife.com/sausage-fattener/>> [Accessed 19 March 2020].

Lennardigital.com. 2020. *Sylenth1 | Lennardigital*. [online] Available at: <<https://www.lennardigital.com/sylenth1/>> [Accessed 25 March 2020].

Native-instruments.com. 2020. *Native Instruments - Software And Hardware For Music Production And Djing*. [online] Available at: <<https://www.native-instruments.com/en/>> [Accessed 24 March 2020].

Refx.com. 2020. *Home | Refx*. [online] Available at: <<https://refx.com/>> [Accessed 25 March 2020].

Spectrasonics.net. 2020. *Spectrasonics - Omnisphere 2 - What's New*. [online] Available at: <<https://www.spectrasonics.net/products/omnisphere/index.php>> [Accessed 25 March 2020].

Thurley, O., 2019. *Oliver Thurley*. [online] YouTube. Available at: <<https://www.youtube.com/channel/UCBNjKsD4ZfV1htmgbcgZduQ/playlists>> [Accessed 22 March 2020].