



Tileyard Education

MA Commercial Music Production (CPO0721)

Development Module

Element D2b: Instrument Essay

“I Swear” – An Interactive Music Video

George Bone - 2100176

April 2022

3,867 words

Acknowledgements

The start of this calendar has been one of the, if not *the*, most challenging periods of my life. I do not say this sentence lightly, considering its teleological juxtaposition against the last two years of COVID fallout. Confidence in not only myself but in the societal norms in which we live has - at times - failed to dip further. This *has* affected my ability to complete these assignments. The heavily compressed timetable in which this project has been made in, for example - from germination to working prototype - reflects the amount of time needed on personal reflection and not (as I hope you do not believe) on my commitment or drive to complete this task.

To that extent, and to paraphrase Ben Croshaw: 'life is an exercise in duality: one can only [experience pain] if there has been [pleasure] to put it into context' (Zero Punctuation, 2014). A recognition of being in the tunnel, therefore, means nothing without equal recognition of the brightness that continues to push me through it. On a professional level, I would like to thank Ciaran Robinson for not only acting as a reference on multiple external applications this term, but in inspiring me to pursue the topic of this assessment further. I subsequently promise to read his book further, and buy him as many pints as he desires, in lieu of payment. On a personal note, I would like to thank everyone at the Tileyard community who knows me, and has been supportive over the last three months especially. The uplifting yet ever-stimulating milieu of Tileyard, subsequently, functioned as welcome escapism. I look forward to building on these relationships long into the future; as we all know, rock bottom is a brilliant foundation.

Contents

INTRODUCTION.....	4
RESEARCH & CONCEPTUALISATION	5
DESIGN & BUILD	Error! Bookmark not defined.
Background Track Creation	7
Creation of Game Layout.....	9
Coding & Sound Design	12
Brief Play Testing.....	13
DISCUSSIONS & CONCLUSIONS	15
BIBLIOGRAPHY	17

INTRODUCTION

The video game market is an ever-expanding, and yet continually developing frontier, with a projected 3 billion people expected to be gaming, in some form or another, by the end of 2022 (Insider Intelligence, 2021). In the U.K. exclusively, aided by COVID-19 enforced lockdowns, spending in the video game market grew 30% year-on-year, valuing the industry at over £7bn (The Guardian, 2021). In almost perfect synchronicity with the commencement of the UK's first national lockdown, Nintendo released the sequel to their ever-popular Animal Crossing series, entitled *New Horizon*, in which the protagonist explores and develops a hyper-stylised world. Though looking nothing like the outside world, the immersion and realism of the title corresponded in a 34% leap in the total sale of video gaming software in the U.S., and in the U.K. the Nintendo IP dethroned *Doom Eternal* as the highest-selling global title of that fiscal year (The Guardian, 2020). The inhabitants of your island offered a temporarily escapism for players; one which took them away from the apocalyptic nature of the world around them, and into a digital utopia of their own making. It was the players' ability to interact with a world that was similar, and yet not so similar, to their own, that made the game so universally appealing. This ethos, coupled with the DIY nature of my own artist project, inspired me to fuse both mediums, creating a synthesis between the visual and the audible. The function of this essay, therefore, is to introduce and critically analyse the alpha build of my debut video game music video for the track "I Swear". The first half of this paper will engage in commercial and academic discourse surrounding ludomusicology, and a breakdown of the processes undertaken to bring the result of my research to life. The following half will be dedicated to discussing both the successes and failures of the project, concluding with ambitious – yet logical – recommendations upon which to build from.

RESEARCH & CONCEPTUALISATION

“I Swear – An Interactive Music Video” is a self-designed video game level, and will function as part of my first lead single’s campaign for my debut EP, projected to release on December 9th 2022. With music videos still perceived as the most effective way to promote artists, making a music video to accompany my debut release will subsequently push that piece of music further (Banks, 1997). The overall goal when making this level was to create a recognisable London environment that helped to immerse the player in the soundscape and the ethos of the track, created using a fusion of Unity programming and FMOD sound design. To that extent, and achieving part of this objective, the player explores a recreation of the Hammersmith & City, Circle and Metropolitan entrance of Kings Cross St Pancras, exploring the sights and sounds of what my interpretation of TfL infrastructure has to offer. Your digital journey would be backdropped by the track that this music video accompanies the launch of, with animated buskers providing atmosphere and gravity to your adventure. As Laura Leante argues, it is better to have a visual connection to the performers in order to fully construct meaning, or multiple meanings, then merely just to listen to the track in a vacuum. (Leante, 2005).

This project is not unique to me as a musician nor as a programmer, however the implementation of this type of project is still commercially niche and varies in its success. To combat and compete with the rise of predominantly YouTube-based Machinimas, MTV2 released the “Video Mods” project, in which famous and contemporarily popular songs would be remade from existing video game assets (Kotaku, 2012). The most recognisable of these ports was a shot-for-shot remake of Foundation of Wayne’s “Stacey’s Mom”, portrayed in The Sims 2 Engine. To that extent, these were indeed video game-based music videos, but lacked the interactivity that functions to make the videos “games”. More recently, Talentbanq artist Rebekah Fitch’s 2020 single “Game Over” had a 2D side-scroller attached to it, in which the person who got the most points over a certain time period would win tickets to the London leg of her UK tour. By doing this, Fitch was about engage with fans, but incentivised the competitive aspect of the game more than the music that the game was promoting. This may explain the fact that, while the track is a well-crafted and commendable release, it is the third-least listened song on her discography, according to Spotify (2022). Such a pitfall is one in which “I Swear” hopes to not fall into. Not only is the game set in a playable 3D

environment, but it is explorable at your own free will, making the players – and the protagonists’ – interaction with the experience entirely up to them. An infamous real-world example of this level of world-building can be seen in “Epic Citadel”: a demo game created in 2013 to show off the third version of the ‘Unreal’ engine, in which you similarly played through an in-real-world inspired medieval environment.

One crucial decision I needed to make when storyboarding my project regards the required level of immersion the protagonist engages with throughout the level. Among the ludomusicological academic community, “immersion” is a key area of discourse, as there is ‘a desire to counter accusations that gamers mistake the Gameworld for “[...]reality[”]’ (Fritsch, 2016). Indeed, when deciding to set my game level in and amongst one of the most famous train stations in the world, it becomes ever harder to create a clear delineation between reality and simulation. Matthew “UpIsNotJump” Hamlin, quiet conveniently, divides a video games emulation of “reality” into two clear subsections: that of a game being “realistic” (the protagonist walking and talking at a regular human pace), and portraying “realism” (having gameplay and environments interact in a way that makes sense based on the mechanics and environment the player has at their disposal). (UpIsNotJump, 2019). For Hamlin, ‘[h]aving lots of realism leads to a far more exciting experience where you organically discover interesting tid-bits hidden within the game’s mechanics’. Karen Collins calls the implementation of this “realism” into the playable medium as his ‘Variation Technique’ (Collins, 2008). An example of this technique implemented is in *Sonic Generations* (2011). The sight of an anthropomorphic blue hedgehog “rolling around recognisable world locations] at the speed of sound” is certainly not realistic. That said, the fact that a high-pass filter is placed over all diegetic and non-diegetic in-game sounds upon creating a sonic boom emulates realism perfectly. In a world perpetually engulfed by ever-heightening tensions, I would argue that the drive to create a “realistic” world, saturating the market in yet another simulation of an alternate or bygone reality, is not as present in independent projects such as my own. Developing and marketing the game on its “realism”, therefore, was a primary objective.

DESIGN & BUILD

Though the project was ambitious and (at least from conception) took two months to conceptualise, programming and prototyping only began with a fortnight left until the end of the deadline, resulting in a potentially rushed pipeline in which to design and build my video game level, and explain its function. The project itself was split up into four distinctive sections, that represent an almost teleological insight into how this game was brought about.

Background Track Creation

Though the overall goal of this project is to create a fully functional video game level, the visuals are only merely a vessel by which to promote the track itself. Additionally, the final vision for the levels artistic design would not have been completed but for the inspiration of the track. Therefore, a non-insignificant portion of this section will be directed towards the music, itself. Figure 1 shows most of the working logic document. The nonchalant drum rhythm and soundscape fuse with stylistic and musical synecdoches of the capital, in nods to British summer-time hits such as Lily Allan’s “LDN” and “Smile” (2006). To almost mirror the soundscape of Allan’s work, “I Swear” is also composed in F Major, though - instead of pulling from an entirely diatonic Ionian scale – takes influence from the Phrygian and Lydian modes to create harmonic intrigue. Muted trumpet choruses are also added for this reason, and to celebrate the prominent jazz culture on the north and predominantly south side of the river, emulating David Goulding’s idea of having ‘musical melodies... [that spoke] for places (Goulding, 2019). Vocalist Rachel Hill toplines over the track instead of myself to give the lyrical content an airy quality and to stop an abundant swath of mid-low EQ.

In order to keep intrigue in the track high (and to counterbalance an arguably simple melody), I felt it necessary to employ many different, and somewhat ambitious harmonic changes. The discovery of the American brother-sister duo Clyde and Gracie Lawrence aided

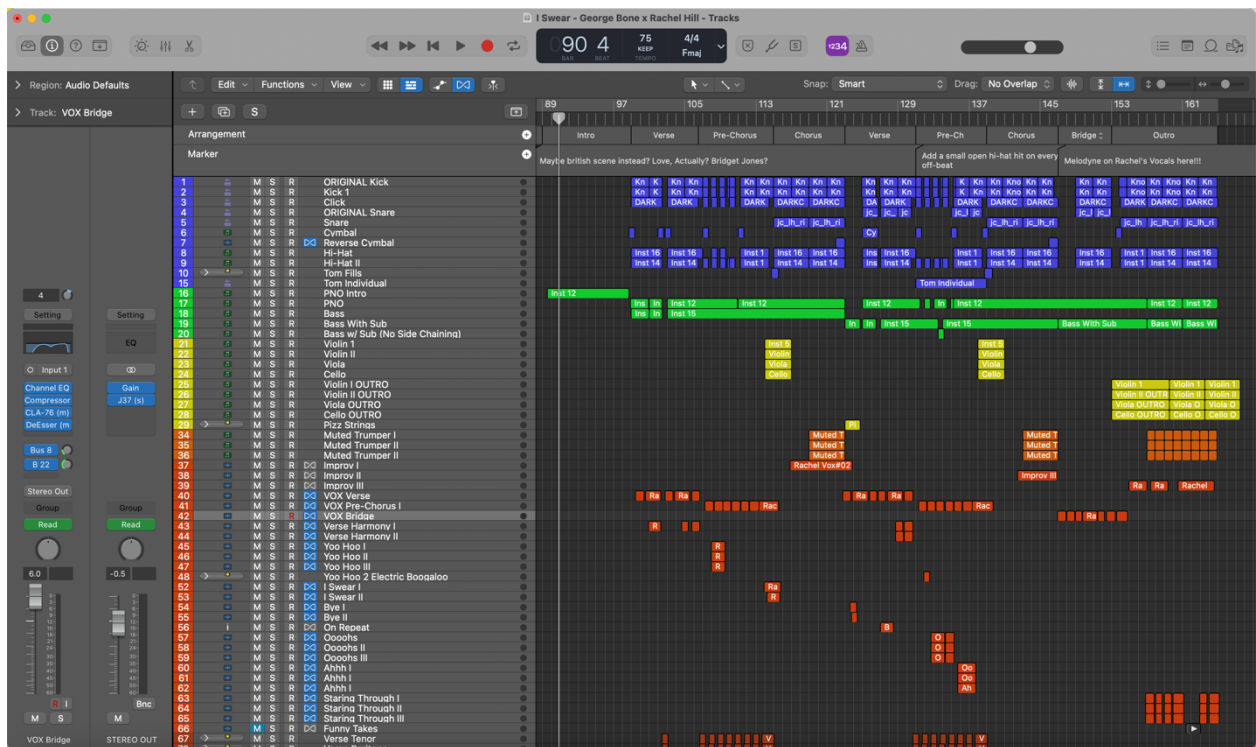


Figure 1. "I Swear" in Logic Pro.

in this harmonic development, in particular their track “Do You Wanna Do Nothing With Me”. Lyrically, both songs detail pining for a loved one, and a longing to return to, or the discovery of, a simpler time. Structurally though – according to Richard Middleton - both contain an ‘epic’ mode, where focus is shifted onto repetition, and variations on said repetition, and ‘lyrical’, marked by symmetrical binary structures (Middleton, 1990, p.216). Examples 1a and 1b show both opening phrases employing transposed chromatically ascending progressions, finishing the antecedent with varying degrees of dominant preparation. The whole session was subsequently run through a J37 tape machine (courtesy of Waves Audio) in order to add depth to low-end resonances, while cleaning up elements of high end tampered with via multiple EQs.

Every track added, though, brought about an ever-expanding issue of practicality. Even theoretically, how could a backing choir approximately thirty people in size, a string quintet and a muted trumpet trio all fit on the eastbound platform at Kings Cross, let alone stand far away enough to let daily commuters pass through? They could not, and therefore a decision was needed on whether to restrict the textural and harmonic complexity of the song or scale back the ambitiousness of the project. As the track was for commercial release, and the main priority of

Do You Wanna Do Nothing With Me (Extract)

Arranged by
GEORGE BONE

Words and Music by
CLYDE & GRACIE LAWRENCE

♩ = 101 Funk, Swinging 16ths

Clyde

Bmaj7

We're all look-in for some- one, that per-fect girl, —

T.

C°

C#m7

Em6/F#

Who can take — out hand and help us see the world —

Example 1a. Opening phrase of Lawrence's "Do You Wanna Do Nothing With Me".

I SWEAR (EXTRACT)

Arranged by
GEORGE BONE

Words and Music by
GEORGE BONE & RACHEL HILL

Fmaj7(add9)

F#° /D

Gm7

C7

♩ = 76

ALTO

La-zy su- mmer days, I think o-of you

Example 1b. Opening phrase of George Bone & Rachel Hill's "I Swear".

this track, it was clear that the concept needed to be modified. Following from this, and as reflected in the Alpha build of the level, the track is played from a 1950s-era jukebox (provided by Suheb Qureshi); the track was then run through Isotope's Vinyl plugin to simulate this change in source.

Creation of Game Layout

One of the most satisfying parts of this project was bringing Kings Cross to life in my image. From the first floor to the last texture, creating an environment in the void was a unique – yet challenging – endeavour. For simple geometric purposes, because of a non-existent budget to work with and in order to play my game in the first place, I downloaded Unity's own

“Standard Assets” pack from the Unity asset store, setting out to create a hyper-stylised, yet instantly recognisable, play location. Other prominent assets I curated included Mario Haberle’s “Underground Industrial Models” and Hurly Burly’s “LowPoly Subway Street Entrance”, although these were later scrapped as they did not align with the artist designs by which I wanted to model the level after (as mentioned later).

Reference photos of both the east and westbound platforms were taken in order to gauge not only the type of textures needed to complete the stations architecture, but to understand the negative space in which the protagonist and the NPCs would be walking and interacting with (Figure 2a). An area in which I struggled mostly to emulate, but which was made easier by my own reference photos, was the train tunnel itself. As the assets I had to pool from were predominantly rectangular or square-based, it meant that creating a smooth curved surface, was almost impossible without overlapping an incomprehensible number of walls. Upon looking at the reference photos taken of the tunnel, though, I notice that the structure was divided up into three distinctive materialled, and so I divided up the tunnel into three distinctive square sections to give the illusion of curvature (Figure 2b).

The art design of the station itself was influenced heavily by the dichromatic locations of “Superhot”. The prominent red hue given off by the enemies the protagonist faces juxtapose the chrome textures of the levels. I adapted this technique into my own level, except replacing the almost perfectly white hue of “Superhot” with a slightly-off grey (to show the age of the station) and changed the colour of the NPCs to orange (as that is one of the primary colours of my personal musician brand. Additionally, the comical yet simple design of both “Happy Burger’s” NPCs and playable characters (Figure 3) led myself to also populating my world with similarly shaped bean people. In future versions of the game, I plan to create individual textures for each of these characters reflective the wishes of those who donate to the game’s associated Kickstarter.



*Figure 2a. Kings Cross St Pancras
eastbound platform*

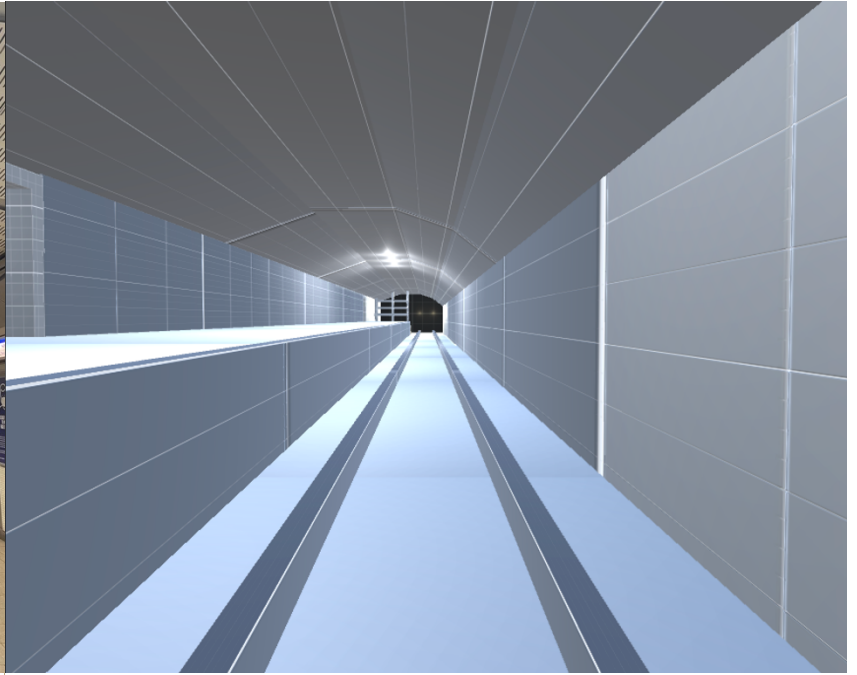


*Figure 2b. Screenshot of eastbound platform tunnel in “I Swear
– An Interactive Music Video”*



Figure 3. Screenshot from Happy Burger.

Coding & Sound Design

To help further build the realism of the underground, one crucial objective was to make it appear as if the tube was a vibrant hive of activity. Having NPCs (Non-Playable Characters) that walked, talked and interacted with the environment was a natural way in which to do that, and – in retrospect – it appeared that giving the “Bean People” of my world a voice was easier than giving them the joy of movement. For example, from my personal experience and of that when taking reference photos, the Bean guarding the turnstiles at the entrance to the initial junction does not have much to do, other than control the flow of traffic. To represent this in an overexaggerated manner, I spatially programmed a one-sided phone conversation to play, which would subsequently crescendo and would lose reverb the closer you get to it (Figure 4). This technique was replicated the closer to, or further away, the protagonist moved from the jukebox playing the underpinning track. This was a successful way in which to create alternative stimuli in the level and allow players to discover Easter Eggs in the level along the way. The sound-actions of the protagonist in a video game level, after all, are determined by that of the player themselves, in what Collins refers to as “Kinesonic Synchronesis” (Collins, 2013). When developing this level further in the future, I would include more of these vocal cues, and give donors to the aforementioned Kickstarter campaign a chance to record their own vocals for the level.

Programming the movement of my NPCs, however, left a lot to be desired; even getting them to merely wonder around a designated area of my play space was a difficult task. Apart from a few selective Beans – the bean in the booth and the bean tipping over onto the westbound platform – the NPCs were initially placed in the playing space using the same code creators use to place trees on an open terrain. An element of random selection in which the NPC capsule meshes initially spawned into simulated the sporadic and ever-changing density of the London underground in a controlled environment. Capsules that were found to be clipping into one another though were removed. Following a YouTube tutorial on how to create effective Wander AIs (TRGameDev), I created a NavMesh on the areas of the train station in which foot traffic was expected to not only walk through but be at large. Even areas inaccessible to the player – the area behind the security gates you spawn in front of – required NPC movement, to further build

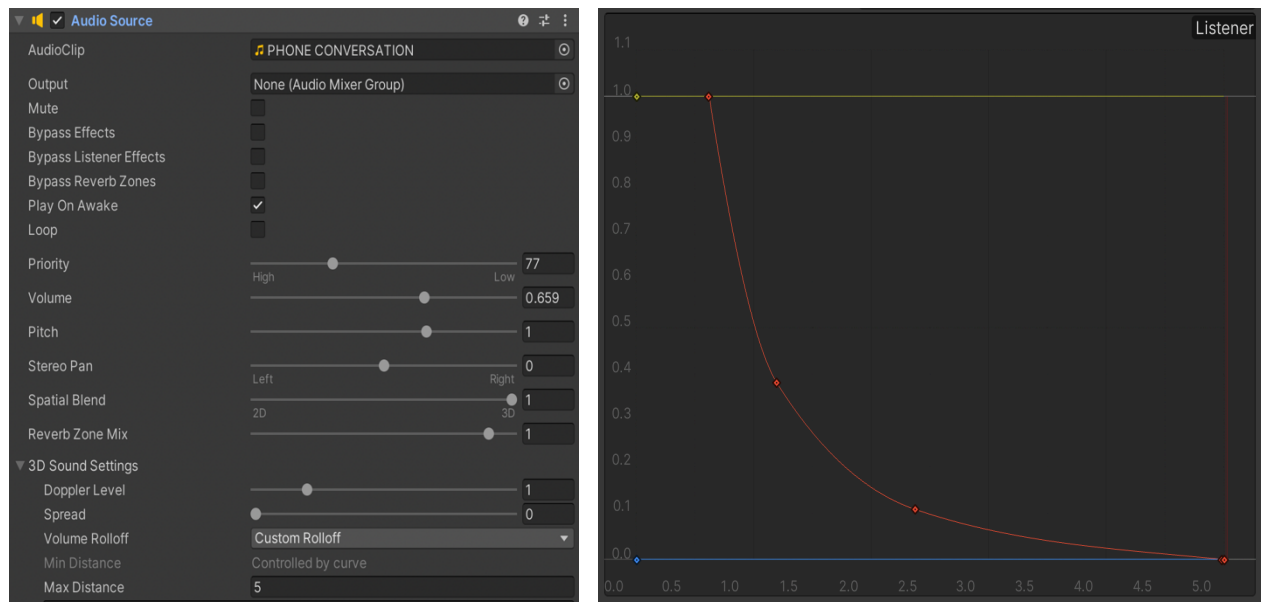


Figure 4. Screenshot of Unity audio for phone bean.

up the simulated realism of the environment (Figure 5). Due to the compressed timetable in which this project was completed in and the instability of the C# coding in which the YouTube tutorial gave, though, I did not have time to fully implement this programming into the submitted alpha build of my game, and so had to scrap it in preference of a playable game: a disappointing outcome, yet a necessary one (as an issue with an earlier build of the script meant that I had to start the entire level over again). This, additionally, meant that the random footsteps I recorded and programmed in FMOD also, unfortunately, had to be scrapped.

Brief Play Testing

Though I was continually testing the game myself to weed out collision detection issues and comparing light fixture colours, I was testing under the pretence that I knew what the objectives and desires of the level were. In order to gauge properly how effective, or even how ineffective, my music video was in representing the music underpinning it, I interviewed my manager Katherine Pittalis while she play-tested the level for the first time. While the feedback was holistically very promising, she recommended both a few short and long-term adjustments, with the former being minor adjustments I could make to the coding and sound design before the deadline. For example, though the “fud” of the protagonists’ walk cycle was extremely appealing

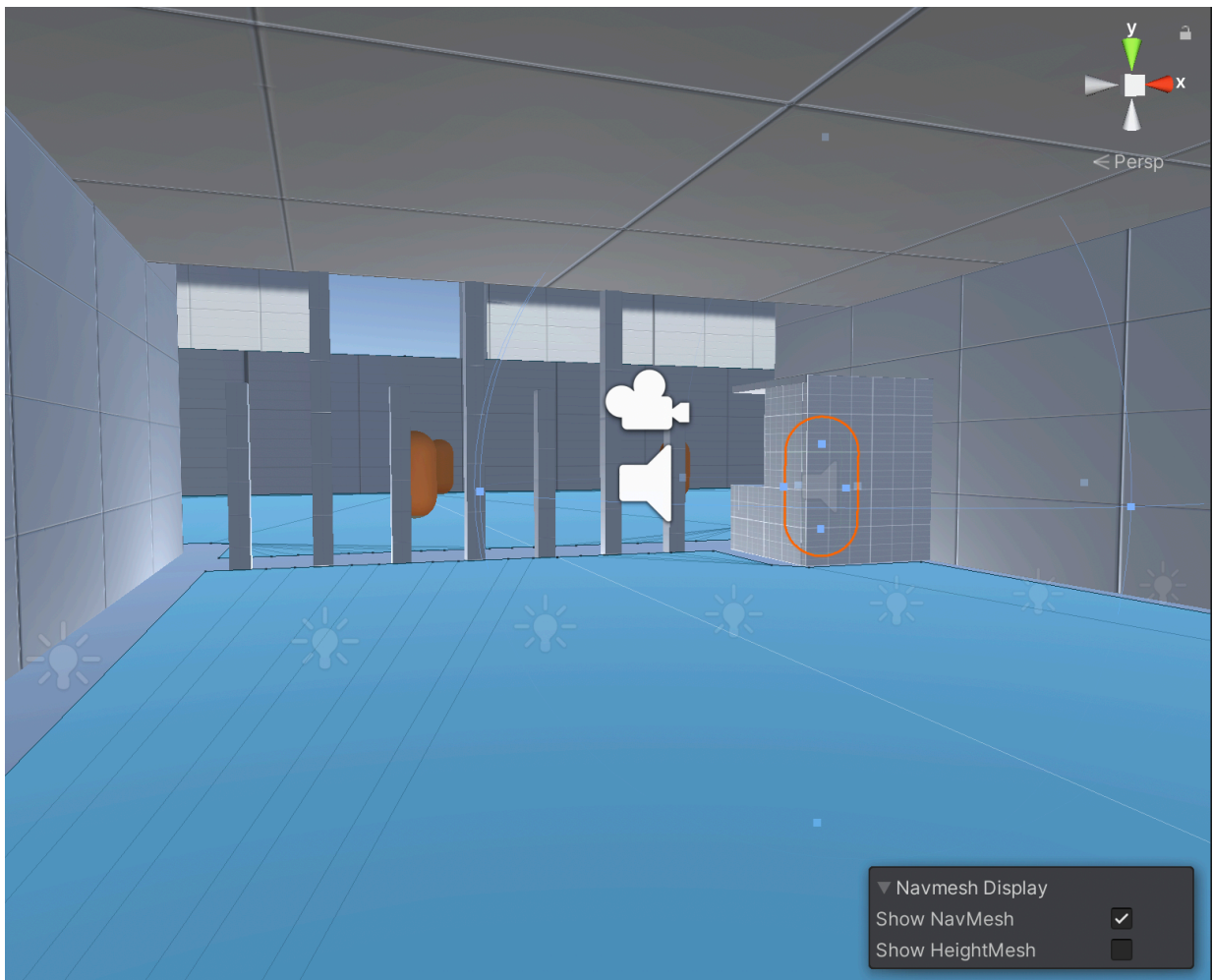


Figure 2. Unity screenshot showing the Wander AI NavMesh (Blue).

to her, she admitted that the foley work was ‘quite generic’ (Pittalis, 2022). This issue was rectified by turning down the volume of the footsteps and adding reverb to them, in parallel with the amount of reverb placed on the voice of the guard bean and the jukebox. Similarly, she enquired about whether ‘there [was] a way that [I could] make the song [coming from the jukebox] a bit more echo-y?... like [I have] it with the tube announcements?’. And again, all that was necessary was a simple adjustment of the stereo delay in FMOD and the level displayed evermore so realism. That said, she did argue that the world was not yet complete without some sort of working movable mechanism attached to it (such as a moving train going through the platform, or the movement of the NPCs), which I assured her would be coming in later builds of the level.

DISCUSSIONS & CONCLUSIONS

As has already been highlighted briefly in the previous section, the project went through a gradual metamorphosis during its construction and storyboarding. Though most of the project's attention was focused on the track backdropping the experienced, I would argue that the implementation of the track as a whole has been a success, with multiple passers-by commenting on the 'engaging and interactive' elements of the level. The reference photos taken acted not only to ground the project in a recognisable London environment (as laid out in my objectives in the beginning of this paper) but also gave me a starting point by which to manipulate the city to my sight and sound. With all that said, there are two minor and one major area of the level that I would be looking to improve upon, if I were to release this formally along with the single in August 2022.

Having a hyper-stylised world meant that some sacrificed needed to be made in regard to the scenes attention to detail. This strategy came with its own advantages and disadvantages. On one hand, having similar textures and colour pallets streamlined the production of the level, helping me keep on schedule and achieving my desired art style. On the other hand, it made the scene feel slightly lifeless, according to my play tester. One recommendation she suggested to resolve this issue included designing separate square textures that showed both maps of the London underground, and the maps of specific lines that run through that section of the train station. Though there is precedent for me using multiple colours in the level (as seen by the purposeful colouring of the bean people), the bright white base of the designs backdropping the famous technicoloured map of the London Underground would stick out quite prominently against the universally chrome wall textures. Further academic discussion needs to be had on whether signage in a video game level results in higher levels of realism, or makes the scene more realistic, however this falls far beyond the remit of this essay. Additionally, further testing would need to be undertaken to determine whether this would be something that other people were looking for in this game.

Another point of discourse is with the overall objective of the game. Though observers liked the art style, and the play tester grasped the humour and relatability of the scene, they did not fully realise what the project was all for. No text was prompted to appear giving an indication about any objective or reason for why they were playing it, and it isolated those I

had a discussion with about it. Additionally, as I did not programme the audio cues to loop after the duration of the song, after the tracks fade out ends all audio finishes and the protagonist is left scouring a noiseless void until you force quit the game. In later patches, they suggested the addition of a menu screen, or a time-out scene coded into the game to let players know that the experience has finished, which would be easy to implement.

That said, coupling my novicey to the medium with my ambition to take on such a grand project – though with the best of intentions – resulted in me stretching myself too thin, and created a watered-down version of what I had initially planned to achieve. With ever-tighter deadlines I gave myself evermore to do. To simplify the project, and to similarly improve upon the ideas and suggestions made for this version, I am looking to explore the possibility of porting this 3D level into the second dimension, and creating for the player a top-down view of Kings Cross St Pancras, akin to the gameplay of *The Legend of Zelda: A Link to the Past*. This would hopefully also result in a significant reduction in mangled textures and ever-flicking light fixtures, that pervaded the 3D iteration of the level. If I were to replicate this project with the knowledge that I have gained over the course of the term, I would have completed this project in 2D and then slowly transition to the third dimension once my Unity skills had progressed far enough.

Notwithstanding, I am incredibly proud of the product that I have achieved, in the time frame that I was able to complete it in. Not before February had I previously engaged (critically or practically) with FMOD, Unity or the concept of coding altogether. I found the challenge of taking on a new task which pushed me out of my comfort zone to be a wholly rewarding challenge. I was surprised to find such a vast array of resources available on YouTube, both from content creators and Unity themselves. Even if the asset packs used in said videos cost, the open-sourced nature by which such tutorials are available to the public results in better collaboration and wider discussions amongst the community about independent games, such as my own. In an industry expanding year-on-year, coupled with ever-greater mergers creating an ever-greater monopolisation of the market, it is refreshing that such indie titles as “Untitled Goose Game” and “Fall Guys” run in the same engines by which I created a hyper-stylised model of Kings Cross St Pancras in. I will be coming back to the skills that I have developed in both FMOD and Unity frequently, ever hungrier for more.

BIBLIOGRAPHY

- Allan, Lily. *LDN*. 2006,
open.spotify.com/track/5wD6de7Fz1QfxVNkv1SEy7?si=dbef51ab60684bda. Accessed
31 Mar. 2022.
- . *Smile*. 2006, open.spotify.com/track/79z9QkhHePTFsSeVw9uyj0?si=81033ef6a75a4cfb.
Accessed 31 Mar. 2022.
- Banks, Jack. "Video in the Machine: The Incorporation of Music Video into the Recording
Industry." *Popular Music*, vol. 16, no. 03, Oct. 1997, p. 293,
10.1017/s0261143000008424. Accessed 14 Mar. 2019.
- Ciarán Robinson. *Game Audio with FMOD and Unity*. New York, Ny, Routledge, 2019.
- Collins, Karen. *Game Sound : An Introduction to the History, Theory, and Practice of Video
Game Music and Sound Design*. Cambridge, Mass., Mit Press, 2008.
- . *Playing with Sound : A Theory of Interacting with Sound and Music in Video
Games*. Cambridge Mit Press, 2013.
- Fitch, Rebekah. "Game Over." *Gameover.rebekahfitch.com*, 4 Nov. 2020,
gameover.rebekahfitch.com/. Accessed 31 Mar. 2022.
- . *Game Over*. 2020,
open.spotify.com/track/61UPFdvmM2q3Ln02HxWrzU?si=451aafd5453c4aed.
Accessed 31 Mar. 2022.
- Fritsch, Melanie. "Beat It! Playing the King of Pop in Video Games." *Music Video Games*, by
Michael Austin, Bloomsburg Publishing, 28 July 2016.
- Golding, Dan. "Music That You Help Make: Composition for Video Gaming Draws on
Tradition and Tech." *The Conversation*, 2 Oct. 2019, theconversation.com/music-that-
you-help-make-composition-for-video-gaming-draws-on-tradition-and-tech-124282.
- Hamilton, Kirk. "The Time MTV Turned Video Games into Music Videos." *Kotaku*, 26 July
2012, kotaku.com/the-time-mtv-turned-video-games-into-music-videos-5929345.
- Inside Intelligence. "Digital Gamers Worldwide, 2015-2024 (Billions)." *Insider Intelligence*, 1
July 2021, www.emarketer.com/chart/249574/digital-gamers-worldwide-2015-2024-
billions. Accessed 31 Mar. 2022.

- Lawrence. *Do You Wanna Do Nothing with Me*. 2017,
open.spotify.com/track/2M7UdnD0fEaryh8TnCvqFX?si=f63a3dcc392742c5. Accessed
 6 Feb. 2022.
- Leante, Laura. "Multimedia Aspects of Progressive Rock Shows: Analysis of the Performance
 of the Musical Box." *Composition and Experimentation in British Rock 1966-1976*, by
 Borio Gianmario, Philomusica, 20 Oct. 2005, [www-3.unipv.it/britishrock1966-
 1976/testien/lea1en.htm](http://www-3.unipv.it/britishrock1966-1976/testien/lea1en.htm). Accessed 31 Mar. 2022.
- Middleton, Richard. *Studying Popular Music*. Milton Keynes England ; Philadelphia, Open
 University Press, 1990.
- Pittalis, Katherine. "*I Swear - an Interactive Music Video*": *Play Testing Session*. 28 Mar.
 2022.
- Shaidon7. "MTV2 Video Mods - Stacy's Mom." *Www.youtube.com*, 8 Mar. 2007,
www.youtube.com/watch?v=JiiDAUL7hYU.
- SonicJGB. "Sonic Generations: Rooftop Run (Modern)* [1080 HD]." *Www.youtube.com*, 27
 June 2015, www.youtube.com/watch?v=3RsDrXUc6gQ&t=49s. Accessed 31 Mar.
 2022.
- Sweney, Mark. "Family-Friendly Animal Crossing Takes Video Game Top Spot amid
 Lockdown." *The Guardian*, 23 Apr. 2020,
[www.theguardian.com/games/2020/apr/23/family-friendly-animal-crossing-takes-
 video-game-top-spot-amid-lockdown](https://www.theguardian.com/games/2020/apr/23/family-friendly-animal-crossing-takes-video-game-top-spot-amid-lockdown). Accessed 31 Mar. 2022.
- . "Lockdown Boredom Drives UK Video Games Market to £7bn Record High." *The
 Guardian*, 19 Mar. 2021, [www.theguardian.com/games/2021/mar/19/lockdown-
 boredom-drives-uk-video-games-market-to-7bn-record-high](https://www.theguardian.com/games/2021/mar/19/lockdown-boredom-drives-uk-video-games-market-to-7bn-record-high).
- The Escapist. "TOP 5 BEST & WORST GAMES of 2013 (Zero
 Punctuation)." *Www.youtube.com*, 8 Jan. 2014,
www.youtube.com/watch?v=D7rMUvEPXK0. Accessed 31 Mar. 2022.
- Throneful. "SUPERHOT Gameplay (PC HD) [1080p60FPS]." *Www.youtube.com*, 22 Oct.
 2019, www.youtube.com/watch?v=9KDxMbKWw5g. Accessed 30 Mar. 2022.

TRGameDev. "How to Make Easy Wander AI in Unity!" *W*[www.youtube.com](http://www.youtube.com/watch?v=aEPSuGlcTUQ&t=290s), 30 Oct. 2017,
www.youtube.com/watch?v=aEPSuGlcTUQ&t=290s. Accessed 31 Mar. 2022.

Unreal Engine. "Epic Citadel Demo: Now Available for Android & IOS | Unreal
Engine." *W*[www.youtube.com](http://www.youtube.com/watch?v=0pHPgXeRm78), 29 Jan. 2013,
www.youtube.com/watch?v=0pHPgXeRm78. Accessed 30 Mar. 2022.