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Orange Line is an album of ambient pieces inspired by the atmosphere within the Washington, D.C. Metro system. This set of pieces is the result of my fascination with this metropolitan transit system combined with my explorations into composing ambient music. This paper seeks to clarify the way *Orange Line* drew inspiration from the D.C. Metro, as well as from past ambient works, including *Ambient I: Music for Airports* by Brian Eno, *Selected Ambient Works Volume II* by Aphex Twin, and *Long Drove* by Simon Scott. Each of these albums served as areas of inspiration in different compositional elements that exist in *Orange Line*. The resulting work is a sonic experience that combines my fascination with the D.C. Metro with my explorations into composing ambient music in nine relatively short pieces.

ORANGE LINE: AMBIENT MUSIC AND THE WASHINGTON, D.C. METRO

by

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CHAPTER I: INTRODUCTION

Orange Line is an album of electronic ambient music that immerses the listener in the very distinct and artistically striking Washington, D.C. Metro, a rapid transit rail system that connects the city with its surrounding areas in Virginia and Maryland. My initial inspiration to create this album occurred when I recently traveled to my hometown of Fairfax, Virginia and rode the Metro's Orange Line into Washington, D.C. for a day trip. I was overwhelmed by the remarkable sights and sounds that I had remembered from riding it when I was younger. This trip coincided with my recent, ever-growing love of composing electronic ambient music, and re-experiencing such a distinctively atmospheric place that I have always loved going to made me want to capture it through that medium. Chapter II will outline the D.C. Metro's history and describe its atmosphere.

This album follows a loose narrative structure of riding the Orange Line of the D.C. Metro from its western terminus at the Vienna station in Virginia to the heart of D.C. at Metro Center station, where several of the Metro lines converge. I chose this specific portion of the Metro system to focus on because this is the segment I've ridden the most in my life thus far, and the journey from the surrounding suburbs of the Washington Metropolitan Area into the center of D.C. is a very common journey for people that are riding the Metro.

The musical material of *Orange Line* is based around audio recordings that I made across several spots on the Orange Line, as well as some recordings taken on the Red Line. The recordings incorporate sounds of trains arriving and leaving stations, the ambient sounds of stations, and sounds from inside moving train cars. These recordings were then layered, processed, sampled, and filtered to be used as sounds in ambient compositions. Specifics of the

audio recording and manipulation process, as well as the compositional process are discussed in Chapter IV.

Orange Line's compositional style is influenced by a variety of ambient music albums, including Brian Eno's *Ambient 1: Music for Airports*, Aphex Twin's *Selected Ambient Works Volume II*, and Simon Scott's *Long Drove*. Ambient music has a lot of variation as a genre, and each of these albums provides a unique look into how ambient music is constructed and organized. I will discuss ambient music further in Chapter III.

CHAPTER II: THE WASHINGTON, D.C. METRO

Introduction to the D.C. Metro

The area of the United States encompassing Washington D.C. and the surrounding counties in Maryland and Virginia is collectively referred to as the "DMV" (D.C., Maryland, Virginia, not to be confused with the Department of Motor Vehicles) and is the region that the Metro rail system serves. In comparison to other major rapid transit rail systems in the U.S., the Metro is relatively new—the New York City Subway opened in 1904,[1] the Chicago "L" in 1892,[2] and the Boston MBTA Subway in 1897.[3]

Construction began on the D.C. metro in 1969, and it opened to the public in 1976. The system's original span consisted of only one train line, the Red Line, which connected Farragut Square in downtown D.C. (Farragut North station) to the Brentwood neighborhood in Northeast D.C. (Rhode Island Avenue–Brentwood station). Since its initial opening, the D.C. Metro has expanded to much more of Washington D.C. as well as Arlington, Fairfax, and Loudoun counties in Virginia, and Montgomery and Prince George's counties in Maryland. Figure 1 reproduces the official map of the WMATA rail system at the time of the writing of this thesis. The Metro traverses these counties across six different train lines, Red, Blue, Orange, Yellow, Green, and Silver, spanning 128 miles (208 km) of track across 98 stations,[4] making it the third largest rapid transit system in the U.S. behind New York City and Chicago.

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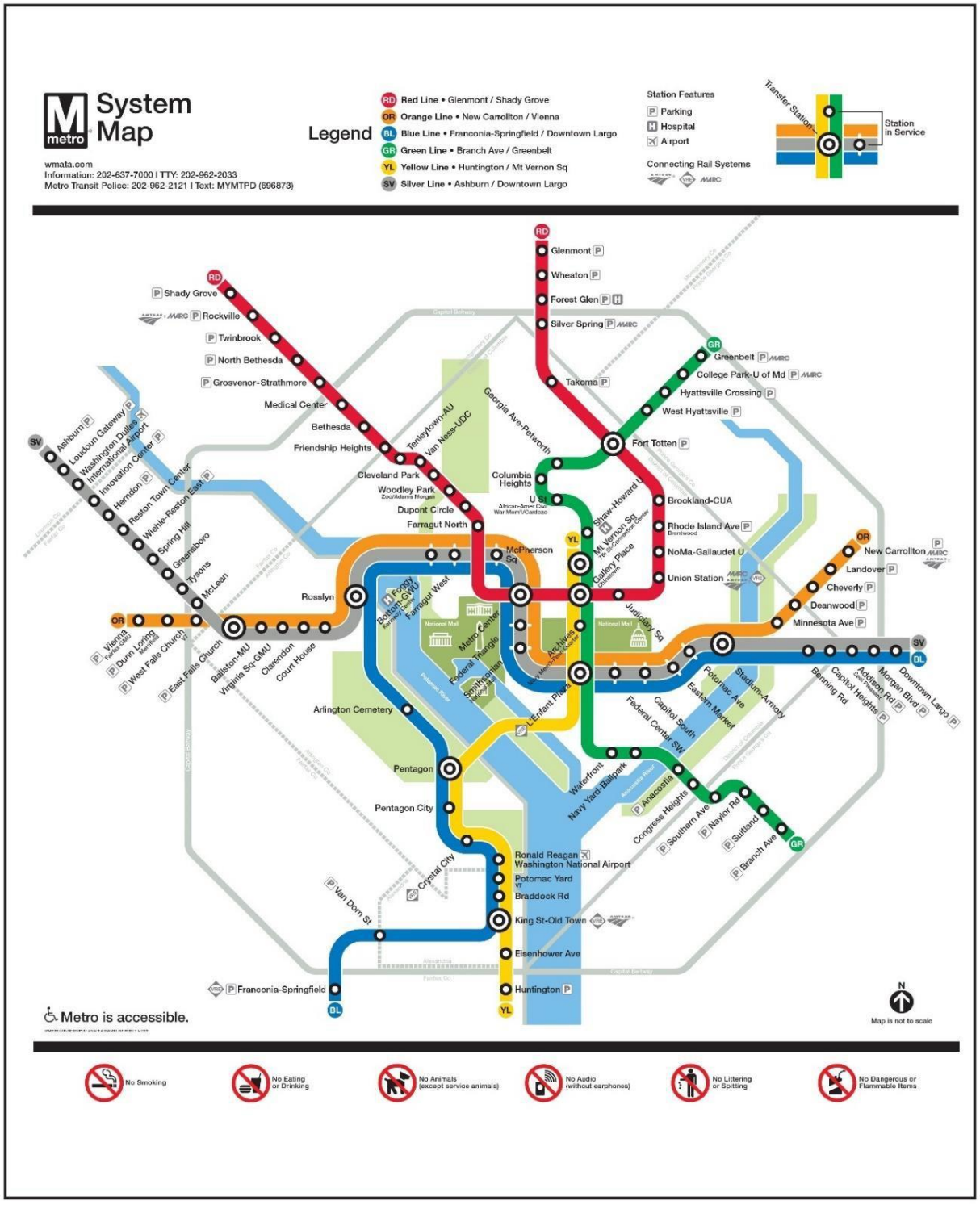
[1] "Opening ceremonies, New York subway, Oct. 27, 1904," Library of Congress, accessed March 6, 2024, https://www.loc.gov/item/2016600205/.

[2] "Facts at a glance," CTA, accessed March 6, 2024, https://www.transitchicago.com/facts/.

[3] "The History of the T," MBTA, accessed March 6, 2024, https://www.mbta.com/history.

[4] "Milestones and History," WMATA, accessed February 25, 2024, https://www.wmata.com/about/history/.

Figure 1. WMATA Rail System Map[5]



[5] "System Map," WMATA, accessed February 25, 2024, https://www.wmata.com/schedules/maps/wmata-system-map.cfm.

Sights of the Metro

Aside from its status as a rapid transit system, the D.C. Metro's most striking element is its architecture. The D.C. Metro's original stations were designed by architect Harry Weese in a brutalist style, alongside other influences including modernism and minimalism.[6] An important aspect of its architecture is below-ground stations closer to downtown and above-ground stations further from the center. The above-ground stations have been built more recently as the Metro has expanded outward over the years, and they tend to have more architectural variation. The below-ground stations, on the other hand, have a more consistent style, with the variations between stations being much more subtle. Figure 2 shows how upon arriving at an underground Metro station, you are first met with a stately rectangular pylon bearing the Metro's signature 'M' at the top, the name of the station running down the side, and a color code under the 'M' indicating which line(s) the station serves.

Figure 2. Metro pylon outside Farragut West station[7]

[6] Zachary M. Schrag, *The Great Society Subway: A History of the Washington Metro* (Baltimore: Johns Hopkins University Press, 2006), 74–94.

[7] Photograph taken by Jack Yagerline on September 29, 2023.

As you approach an underground station, you are met by a long escalator, usually with some sort of large canopy over the entrance. Figure 3 captures the huge slabs of exposed concrete seen when taking the escalator into an underground Metro station.

Figure 3. Escalator into Dupont Circle station[8]

Upon entering the station, you begin walking on a path of reddish-brown hexagonal tiles that span the station's floors as shown in Figure 4. This path will lead you to the platform, where the Metro's brutalist architecture is most apparent. All underground stations are 600-foot long,[9] tall, concrete tunnels, with the walls and the ceiling constructed in a waffle pattern (Figure 4).

Figure 4. Clarendon station platform with hexagonal floor tiles and waffle ceiling design.[10]

[8] Photograph taken by Jack Yagerline on September 29, 2023.
[9] Schrag, *The Great Society Subway*, 65.
[10] Photograph taken by Jack Yagerline on December 30, 2023.

The platforms include brown pylons that are similar to the outdoor ones, yet shorter and wider, which can be seen in Figure 5. The walls also feature large brown banners displaying the name of the station, in addition to which train lines are served. The stations are illuminated from beneath the floor rather than from above, making them feel warm and inviting. All wayfinding text inside and outside the stations is printed in medium or bold variations of Helvetica, a font whose minimalist characteristics match those of the stations. Every architectural and design element, from the walls and floors to information and wayfinding structures, has a cohesive artistic intent that gives the stations a well-defined atmosphere.

Figure 5. Rosslyn station's indoor pylons[11]

Sounds of the Metro

Like the visual experience, the sonic experience of the D.C. Metro is equally spectacular and was what initially inspired me to begin the *Orange Line* project. The first and most prominent sound that you hear upon entering a Metro station is the sound of trains pulling into and out from the platform. Over the course of the Metro's half a century in operation, there have been seven different series of trains by five different manufacturers. Because multiple series of

[11] Photograph taken by Jack Yagerline on September 29, 2023.

trains are in operation at once, multiple distinctive sounds can be heard, depending on what series train is pulling in/out of the station. Today, only the 2000, 3000, 6000, and 7000 series trains are in use, the first three of which have the same slowdown and startup sound, so only two distinct train sounds can be heard in the stations. Figure 6 provides a table from WMATA's December 2021 Fleet Management Plan that outlines the Metro's current and past rolling stock.

Figure 6. WMATA Metrorail Rolling Stock[12]

Manufacturer	Series	Seats Available	Years Entered Service	Years Overhauled	# Purchased	# in Service
Rohr Industries	1000	80	1976-1981	1994-1997	300	No longer in service
Breda Construzioni Ferroviarie	2000	68	1984-1985	2003-2004	76	74
	3000	68	1985-1989	2004-2008	290	276
	4000	68	1992-1994		100	No longer in service
Construcciones y Auxiliar de Ferrocarriles, S.A. (AAI/CAF)	5000	68	2002-2005		192	No longer in service
Alstom	6000	64 (A-car) 66 (B-car)	2007-2009		184	180
Kawasaki	7000	62 (A-car) 68 (B-car)	2015-2020		748	748
Total					**1,890**	**1,278**

In addition to the characteristic sounds of the trains, the stations themselves include some unique sounds. The long escalators that bring passengers both into and out of the station, as well as the short escalators that get them down to the platform from the station, often emit a very distinctive humming sound that I have noticed in every Metro station I've visited. There is also a very subtle and calming sound of air blowing through each station that adds a layer of white noise to the aural experience of riding the Metro.

[12] "Metrorail Fleet Management Plan December 2021," WMATA, accessed March 2, 2024, https://www.wmata.com/service/daily-report/.

All this detailed description of the D.C. Metro is meant to convey that spending time in this system is a deeply immersive experience. I argue that the Metro has a very strong artistic identity, conveyed through both Harry Weese's architectural choices as well as the consistent design choices made for several elements of these stations. To me, and many others I have spoken to, taking a trip on the Metro is more than just getting from one place to another. The Metro system is also a time capsule of a unique style of architecture and design. This experience that I and many others have had on the D.C. Metro is why I wanted to capture its atmosphere through a piece of music.

CHAPTER III: AMBIENT MUSIC

Introduction to Ambient Music

Orange Line is a composition of ambient music, which can be loosely defined as electronic music that emphasizes texture and atmosphere over other musical elements. That ambient music is a subgenre of electronic music means that much of the sonic content is produced primarily through electronic means, including synthesizers, tape loops, and processed audio recordings. Typically, ambient music will use one or more of these electronic elements in arrhythmic, spacious, often harmonically consonant compositions. Despite the broad definition of this genre, ambient music is made in a variety of different ways, with each ambient artist approaching the genre differently. While ambient is usually seen as a genre meant to be calm and serene, there are some ambient artists (such as Aphex Twin, who will be discussed later in this chapter) who use the atmospheric aesthetic to evoke strange and abstract thoughts in the listener. In recent years, ambient music has gone from being a niche subgenre of electronic music to widespread mainstream attention, due to its popular use in video games and films. *Orange Line* combines elements of several different genres of ambient music and draws particular inspiration from a few key ambient works. In this chapter, I will discuss three key ambient works that influenced *Orange Line,* detailing their importance to the genre and their unique compositional methods.

Brian Eno – Ambient 1: Music for Airports

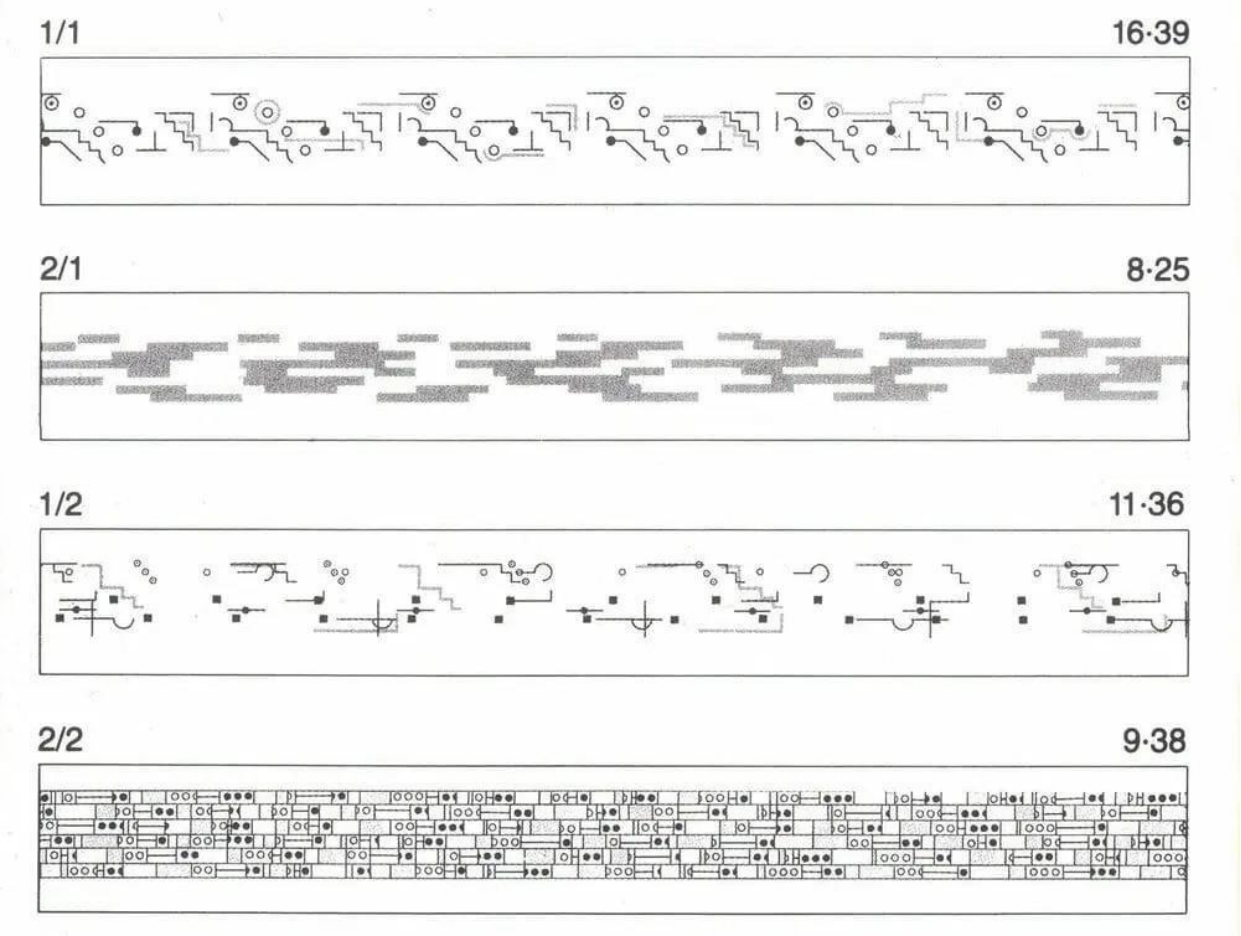
An early work of ambient music that is extremely important to the genre, as well as to my own work, is Brian Eno's *Ambient 1: Music for Airports*. This album, while not the first piece of ambient music, is the one that literally defined the genre. Eno coined the term "ambient music" in the liner notes of the album, defining it as "an atmosphere, or a surrounding influence, a

tint",[13] and as music that "must be able to accommodate many levels of listening attention without enforcing one in particular; it must be as ignorable as it is interesting."[14] Eno's definition has been the unifying factor in many of the ambient music releases since *Music for Airports*, both by Eno himself as well as several other artists. *Music for Airports* contains four pieces titled only by the number on what side of the record they are ("1/1", "1/2", "2/1", and "2/2"). Each was composed through the experimental process of playing back long tape loops that were all at slightly different speeds, so that they would loop back around at different times. The result is a combination of different instruments, each playing repeated short musical phrases with space in between that combine in unpredictable patterns for the duration of the piece. In the liner notes of the album, Eno included a graphic score that represents the sound heard on each track, which is reproduced in Figure 7. Each tape loop is represented by a shape that recurs after a certain horizontal distance; this way the listener can see how the different sounds are interacting with one another in time. Through this process, Eno was able to create music that was both static and floating.

[13] Brian Eno, "Ambient Music," liner notes for Brian Eno, *Ambient 1: Music for Airports*, EG, Polydor, PVC, 1978, accessed March 6, 2024, Discogs.

[14] Eno, "Ambient Music".

Figure 7. Brian Eno's graphic score for *Ambient 1: Music for Airports*[15]



All four of these pieces have soft dynamics. The first piece is made up of a piano, electric piano, and synthesizer pads, with the piano and electric piano playing with slow velocities, and the pads having quite a rounded timbre. Additionally, each layer's tape loop contains only a few pitches combined in slow, ametric rhythms, interrupted by long stretches of silence. Combined, the different loops form a spacious array of soft musical phrases that move in and out of phase with each other. When a listener puts on "1/1" in the background, they hear music that is pleasant and unobtrusive, enhancing the environment of whatever location it is being played in.

[15] Eno, "Ambient Music." This graphic score is printed in the liner notes for *Ambient 1: Music for Airports*. The timestamps printed on the upper right of each graphic do not match the current digital streaming lengths of each track on the album.

Because the music is very warm and spacious, lacking an obvious development, it fits very nicely into the background of a space. By contrast, if a listener puts this music on for the purpose of consciously listening to it, they will hear a composition with great detail, whose layers all dance around each other in unpredictable ways, with a very subtle but noticeable development from beginning to end. This is exactly what Eno means by "as ignorable as it is interesting." The music does not insert itself into its environment, but when focused on, can very much enhance the experience of being there.

Aphex Twin – *Selected Ambient Works Volume II*

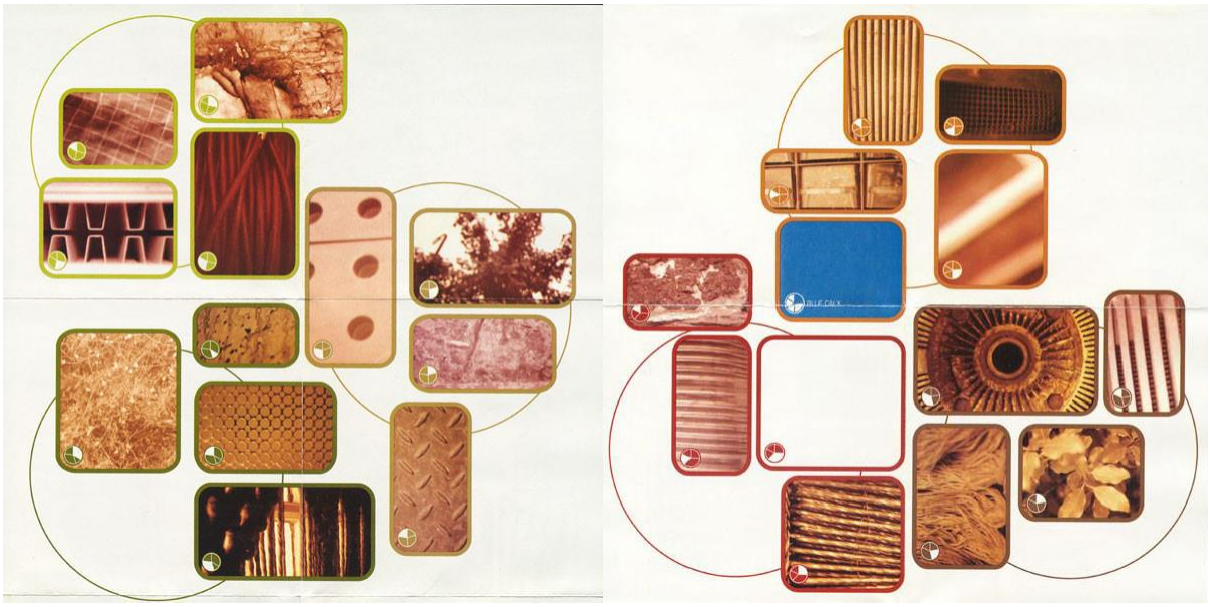
A set of pieces that is quite different than Brian Eno's landmark ambient albums, yet equally important to the genre, is found on Aphex Twin's 1994 album, *Selected Ambient Works Volume II*. Aphex Twin (the stage name of electronic musician Richard D. James) is one of the most popular and influential composers of electronic music from the 1990s to the present day. While the majority of his musical releases fall under the IDM, jungle, and techno subgenres of electronic music, his 1994 album is firmly an ambient album, where he redefined the genre through his own unique compositional voice. *Selected Ambient Works Volume II*, despite its title, is Aphex Twin's first and only collection of ambient music,[16] although much of his non-ambient music is influenced by and incorporates homages to the genre. *S.A.W. II* is more than two hours in length, consisting of 24 tracks[17] of a mix of ambient and dark ambient. Dark ambient is a subgenre that is characterized by a more ominous, dissonant, and industrial character than most ambient music. While the tracks on this album are unnamed (except for track 13, entitled "Blue

[16] Aphex Twin's first record, *Selected Ambient Works 85-92* contains very little ambient music, with the only ambient track being "I".

[17] The album is 26 tracks on the UK vinyl pressing.

Calx"), they have unofficial titles given by fans, based on images from the album's artwork[18] shown in Figure 8.

Figure 8. Liner note images for *Selected Ambient Works Volume II* (U.S. CD release)[19]



Unlike *Music for Airports*, in which Brian Eno sought to create something calm and soothing, Aphex Twin strove for a more surreal approach to his ambient compositions. Aphex Twin stated in an interview that the music of *S.A.W. II* was inspired by his lucid dreaming, and that he was attempting to recreate the sounds heard in his dreams[20]. He also stated that the sound of the album is "like standing in a power station on acid,"[21] very much emphasizing the industrial nature of the soundscapes in many of the tracks. The sounds on this album are a mix of synthesizers, processed audio recordings of human speech, found metallic sounds, and occasional subdued percussion. The synthesizers on this album are often put in microtonal

[18] Marc Weidenbaum, *33 1/3: Selected Ambient Works Volume II* (Bloomsbury, 2014), 66–72.

[19] Aphex Twin, liner notes from Aphex Twin, *Selected Ambient Works Volume II*, Warp, 1994, accessed March 13, 2024, Discogs.

[20] "Lost in space," The Aphex Twin Community v4, last modified March 1994, https://www.aphextwin.nu/learn/98136154898147.shtml.

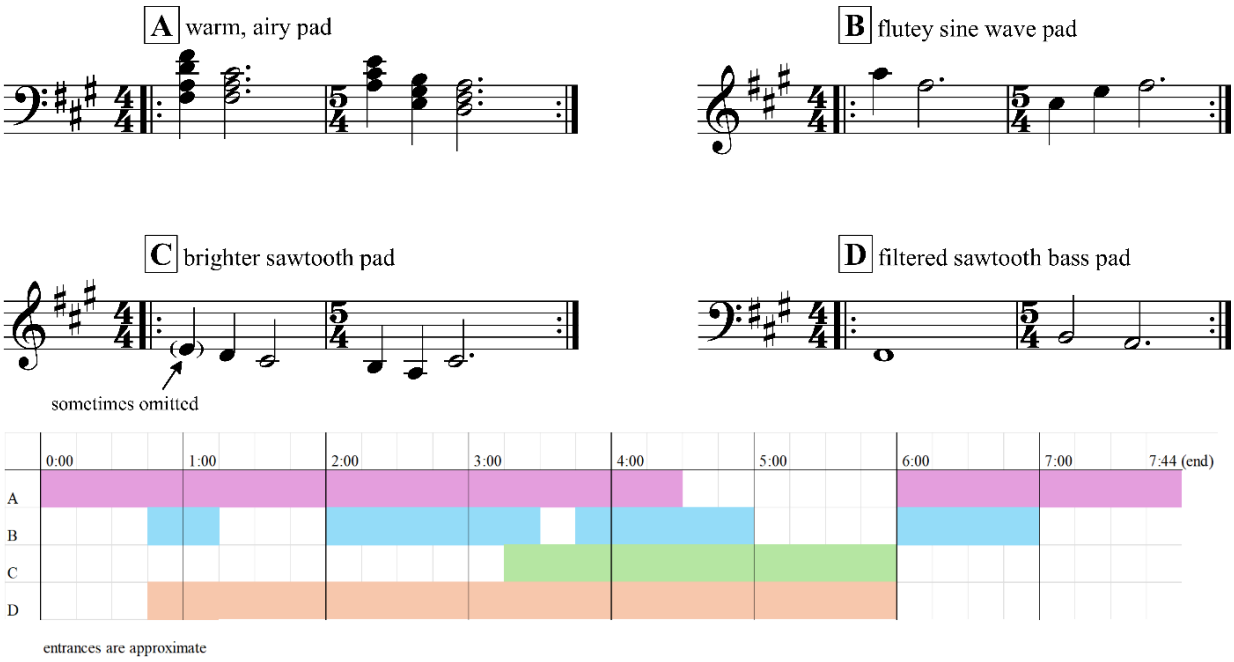
[21] "Lost in space."

tunings, which is another departure from Eno's version of ambient music. An example of a track using microtonal tunings is "#23" (fan-named "White Blur 2"), which is made up of a repeated synth phrase layered with an unsettling recording of a person laughing pitched up and down. Many of the tracks on *S.A.W. II* are also quite dissonant, another departure from Eno's typical ambient style. One of my favorite examples is "#7" (fan-named "Curtains"), which is built around a warm synth loop playing a strange, hypnotic riff.

Not every track on *S.A.W. II* is eerie, however. "#3" (fan-named "Rhubarb") is one of the most popular pieces on this album and is one of my personal favorite ambient pieces of all time. "Rhubarb" is made up of a melancholic chord loop played on a washy synth pad with heavy reverb. The track's structure is built around this chord loop as well as other synth layers that harmonize with it. The track may seem static and repetitive until one catches on to the slow evolution of synth layers, which process gives "Rhubarb" its form. As the track progresses, it gradually layers in more synth loops, while simultaneously removing established ones, resulting in different interactions between layers. Figure 9 presents a graphical analysis of "Rhubarb" that attempts to capture this process.

Many of the tracks on *S.A.W. II* portray melancholy via slow moving harmonies and looping of different layers (other examples being "Cliffs," "Lichen," and "Stone in Focus"). This formal organization of different musical layers is important in understanding my own compositional process in *Orange Line*, as I explain in Chapter IV.

Figure 9. Graphical Analysis of Aphex Twin's "Rhubarb"



Simon Scott – *Long Drove*

Simon Scott's 2023 album *Long Drove* is a much more recent inspiration for my work. *Long Drove* is conceptually very similar to *Orange Line*, in that it is based upon a particular location. In his Bandcamp liner notes, Scott describes his inspiration for creating this album:

> I regularly visit the remote and nameless broken bridge . . . that is situated over a long drainage ditch that connects Holme Fen and New Decoy nature reserves, simply to listen. Each season I'd return to observe the sonorities of wildlife merge and coalesce with the hum of the long telephone wires that stretch across the wide and flat Fens. Within my audition I'd perceive different sonic characteristics within the same location and I soon began to record its vast polyphonic glory.[22]

The sounds of a particular place sparking Scott's inspiration for *Long Drove* was especially influential for me when working on *Orange Line* because he demonstrates how to masterfully incorporate field recordings into ambient compositions. Each track on *Long Drove*

[22] Simon Scott, liner notes for Simon Scott, *Long Drove*, Room40, 2023, accessed March 4, 2024, Bandcamp.

incorporates field recordings to varying degrees, which physically places the listener in the locations Scott is portraying. The first track, “The Black Fens”, is the most traditional ambient track on this record, with the bulk of the sound being made by synthesizers. However, there is a natural sound element happening through these synthesizers, which the liner notes describe as field recordings “fed into Scott’s modular synth system to gradually tease out submerged hidden melodies.”[23] The second track, “Whittlesea Mere,” follows this same standard ambient composition aesthetic, but the field recordings are a lot more up front in the mix, making them hard to ignore. The next three tracks, “Holme Fen Posts I-III,” are almost entirely made of looped field recordings, stripping away almost all the traditional ambient elements, forcing the listener to hear the sound sources unmediated. The final track, “The Whistling Wires,” retains the outdoor sounds of the “Holme Fens Posts” tracks, with the addition of recordings of Scott literally playing a bridge in this location like a musical instrument with mallets. He states that “The Whistling Wires” contains recordings of the whistling power lines that stretch across this location. The listener can also hear remnants of “The Black Fens” in this concluding track, giving the album a really satisfying close.

[23] Simon Scott, liner notes.

CHAPTER IV: COMPOSITIONAL STRUCTURE IN *ORANGE LINE*

Overview

The initial inspiration to compose *Orange Line* came in the summer of 2023 when I visited D.C. and was reminded of the visual and aural strikingness of the Metro. While the visuals are what people often focus on when discussing the greatness of this metro system, I have always been more fascinated by the sound. Sound for me has been the way I store memories, and entering the Metro stations and hearing the tapestry of train noises brought me back to the trips I would take on this system in my youth, and how cool I've always found these sounds. After my summer trip to D.C. was over, I could not get the sounds of the trains, escalators, and tunnels out of my head, and the astonishing visuals kept playing over and over again in my memory. I was reminded of the other-worldly feeling riding the Metro gave me when I was a kid, and I wanted to capture that feeling through an album of ambient music. My compositional processes for *Orange Line* involved two steps: gathering the source audio material and synthesizing it all together into a musical composition. I will discuss each step in turn, and I will then conclude by describing how all the tracks that make up *Orange Line* trace a narrative arc.

Recording the Source Audio Material

As I discussed when referencing Simon Scott's *Long Drove* album in Chapter 3, making field recordings then manipulating such recordings is a very effective way to create a unique sound world for a piece of ambient music. Because the sonic aspect of riding the D.C. Metro is so important to the experience, I wanted to capture the sounds at their source. When planning out my trip to D.C. to make recordings, I needed to carefully consider how to capture the audio most effectively. First, the matter of what equipment I should bring needed to be decided. Recording in busy public places meant that my setup would need to be compact and mobile. But to feasibly

use these recordings in a professional audio production, the sound quality needed to be fairly high. To achieve both of these goals, I settled on using a handheld Zoom H4n Pro Audio Recorder, pictured in Figure 10. This recorder provided a lightweight solution, and comes with a stereo pair of high-quality microphones built in.

Figure 10. Zoom H4n Pro Audio Recorder[24]

My next step was to make a list of sounds I wanted to capture. The list I made is as follows:

1. 2000/3000/6000 series trains arriving and leaving a station (three separate recordings). These series trains all emit the same sound.
2. 7000 series trains arriving and leaving a station (three separate recordings).
3. Station ambient sounds for at least two different underground stations (five minutes of audio for each).
4. Station ambience for at least one above ground station (preferably Vienna Station).
5. At least one minute of escalator noise (recorded in at least two stations).
6. Recordings from inside a train car while the train is moving.
7. Outdoor recordings of the Washington, D.C. metropolitan area.

[24] "H4n Pro Black," Zoom, accessed April 16, 2024, https://zoomcorp.com/en/us/handheld-recorders/handheld-recorders/h4n-pro/.

Given that this list required me to visit several different spots along the system, I needed a route plan to make sure I was able to make every recording I needed[25]. My trip began at Vienna station, which is the Virginia terminus of the Orange Line. Here, I recorded the above-ground station ambient sounds, capturing the sound of standing on the platform in the median of Interstate 66. When I boarded the train, I was able to capture a special announcement made by the driver, outlining the route that the Orange Line train would take from Vienna to the Maryland terminus at New Carrolton station. I stayed on the train through several stations in order to capture multiple recordings from inside the train as it sped down the tracks.

I exited the train at Foggy Bottom, the first Orange Line station in D.C., where I recorded its ambient sounds, as well as multiple recordings of 7000 series trains arriving and departing. Foggy Bottom station also had a particularly noisy escalator leading down to the platform, so I made a few recordings of that. I then left the station to capture some outdoor sounds in D.C., as well as to walk around the city to remind myself of its distinct feel. I walked from Foggy Bottom to Dupont Circle, where I then returned to the Metro, making a recording of the incredibly long escalator leading into the station. Since Dupont Circle station only serves the Red Line I took the train to Metro Center, which is a large transfer station serving the Red, Orange, Blue, and Silver Lines. Due to Metro Center being quite crowded (as many transfer stations are) with lots of human noise, I was not able to capture its ambient sounds, so I hopped on the Orange Line heading back towards Vienna to find a quieter station. I then got off the train a few stations later at Farragut West station, where I was able to capture multiple recordings of 2000, 3000, 6000, and 7000 series trains, in addition to a few long ambience recordings. I then got back on the line headed west, which I was only on for a couple of stops before getting off at Rosslyn station,

[25] The entire description can be visualized via the WMATA Rail System Map in Figure 1.

where I recorded more ambient station sounds. I concluded my trip by riding the Orange Line back to Vienna where I started. I also took many pictures throughout this trip to collect visual documentation of all that I was seeing.

Now that I had more than an hour's worth of audio recordings, they needed to be prepared for use in my composition. I normalized each recording to -6.0db (I recorded at a quiet volume to prevent clipping) and applied mild equalization to remove any frequencies in the recording that would get in the way of the intended listening experience (mostly filtering out frequencies below 60 Hz to remove any rumble/mud they may cause).

Sounds Used in *Orange Line*

A big part of *Orange Line*'s sound is heavy layering of processed versions of the sounds I recorded, mixed with more traditional ambient music elements such as synthesizers and drones. I wanted to keep a somewhat consistent sound across all the tracks, so in general I stuck to a basic inventory of sounds. The first set of sounds used across all nine tracks are the raw recordings that I made while visiting the Metro. These include trains pulling in and out of the stations, sounds of a moving train, audio announcements played inside train cars, and ambient recordings made at various stations. I wanted to have these unaltered recordings included in this project, because those are the sounds that a listener would most likely recognize and associate with the D.C. Metro. Additionally, because these sounds are so striking on their own, I wanted to make sure listeners that are not familiar with them would be able to hear them in their unaltered states.

The next set of sounds used across *Orange Line*'s track list consists of playable instruments made using processed versions of the sounds I recorded. When starting this project, I was interested in having electronic instruments made from the sound sources themselves as an alternative to standard synthesizers. I went about fashioning these instruments in a few different

ways. The first and most basic instrument I made used the sound of a train pulling into the station, and can be heard on tracks 1, 3, 4, 7, and 9. In order to make this instrument, I took a short snippet of the recording of the train pulling into the station where an identifiable pitch can be heard and exported that as an audio file. I then filtered out any part of that sound that contained extraneous noise so that just the pitch and its overtones, as well as a little bit of white noise, could be heard. I then put this audio file into Logic Pro's sampler, where I mapped this recording to each note on a keyboard, so that when that note is played, the sample is played back at the corresponding pitch. The result is an airy-sounding synth pad made from the actual sound of a Metro train which ended up blending very well with the raw recordings.

Three additional instruments were made using a different process through the audio plugin, Vital. Vital is a synthesizer plugin that allows users to import their own sounds to create synthesizers, which was perfect for the *Orange Line* project. Instead of using a short, distinct sound for these instruments, I used longer recordings of the atmosphere of three places: Farragut West station, the highway near Vienna station, and a spot next to the Potomac River. The processes for making these three instruments out of these places were the same. I first dropped the long field recording into the sampler area within Vital and set it to key-track mode. This means that when I play different notes on a keyboard, the software will pitch the recording up or down, based on what notes I play. I then set the sampler up so that whenever a key is pressed, it will play the audio sample from a random starting point, so that it's not always starting at the beginning of the recording. Finally, I set the sample's audio output to Vital's comb filter, which allows only a fundamental and its overtone series to be heard, quieting the rest of the sound. What this means is that when I play a note on the keyboard, I will hear a defined note with a

complex timbre. This resulted in three instruments that are derived from recordings made in these locations, that have been turned into atmospheric synthesizers.

The last category of sounds used in these tracks is standard ambient synthesizers. I originally wanted to go in the compositional direction of not using any standard synths in *Orange Line*, and instead use the sounds I recorded in D.C. This aim, however, proved to be a limitation that detracted from the overall quality of these tracks. Because I want this *Orange Line* to not only reflect my experience riding the Metro, but also pay homage to previous ambient works, it only seemed appropriate to include more commonly found ambient sounds. The primary synthesizer heard on this album is a virtual recreation of the Sequential Prophet V, an analog synthesizer that has been famously used by some of my favorite electronic artists. The Prophet V can be heard on tracks 1, 2, 5, 7, and 9. In general, I am only using the Prophet V as a subdued warm synth pad, with a little bit of chorus effect added for some slight shimmer. The pad is then usually processed with lots of reverb to give it space and resonance. Other synthesizers heard throughout the album are a Roland D-50 and a virtual emulation of a Yamaha DX7, both of which I used to fill up the sonic space in tracks 1, 3, 4, and 9. All three of these synthesizers have a retro sound to them, which to me perfectly captures how the D.C. Metro is an architectural reflection of the time that it was constructed.

Narrative Structure of *Orange Line*

Orange Line is nine tracks long and outlines the journey from the western terminus of the Metro's orange line at Vienna station to the heart of Washington, D.C. at Metro Center station. The album alternates between tracks that take place at a particular station and tracks that take place in transit between stations. *Orange Line* doesn't cover every station in the span from

Vienna to Metro Center, but rather includes select stations that hold a particular significance to me. The rest of the chapter briefly describes the compositional process for each track.

Orange Line's Track List[26]

1. "Vienna" – Station track
2. "I-66 E" – Transit track
3. "Ballston" – Station track
4. "Whistling Tunnels" – Transit track
5. "Rosslyn" – Station track
6. "Beneath the Potomac" – Transit track
7. "Foggy Bottom" – Station track
8. "The Brutalist Underground" – Abstract track
9. "Metro Center" – Station track

The opening track is titled "Vienna" after the station at the Virginia terminus of the Orange Line. "Vienna" takes place before our trip on the Metro begins. I chose this terminus of the Orange Line to begin with because this is the station at which I have historically boarded the Metro. Vienna is an above-ground station that sits on an island platform in the median of Interstate 66 in Fairfax, Virginia. While interstate traffic is often a nuisance, at Vienna station it can be somewhat soothing, a layer of white noise as you wait for your train. Because Vienna is a terminus station, the Orange Line comes to the end of its journey there, and trains will sit on the platform for several minutes with their doors open. Vienna being a terminus station also yields a unique announcement from the train's operator, welcoming the passengers to Metro and describing the trip the train will take all the way to the other terminus at New Carrolton station in Maryland. "Vienna" is a very peaceful ambient track, made up of sparse open chords played on a warm, reverberated synth pad. In the background the sound of highway traffic can be heard,

[26] Appendix A provides links to mp3 files of each track on *Orange Line*.

giving the track a light and airy sound. In the context of the album's narrative, we are above-ground, not yet having begun our journey, waiting for the train that will take us underground, into the heart of D.C., and the D.C. Metro system. The sounds of the Metro are not heard until the end of the track, where a train arrives at the station, an announcement over the train's loudspeaker can be heard distantly, and the train speeds off into the distance towards its next station. The listener is left at Vienna's platform, hearing the interstate traffic as the music fades away. Despite being the first track on the album, "Vienna" was the final track composed, as I wanted this track's style to reflect sounds heard in the following tracks.

Track two ("I-66 E") depicts riding the Metro down the middle of Interstate 66 as it speeds towards Washington, D.C. The sound of the train rumbling across the tracks can be heard throughout the entire piece, as a layer of white noise. "I-66 E" is the only track on *Orange Line* with a traditional musical pulse. I used a 128 BPM synthesizer pulse in most of this track to convey the fast movement of the train as you whiz by different portions of northern Virginia. Despite this pulse, the rest of the layers in "I-66 E" hew more closely to a standard ambient aesthetic, with a warm synth pad reminiscent of "Vienna" playing a simple repeated sustained figure throughout. "I-66 E" is in three parts, each part adding a layer to the previous one. The first part contains only the sound of the train, soft synth pad, and a subdued 16^{th}-note pulse in the background. The second part brings the pulse to the foreground and brightens its timbre so it stands out even more. The third part adds a deep sub-bass, adding cinematic gravitas to the sound, and brightens the 16^{th}-note pulse even more. As the track fades out, a high frequency cut gradually sweeps down the entire track, leaving us with only the muffled sound of distorted train tracks at the piece's conclusion. This ending is a nod to the Metro diving underground as it enters the denser neighborhood of Arlington, Virginia.

The third track, titled “Ballston,” is based around the Metro station of the same name. Ballston station is the first underground station of the Orange Line when travelling from Vienna. The moment when the train first pulls into the brutalist underground station never fails to amaze me, as we just spent several minutes in a dark tunnel, previously coming from daylight and highways. “Ballston” is based around a low distorted drone that plays throughout the entire track. The piece begins with the Metro train pulling into the station, followed by a spacey melody in Mixolydian mode played by a heavily processed flute sample. I chose focus on this processed instrument, as it is recognizable as a flute, but something doesn’t sound quite right about it. My choice of a flute was also inspired by “Strawberry Fields Forever” by The Beatles, in which a Mellotron flute intro sets up the strange and otherworldly sound of the song. The melodic phrases in “Ballston” are sparse and meandering, almost like fragments of someone singing in a cathedral. The melodic bursts are interrupted by sounds of trains pulling in and out of the stations, and the distinct doors opening/closing announcements coming from inside the trains. The piece ends as it begins, with a train pulling out of the station and fading away into the dark tunnels.

Track 4, (“Whistling Tunnels”) immediately follows “Ballston” by putting the listener in the dark tunnels connecting the underground stations. I’ve always found the Metro speeding through these dark tunnels to be somewhat eerie, as all you can see out the window are the tunnel lights flashing by, and all you can hear is the roaring sound of the train echoing all over. Track 4 is the first piece on *Orange Line* that does not employ traditional musical harmonies, but rather builds a soundscape around the liminal atmosphere of the tunnels. “Whistling Tunnels” features the most audio processing out of all the tracks on the album, with almost every sound heard being some sort of manipulation of a recorded sound. The undulating drone that persists through

the whole track is a combination of two layers. The first layer is the sound of Foggy Bottom station's escalators pitched down an octave and stretched out to double the length of the recording. The other layer is a Roland D-50 synth patch titled "Devildom" which has also been pitched down significantly, as well as had several of its overtones boosted using an equalizer. The result is a bassy drone that sounds like electricity is buzzing all around you. This drone is accompanied by an airy melody, reminiscent of the one in "Ballston", but played on the synthesizer made from the sound of a train pulling into the station. Sounds of trains rushing by and the unaltered buzzing of the Foggy Bottom escalator can be heard fading in and out in the distance.

"Rosslyn" is the 5th track on *Orange Line* as well as the longest track, clocking in at about eight minutes. Rosslyn station is the final station in Virginia as the train heads into D.C. and is also the deepest station on the Orange Line. The track begins with a distorted beeping sound, reminiscent of the blinking lights on Metro station platforms that signal that a train will be arriving shortly. A slow repeating synthesizer wash is then layered on top, combining both the Prophet V's warm pad, as well as the synthesizer made from the station ambience recording. The musical structure in "Rosslyn" is comparable to that of "Rhubarb" from Aphex Twin's *Selected Ambient Works Volume II* in that it is based around a few varying repeated synth layers that are combined with each other in different ways. This hypnotic repetition is meant to freeze the listener in a specific moment in time when the train is about to arrive, but before you can see its headlights illuminating the tunnel.

The next and final transit track is titled "Beneath the Potomac." As the title suggests, this track is the transition from Virginia to D.C. as the train makes its way through the tunnel under the Potomac River. Like "Whistling Tunnels," "Beneath the Potomac" conveys the somewhat

eerie and claustrophobic nature of traveling through the dark train tunnels. This track is made up of a dark, warbly synth pad, made from an ambient recording of the Potomac River. This sound is combined with whooshes of white noise, aurally conveying the tunnel lights as they whiz past the windows. This track is the darkest track on *Orange Line* and again takes us away from the more traditional calming aesthetic of ambient music, venturing closer to the more unnerving sound of dark ambient. It ends with the rumbling of train tracks as the train makes its way into the first station inside D.C.

"Foggy Bottom" is the 7th track on the album and takes us to the Orange Line's first station in D.C., Foggy Bottom-GWU. This track brings back the warm, calming synth pads from tracks 1 and 2, and features sparser instrumentation. Like "I-66 E" and "Rosslyn", "Foggy Bottom" incorporates a simple repeated synth figure reminiscent of Aphex Twin's work on *S.A.W. II*. This piece is also the first one since track 2 to feature an unprocessed field recording recorded at Foggy Bottom-GWU station playing in the background. "Foggy Bottom" is quite simple and calm, functioning as a contrast to the previous dark ambient track, but also because this is my personal favorite station in the entire Metro System. The lack of low frequency information on this track compared to the previous tracks allows this track to have a shimmer and brightness to it.

The penultimate track is titled "The Brutalist Underground," which is the only track on the album that does not fall under the category of being a "station" or "transit" track. This track is rather a depiction of the amazing brutalist design of these stations. As discussed in Chapter II, the brutalist architecture of the D.C. Metro is so striking, and arguably its most distinctive element to passengers. This track is an homage to the Metro's design and aesthetic, by conveying these massive concrete structures. "The Brutalist Underground" is based around the dark and

distorted sound of a custom synthesizer made from a pitched-down version of my highway recording. The highway synthesizer plays a repeating series of pulsating chords, layered with the airy Metro train pad. The Metro pad's melodic loop is a different rhythmic length from the repeating chordal pattern, resulting in the two layers lining up with each other in different ways (a compositional technique used by Brian Eno on *Music for Airports*). A little more than halfway through the track, the chords begin rising in both pitch and volume, as the sound of a departing train whistles in the distance. As quickly as the build-up reaches a climax, the music then fades away, with the chords slowly getting lower and lower until all that can be heard is muffled rumbles.

The final track on *Orange Line* is titled "Metro Center" after the station of the same name. Metro Center station is a massive, multilevel Metro station where the Orange, Blue, Red, and Silver Lines converge in downtown D.C. "Metro Center," like several of the tracks on the album, is made up of a repeated chord cycle. These chords are reminiscent of those ones may find in choral music, chosen due to Metro Center's cathedral-like magnitude.

Conclusion

Orange Line is the result of my fascination with both the Washington, D.C. Metro and composing ambient music. Not only did working on this album allow me to merge two of my fascinations together, but it also encouraged me to analyze my own work as a composer, and how it is based on precedents set by past works by other composers. Through the combination of conventional ambient sounds and custom sounds from recordings I made, I was able to create a work that explores the unique atmosphere of the D.C. Metro. *Orange Line* is my first full-length album of ambient music, and I anticipate that it will open the doors to future ambient releases in the future.

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APPENDIX A: *ORANGE LINE* RECORDINGS

The following are links to mp3 files of the nine tracks that make up the *Orange Line* album. These files are also included as associated files with this document.

1. "Vienna"
2. "I-66 E"
3. "Ballston"
4. "Whistling Tunnels"
5. "Rosslyn"
6. "Beneath the Potomac"
7. "Foggy Bottom"
8. "The Brutalist Underground"
9. "Metro Center"