Hearing Change in the Chocolate City: Computational Methods for Listening to Gentrification

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Abstract

In this article, I outline a method of combining ethnography and computational soundscape analysis in order to listen to processes of gentrification in Washington, DC. I utilize Kaleidoscope Pro, a software suite built to visualize and cluster bioacoustic recordings (typically birds and bats) to cluster points of tension in the soundscape of Shaw, a rapidly gentrifying neighborhood in DC. Clustering and visualizing these sounds (which include car horns, sirens, public transportation, and music) makes audible the sonic markers of gentrification in Shaw. Furthermore, listening to gentrification is a call to engage with the sonic right to the city, histories of legislating sound, and sonorities of memory and nostalgia. This work contributes to the burgeoning black digital humanities canon by thinking through how computational methods can help us to hear black life. Although the digital humanities have turned to embrace the sonic in recent years, there is still much to be done in considering how to embrace the aural in DH work. This project invites us to listen closely to a changing neighborhood, and emphasizes sound as a valid mode of knowledge production, questioning how a sonic rendering of gentrifying space through the digital might move us toward more equitable soundscapes.

Introduction

Gentrification is a sonic phenomenon. As cities across the globe reinvest in previously disenfranchised neighborhoods and invite middle-and upper-class residents to build communities in their own images, the sonic characters of these neighborhoods are shifting as well. Some neighborhoods become louder, newly formed nightlife hubs where incoming partygoers care little for residential sleep schedules. Others become quieter, as new residents enforce particular sonic expectations onto long-term residents. These shifts are, as sound is, enmeshed in complex histories of race, gender, class, sexuality, and ability, and documenting these sonic shifts has the potential to help us imagine and create more equitable soundscapes. [1]

In 2018, I was thinking through the possibilities of using the digital humanities to listen to gentrification in the Shaw neighborhood of Washington D.C. My analysis of the sonic dimensions of gentrification in D.C. is couched in histories of policing black sound, from the black codes of the 19th century to the city's recent #DontMuteDC movement, which has fundamentally shifted the city's public conversation surrounding gentrification and black cultural displacement. The black codes, laws passed in the early 19th century, dictated in cruel detail what was legal or illegal in the life of black people, both freed and enslaved. They included several laws about the legality of black gatherings, which had to be approved and supervised by white men of authority (largely police), and imposed limits on the number of people that could gather and at what times [Snethen 1848]. Over 100 years later, traces of the restrictive black codes are still present in D.C. and in cities across the country. [2]

In April of 2019, the #DontMuteDC Movement originated at one particular intersection in D.C., at the corner of 7th Street and Florida Avenue Northwest. 7th and Florida is home to "Central Communications," a MetroPCS cell phone store whose owner, Donald Campbell, plays go-go music from large storefront speakers during business hours. Go-go music is D.C.'s local subgenre of funk, pioneered in the 1970s by bands such as Chuck Brown and the Soul Searchers, Trouble Funk, and The Young Senators. Characterized by energetic live performance, intense rhythmic grooves, and [3]

ample audience participation, go-go music has been the sound of working-class black D.C. for over 40 years. Go-go became the catalyst for the #dontmuteDC movement because of complaints leveled at the store by new residents who threatened to sue T-Mobile, MetroPCS's parent company, if the music was not turned off. Public outcry and swift organizing forced T-Mobile to allow the go-go music to continue, but the intersection remains the epicenter of conversations regarding gentrification and the silencing of black sonic life. Despite the positive outcome, this is what gentrification in Washington, D.C. sounds like: increased tensions surrounding the role of sound, music, and noise in "public" space.

In this article, I demonstrate the potential of the computational methods to hear gentrification., using a combination of ethnography, passive acoustic recording, and computational sound analysis. My focus here is the intersection of 7th and Florida, which is located in the rapidly gentrifying Shaw neighborhood of Washington D.C.. This recording and subsequent computational analysis is a part of my larger project of exploring how black people hear gentrification in D.C., and contributes to the black digital humanities by thinking through how digital tools can transform how we hear black life. Furthermore, while the digital humanities have turned toward the sonic in recent years, there is still much to be done to embrace aurality in the field. The project invites us to listen closely to a changing neighborhood, and emphasizes sound as an essential mode of knowledge production, all the while arguing that a sonic rendering of gentrifying space through the digital has the potential to move us toward more equitable soundscapes.

As I listen to 7th Street and Florida Avenue and the broader D.C. area, I hear continued attempts to silence of black music and sound through the threat of legal action, legislation, and the everyday criminalization of black people. In the same space, I also hear the flourishing of black sonic life in all its forms, from the quiet interior to raucous protest. In engaging sound in this way, we might imagine a soundscape in which any and all aural manifestations of blackness might be welcomed and not policed in the ways that they have been for centuries. Engaging with computational sonic methods leads us to a fuller understanding, articulation, and speculation of the auralities of black life, so that we might listen in and through and against gentrifying forces.

Digital Humanities and Black Sound

Although the digital humanities consideration of sound has been behind that of other fields, there are a number of scholars and thinkers whose projects treat sound as data within the realm of DH. Most influential for this project has been those that engage black digital humanities discourses as well as those that engage in large sonic datasets from a computational perspective. This combination of perspectives is critical because of big data's potential to harm marginalized communities, particularly black people. At the forefront of these conversations is the 2019 volume *Digital Sound Studies,* published by Mary Caton Lingold, Darren Mueller, and Whitney Trettian. Acknowledging early on that Black Studies has been on the vanguard of sound studies since its inception, Lingold et al. set the tone for what a sonic digital humanities can be, considering a variety of projects from Jennifer Stoever's foundational blog "Sounding Out!" to Myron Beasley's attention to how Zora Neale Hurston's voice might remix the archive. The volume argues that "while digital media thus create a space of possibility for the study of sound, critical, interpretive labor fulfills this potential, not the technology itself," reinforcing the critical potential of sonic digital work when grounded in rigorous humanistic analysis. This reinforcement becomes ever more important as the #dontmuteDC movement forces the city and even the United States to have a stark conversation on the histories of policing black sound, and how technology might engage, unravel, and work against such legacies. Digital humanities and sound studies are sites in which to disrupt the violences of gentrification, and can do so through engaging with and against technological tools, from recording to machine learning.

In addition to those within digital humanities, ethnomusicologists have also long been engaging sound and the digital. For example, Regina Bradley's "Outkasted Conversations" provides a digital space dedicated to the study and archiving of southern hip-hop scholarship, featuring interviews, essays, and syllabi all dedicated to the study of Atlanta's pioneering rap group Outkast. Additionally, Kyra Gaunt's scholarship on the exploitation of black girls on YouTube and other social media platforms is offering a deep dive into the sonorities of online racial and gendered oppressions. Gaunt's work, drawing on data from YouTube (and therefore Google) makes audible the harm enacted onto black girls and teenagers online, even as their content builds profits for other entities [Gaunt 2018]. These projects incorporate

sound into broader datasets that also include text-based media, arguing for sound's presence as an integral part of multifaceted humanistic projects.

Regarding the computational analysis of sound, Tanya Clement's work on machine learning and recorded sound collections has long been on the vanguard of sound work in the digital humanities. Her early use visualization tools such as ProseVis for the sonic analysis of Gertrude Stein's work has been key in developing questions of how to read sound and how to treat sound as data. Drawing on Johanna Drucker's "data as capta," Clement advocated early on for reading data visualization like musical scores, where the visualization itself is dependent on the observer rather than existing on its own [Clement 2013]. She also developed "High-Performance Sound Technologies for Access and Scholarship" (HiPSTAS), a program that leverages machine learning to generate metadata for large speech based aural datasets [Clement 2018].

Digital humanities practices in oral history have also been key to this genealogy. On the forefront of this work has been Doug Boyd and the Oral History in the Digital Age Project, where authors and contributors have advocated for pushing understandings of oral history practice into digital humanities conversations, from tools to capture histories to using recordings as data. Sharon Webb et al. have developed a minimal computing project to mine oral history recordings for important sonic information that is typically overlooked in favor of text only transcripts. Utilizing the soundscapes of the recording themselves has the potential to help researchers work through issues of gender, silence, emotion, and other factors that are lost within the production of the transcript [Webb et al. 2017]. These projects that consider how engaging in the work of signal processing and managing a large sonic dataset move us toward a broader potential for archival recordings, particularly those based in speech.

My intervention into this conversation in sonic digital humanities is to leave behind the text as an anchoring force, and to create work with large sonic datasets that respects the call and parameters of black digital humanities, described by Kim Gallon as "the intersection between Black studies and digital humanities, transforming the concept into corporeal reality while lending language to the work of the black digerati in and outside of the academy" [Gallon 2016]. Gallon forces us to ask the question of how the complete premise of the digital humanities changes for a group of people who are in many ways, historically and contemporarily, not considered human. Engaging with my own dataset, then, is always a question of amplifying black life. In the case of listening to gentrification in Washington, D.C., I have had to consider how both the creation and analysis of a large sonic dataset might engage the aural to disrupt visual narratives of gentrification, which emphasize dramatic change, displacement, and erasure [Parham 2007].

Methodology

I conducted the majority of the fieldwork for this project in Washington, D.C. between 2016 and 2018, employing three interwoven methodologies: interviews, participant observation, and passive acoustic recording. I engaged this combination of methodologies in order to arrive at a kind of "thick data" [Wang 2013]. Thick data combines Geertz's thick description with the big data that is often central to digital humanities conversations, aiming for a generative kind of movement between the macro and the micro, which was essential for this project. During fieldwork, I was interested in telling the stories of individuals, places, and songs through interviews and participant-observation, but also in listening to change over time and detecting broader patterns that only a vast number of soundscape recordings could provide. Approaching sound in "multiple registers" consistently allowed me to engage more meaningfully with the ethnographic and the computational aspects of the project.

I conducted dozens of interviews with a wide range of conversation partners: musicians, local neighborhood officials, church members, business owners, and residents. These interviews were typically semi structured conversations, drawing on a mix of my own questions related to sonic impressions of the neighborhood as well as stories that people were willing to share. Gaining access to interviews was often an exercise of positioning myself in layers, typically beginning with my "official" classification as a PhD student or Smithsonian intern working on a project focused on neighborhood change. Language was important here, as "gentrification" carries different connotations than "neighborhood change" in local discourses. Neighborhood change is a less racially charged term than gentrification, with the former indicating that the neighborhood has undergone some development and the latter insinuating that the

development can be blamed on a particular group of (white) people. At a neighborhood association meeting, I once described my project to a black resident of Maryland as being about "gentrification and sound," and he remarked that it was very interesting, "because of that word that you just used," rather than repeating it himself. I moved between the two terms as the project unfolded, often times mirroring the vocabulary of my interlocuters.

Two other layers of identification were key in gaining access to interviews: my blackness as well as my being from Prince George's County, Maryland, located directly east of the city. Because of the exploitative legacies of fields such as ethnomusicology, sociology, and anthropology, communities of color often exercise a legitimate skepticism with outside researchers, no matter their racial identity [McDougal 2014]. During phone calls to solicit interviews, I noticed that I was code switching more than usual, drawing out my D.C. accent in order to be heard and coded as a black woman from the area, working against the violent legacy of my discipline. In this way I was both insider and outsider for the duration of the project, at home in my proximity, racial identity, and family ties to the city yet distant in my academic training. Even as I did fieldwork in places very familiar to me, I was always an outsider just by virtue of doing the fieldwork [Wong 2008]. 13

I articulate these layers in order to complicate the notion of "fieldwork at home," which has been inconsistently theorized in ethnomusicology and is so often conducted by people of color. As Mellonee Burnim has argued, shared racial or ethnic identity with a group of people does not automatically create a culture-bearer. Regarding her fieldwork on gospel music, she emphasizes that her racial identity is not the only reason why she was trusted in her various research sites, but also because she was a culture-bearer within the gospel music tradition, and was able to offer these churches her skills as a musician in return for conducting research [Burnim 1985]. My blackness, then, did not always endear people to me. Fieldwork for me was at home but-not-home, where I was often familiar with the people and places around me but had arrived with a new set of expectations and questions that required me to become an outsider. 14

Participant observation for this project involved attending musical performances, neighborhood meetings, rallies, and protests. At these events, I was typically most interested in sound sources and tensions surrounding them. For example, at an Advisory Neighborhood Commission (ANC) meeting one evening, half the attendees left the event halfway through because their hot-button agenda item had been completed. They then proceeded to be so loud in the hallway that one of the commissioners running the meeting had to step out to tell them to be quiet, reminding them that there were still more items on the agenda besides theirs. These tensions, stemming from who is able to be heard and whose sounds or voice are deemed important, were central for the project. Furthermore, many of my observations were digital rather than in person; I listened to online radio, watched Facebook and Twitter videos, and watched live streams of D.C. City Council Hearings. In this way, my ethnography was necessarily digital because many of the city's conversations on gentrification are happening online, both privately and publicly. As a result, I was thinking across multiple forms and formats of sound. 15

Passive acoustic recording was the most unconventional method for the project, because it is most often used to listen to bioacoustic changes in environments coded as "natural," such as forests or underwater to listen to marine life. However, this method of long-term passive acoustic recording has been established as an effective way of detecting patterns and changes in a large number of soundscapes [Pijanowski et al. 2011]. I was inspired by a colleague's work in the Ecuadorian cloud forest to transfer the methodology to the heart of Washington, D.C., applying a few modifications but utilizing the same recording equipment. For the duration of the project, I utilized two Wildlife Acoustics Song Meter SM4 recorders, described by the manufacturers as "a compact, weatherproof, dual-channel acoustic recorder capable of long-term acoustic monitoring of birds, frogs, insects, and aquatic life." [1] [Wildlife]. 16

From the beginning, this passive acoustic recording was carefully intertwined with ethnography, because I chose to install the recorders on two building rooftops in and around the intersection of 7th and Florida. Acoustically, rooftops offer the best vantage point for urban passive acoustic recording. In order to install the recorders, I first had to receive permission from the owners of those particular buildings (one a church and one a church office), both of whom agreed after an interview with me. This agreement also came with the promise of letting me inside and on the rooves once a month to download data and change the batteries for the recorders, which allowed me to get to know various office staffs and grounded this project in people, rather than soundscape data. The first rooftop was about five stories off the 17

ground, and covered with solar panels. In March of 2018, I hung the first recorder, nestled in a wooden arm, off of the southwestern edge of the roof, so as to be directed towards the intersection of 7th street and Florida Avenue. I installed the second recorder in May over a third-floor balcony in the intersection. Both recorders captured one minute out of every five minutes all day, every day. That resulted in 288 recordings per day, per recorder. The final tally of over 100,000 recordings is nearly impossible to listen or analyze manually, and yet the possibilities for the dataset seem endless.

While the go-go music at Central Communications is certainly the defining element of 7th and Florida, there are a number of other features that provide a rich space for a cultural soundscape study. Given its proximity to the Historically Black College/University Howard University, the intersection is heavily trafficked by students, residents, and people who work in the nearby Howard University Hospital. The northern half of the intersection is home to a florist, beauty supply store, restaurant, and church offices. At the southwest corner of the intersection is a CVS pharmacy owned by Howard University, complete with a small parking lot that is always at least half full of cars. In addition to these businesses, there are Metro Bus stops at the southwest and northeast corners of the intersection, where people constantly mill about and wait for the bus. In addition to foot traffic, 7th and Florida is one of the busiest intersections in the city for vehicular traffic, also ranked in the top 10 dangerous intersections for drivers between 2015 and 2018 [Smith 2018]. Where Florida Avenue continues west directly to the U Street Corridor and into a busy nightlife district, 7th Street southbound leads to the Chinatown/Gallery-Place neighborhood, comparable to a smaller version of New York City's Times Square. The result is a bustling junction that is never silent, if only for the crosswalk signal that beeps 24 hours a day.

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Engaging 100,000 raw .wav files required a healthy amount of data cleaning, an essential and time-consuming phase of every digital humanities project. Data cleaning is generally understood as the manipulation of a raw dataset (sound, text, images, etc.) into a more categorized, segmented, and manageable whole. When it comes to projects based in humanistic inquiry, though, data cleaning in and of itself is contested. The language of cleaning data implies that "things already have a rightful place, but they're not in it" [Rawson and Muñoz 2016]. The practice of putting data into categories is an imposition, and requires the questioning of the categories themselves. In my work, I treat listening as a speculative method, following Deborah Kapchan's call for scholars to "release our hold on intellective knowledge (with its drives to categorize, objectify, and subjugate)" [Kapchan 2017]. Similarly, I seek a mode of knowledge production through the aural that speculates without being ahistorical, and listens with the intent of amplification rather than categorization. This type of speculative engagement with sound led to a flexibility within both data cleaning and analysis, where I engaged in different levels of cleaning depending on the particular goal of the project in that moment. The disruption of visual narratives of gentrification, which emphasize displacement and measurable outcome, lies here in the slippage between the speculative and the categorizable. My intention in questioning the process of data cleaning is not to arrive at a perfect solution of how to categorize data, but instead to use both necessary processes of categorization and speculation to interrupt prevalent narratives of loss.

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Tanya Clement describes computational sound analysis as a question of compromises balanced amidst an exercise in imagination [Clement 2018]. Sound is ephemeral, difficult to track, and contains variants that text-based data does not. However, in order to engage in large scale analysis, some level of categorization is indeed required for a sonic data set. In the case of the data from the recorders, I went through a trial and error process in order to clean the data, beginning with Kaleidoscope, the software suite built by Wildlife Acoustics in order to visualize and classify the data from their Song Meter recorders. The software features a number of different functions, including a spectrogram to visualize data, a clustering mechanism to group like recordings, and a noise analysis tool. I began working with the data month by month, as my data was already organized in this schema because I ascended the rooftops monthly to download data and change the batteries on the recorders.

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In order to train the data set, I first ran a month's worth of data through Kaleidoscope's unsupervised classifier, which allows the algorithm to group the recordings into unnamed clusters based on similarities in frequency and timing. This classification is conducted through Fast Fourier Transform, an algorithm that decomposes complex frequencies. With these base classifiers in hand, I then went through manually and "tagged" clips within my own named clusters, which included the following: brakes, bus hiss, backup beeps, music, voices, and sirens. I developed this final set of categories through trial and error, and then went through to only tag the best examples of these sounds. I then re-ran

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the classifier with the same data to only include the clips that I tagged. This second .csv file then becomes the training set. Finally, I ran a new set of data under a supervised classification, using the second .csv file that I named as the training set. This then produces a results page that clusters the data based on my training set, and is fairly accurate within a set distribution.

I trained the dataset at least three different times, working towards what I considered the best result for my research questions and within the ethical limitations I set for myself. One of the primary dilemmas during this process was the inclusion of voices as a tagged component. Surveillance is a fact of blackness, and keeping this in mind, this project has required careful consideration about the legacy of surveillance that weighs on black people across the diaspora [Browne 2015]. I was therefore determined to ignore potential identifiers in the data, and purposely "cleaned" in such a way that would obscure conversation rather than identify it. In fact, the only reason I classified voices at all was just to be able to train the classifier to be able to listen to go-go music, which contains a great deal of spoken vocals and rapping from lead talkers.[2] After solidifying the training set, I was then able to run all nine months of data from both recorders through Kaleidoscope. After further cleaning the final spreadsheet to only include the relevant information, I uploaded this spreadsheet into Sequel Pro, a database management application used for working with Structured Query Language (SQL) databases. Working with SQL and Indiana University's supercomputing support, I was then able to write queries for the larger dataset, getting back to those crucial questions about gentrification, race, and sound.

Analysis

Drawing on this extended cleaning process as well as other methods of sonic representation, I offer a tripartite analysis of the soundscape data here, focused at different levels of scope to engage a variety of aural insights in a gentrifying intersection. I begin with close listenings, because even amid the possibilities of large scale machine learning, there is still room for and urgency within both traditional and computationally informed close listenings. By computationally informed close listening, I am referring to a kind of deep engagement with and interpretation of a sound source that stems from mediation types other than listening from a standard playback device. In this case, I facilitate close listenings via spectrograms, which are visual representations of sound that mark frequency and amplitude over an x axis of time. Utilizing the Google Chrome Music Lab's Spectrogram tool, I include here a short spectrogram film from the intersection, featuring the sounds from the intersection as well as my own annotations (Figure 1).

In this video, a spectrogram moves left to right in time, with sounds identified by color and 3-D intensification based on their frequency and loudness in relation to the sounds around them. In this short clip, I have annotated the sounds that are most recognizable in the intersection: go-go music, the hiss and beep of a Metro bus, and a siren. These sounds offer a striking visual representation of the collection of sounds in the intersection.

00:26

Figure 1. Go-Go Music

In addition to clips such as these, I also engage in more traditional ethnographic descriptions drawn from my time as a participant-observer in the intersection. Take, for example, an ethnographic sketch of an August evening in 2018:

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> As I sit down at the bus stop, a driver is honking intensely as they go through the intersection, practically laying on their horn. There is also a black woman's voice rapping N.E.R.D.'s "Lemon" from the speaker in front of Central Communications. A black man, who is actually in the intersection, is rapping along, but with different words. They're both rapping over a go-go pocket beat, and cars are driving by. A heavy engine idles at the intersection, then accelerates after the light turns green. As vehicles drive past, the pocket beat remains. In the distance, there is a siren blaring for a few moments, though it never passes directly through the intersection. The man in the intersection that was rapping along with the woman on the speaker has begun to rap on his own, because the speakers are currently on the breakdown, and there are no voices on the pocket now. He raps, "Lock It, Lock it in the Pocket," on repeat. His voice is momentarily drowned out by another heavy engine, but upon it leaving the intersection he seems to have moved on to rapping, "get money, get money." More engines, more brakes, more horns. The song changes, seemingly beginning a new set altogether. Now the song is a go-go cover of Frankie Beverly and Maze's "Before I Let Go." The man that was rapping is now saying "Hey baby, hey baby," but it's unclear who he's addressing. A metrobus stops, with its customary hiss-and-beep combination. A woman's disembodied voice comes from the bus, announcing that "the base fare is two dollars." She

sounds like Siri. While trucks idle at the traffic light, the music is muffled.

This sketch is drawn from my time sitting one of the bus stops in the intersection, watching the passersby, and occasionally speaking with people. On this particular day, all of the people that lingered in the intersection, including myself, were black, and we existed as and within the boundaries of a porous space that people moved through to get to their next destination. For many of us, the intersection serves as a destination in and of itself, a place to come and exist outside in public space.

How can the combination of a narrative close listening and a spectrogram film that approaches the granular help us to articulate the sonorities of gentrification? While many studies and narratives of gentrification emphasize displacement and loss, these sonic materials assert the enduring presence of black life in the intersection. I posit here that all of these sounds, from the bus stop to the siren to the go-go music, are "black sounds." The bus network is an important facet of black working life and labor in D.C., and sirens are closely connected to the same notions of policing and criminality that frame core conceptions of blackness [Summers 2019]. So as these neighborhoods become visually unrecognizable, their soundscapes remain discernable as a space in which black people exist. As gentrification threatens to erase all memory of a black D.C., the sonic footprint of a space on a granular level serves as an important timestamp and a refusal to be overlooked.

These materials are an exercise in amalgamation, where all of the elements of the intersection are displayed and contemplated together. As I have conducted this analysis parallel to the rise of the #dontmuteDC movement, I understand this amalgamation to be a contribution to the amplification of black sonic life in that space. I argue that this close listening emphasizes the immersion of black sound in the intersection. The sounds are not neatly stacked or delineated individually but rather all incorporated together, as they are heard in the intersection. Spectrograms and ethnographic sketches support the assertions of the #dontmuteDC movement, namely that black music, in turn black people, are a foundational part of 7th and Florida, and cannot be silenced or removed because someone deems them too loud, too noisy, or too much of a nuisance.

The final advantage to these close examinations of sound in the intersection lies in their combined elements. The spectrogram offers a visual narrative of sound that an ethnographic sketch alone cannot support in part because of the hierarchy of the senses which presumes visual evidence to be more true than sonic or narrative. And yet, the unreliability of my own narrative allows for the inclusion of more detailed information. For example, my description of the man's rapping is important here: his familiarity with the space and demonstration of go-go music's intertextuality is emblematic of the complex layers of sound in the intersection. But, I choose not to include the audio of that recording because it serves as a potential identifier, and my emphasis on black digital humanities does not allow me to intentionally surveil or put a black person in harm's way. These two modes of listening, then, together move us closer toward a sonic interpretation of gentrifying space and a more equitable soundscape the rejects the violence of surveillance as evidence.

My next level of analysis zooms out to focus on particular days rather than minutes, represented by a 24 hour timeline built with Microsoft's Timeline Storyteller. Several days are important to the life of this intersection, from major holidays to the first day of each month, which is a popular day for many to go to Central Communications to pay their phone bills. Here I offer a 24-hour look at July 4th, 2018, which features commentary about the various sounds heard on that day, from sirens to fireworks, which are common within the neighborhood as well as on the National Mall (See Figure 2).

00:28

Figure 2. 4th of July at Seventh and Florida

In this timeline, hours of the day are represented by rectangular blocks that move clockwise beginning at 12 midnight. The beginning of the day, then, visually, is actually late in the night. These hour blocks are delineated in larger groups of three hours that mark time around a standard 24-hour day. In this representation, the only space continuously filled is that of the beeping crosswalk. While crosswalks are known to beep for accessibility purposes, this one in particular sounds throughout the day without prompting, inserting itself as the most consistent sound in the recording process. The consistent beeping of the intersection offers up a glimpse into a broader conversation about sound, gentrification, and accessibility, as the intersection serves a large population of disabled people. Go-go music, as per usual, begins at 10am when Central Communications opens, ending at 6pm which is earlier than its usual 8pm close but reasonable because of the holiday. Car horns are present throughout the day, as 7th and Florida is a busy vehicular and pedestrian intersection in the city. I offer "music" in the representation here distinct from "go-go music" and "club bass" to encompass the myriad of other types of musical expression that permeate the intersection, from people playing music on their phones as they pass through or the radio that spills out of cars that idle at red lights. For the remainder of the evening and into the night, sirens and fireworks crisscross each other in the timeline, giving the impression of a loud and busy night. Club bass is an interesting swatch in the timeline, present briefly in the late afternoon before asserting a more sustained presence from 12am-3am. Bass is more visible here than audible in actual recordings, because of the low frequencies spilling out of the club. Bass is felt, rather than heard, in most instances, and visual representation of such a consistent frequency is helpful here because many noise complaints (whether overtly racialized or not) begin and end with bass being too loud.

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I chose the 4th of July as a site for analysis because of the frictions between federal and local life in Washington, D.C. The 4th of July is perhaps the city's most popular holiday, where tourists flock in to visit national museums by day and enjoy fireworks by night. However, amid national festivities lie a city that is characterized by its lack of statehood, a drastic wealth gap, and a vibrant local cultural life. This timeline provides sonic entry into these tensions, noting how the neighborhood shifts because of the holiday, but also maintains its own character and traditions, in this case the go-go music at Central Communications.

This circle timeline offers a grammar of audibility in the intersection through the unit of a day, a way of hearing the space that acknowledges patterns and routines but does not obscure or leave behind the sonic messiness of the day. Although gentrification is often considered primarily in longitudinal capacities, the unit of the everyday remains an incredibly useful metric of analysis. As de Certeau argued in "Walking in the City," the city is made by those that walk every day, made not from looking down from the empire state building and mapping the urban as city blocks, but instead in the compilation of those steps [Certeau 1984]. There is a hubris in the longitudinal that I use the day to avoid and to disrupt. As Amira Baraka wrote about tradition, this is the changing same [Baraka 1991]. Much of the gentrification story is not about what changes, but what stays the same. The crosswalk beeps, the music plays, the sirens wail.

My final level of analysis, which is most dependent on that initial data cleaning process, scales back even further to think about gentrification across a series of months in the intersection. In this section, I consider data over the course of the months long period in which the recorders were installed. Gentrification is, on the surface, a problem of time. If I had wanted to hear gentrification over time in a purely longitudinal way, I would have needed to install the recorders in 2008 or 1998 instead of 2018. But this is a case, perhaps even a call, to lean in to the limitations of a dataset. What can nine months tell us about an intersection? What can this interval of time give us about a space? Does this period function only in anticipation of a longer, future dataset, or is there something to learn in listening to these months as incidents themselves?

I draw on sirens here as an example, which operate as both icon and index of a broader urban imaginary [Jones 2017]. Sirens, depending on their source, can signal crime, emergencies, crises, danger, impending violence, even terror [Stone 2014]. Both interviews and informal conversations led me to understand sirens as a powerful indicator of a neighborhoods crime status, with some of my conversation partners sharing that they heard less sirens as the neighborhood around 7th and Florida gentrified. Furthermore, this decrease in sirens was often interpreted as a decrease in criminal activity. I was therefore interested in tracking the presence of sirens across time at 7th and Florida, and offer here a brief representation of that pursuit (See Figure 3).
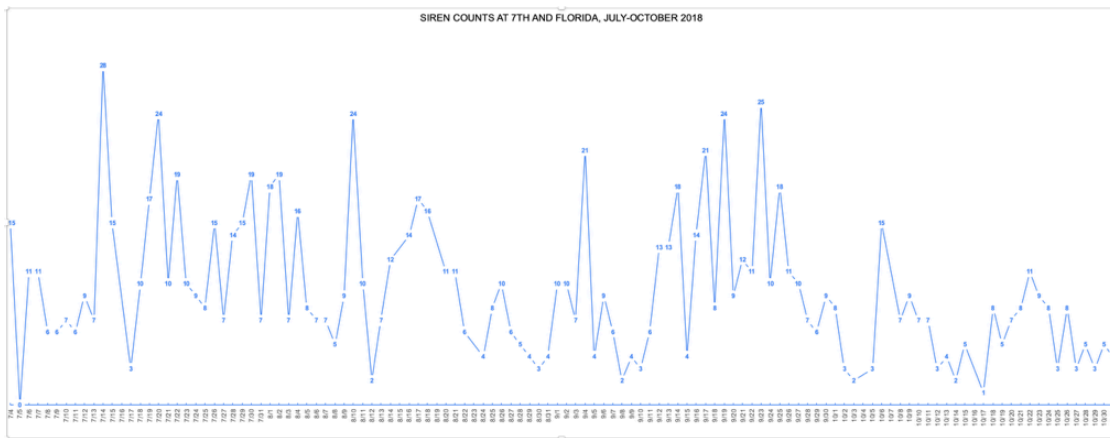
Figure 3. Siren Counts at Seventh and Florida

This simple line chart shows sirens from July to October of 2018, and displays the frequency of detected sirens every day.[3] A number of insights arise from the chart. The peaks and valleys here are often indicative of the number of people active in the space on any given day. For example, most peaks, where the recorder detected 20+ sirens, were on weekends, typically Fridays and Saturdays. Days with the least number of sirens often corresponded with difficult

weather patterns, from heavy rain to thunderstorms. Looking across the longer four month period, from July to October, there is a noticeable decrease in sirens as the season turns from summer to fall. This decrease is consistent with two narratives of a gentrifying city: The first is that crime levels peak during summer months because summers are hot, in terms of both heat and criminal activity. The second narrative is that crime decreases over time in gentrifying neighborhoods, as the crime rate in D.C. has attested to. My intervention lies in the disruption of these narratives, however true they may be. Gentrification is not a linear, gradual process of displacement. Gentrification is a series of jagged interruptions, community meetings, demolitions, protests, contracts, construction projects, and violence.

In carrying connotations of crime and loudness, sirens exist within a nexus of aural indicators of race, criminality, and urban life. Sirens are so closely molded to black urban life because they are indicative and representative of those forces that have deemed themselves in control of black life, particularly the police. The chart here details the pattern of sirens in the intersection, offering a visual experience of what it is to exist in a space in which blackness has been marked as existent and available. I read this pattern as a demonstration of the cycle of potential sonic traumas that come through the intersection every day, sometimes dozens of times a day: of policing, terror, emergency, and health crises. This chart disrupts a visual narrative of gentrification, in which neighborhoods become better and more beautiful looking because it repositions gentrification as a cyclical process of sonic violences, an ebb and flow of sirens. `37`

Conclusion

Taken together, these points of analysis start a conversation about how we might engage in computational analysis and data visualization to bear witness to the sonorities of black life, in both stifling and amplification. Bearing witness alone, however, is not enough. It is the role of the black digital humanist to develop, engage, and experiment with tools and methodologies that are in the service of black life. Here I have utilized spectrogram films to emphasize the ubiquity of black sound, considered how we might imagine the sonic life of a day in a particular gentrifying space, and used long-term analysis to consider gentrifying space as a series of potential sonic traumas. The intention of this work is to arrive at an aurality that disrupts and outright rejects the everyday violences imposed onto black people. `38`

This work has many applications and futures. In legislative arenas, lawmakers across the country decide acceptable decibel levels for city musicians and gatherings. Understanding the connections between sonic datasets and the racialization of sound could lead to more humanely written policies that do not foreground punitive measures for perceived sonic offenses. In addition to policy work, this work also calls for black DH to be recognized as a leader in the building of an anti-racist future. Following the lead of the Data for Back Lives Collective, I believe that research in big data should emphasize approaches to do no (additional) harm. Finally, this work needs to be of use for members of communities that are being silenced, be it through rigorous research that deconstructs the seemingly infallible connection between blackness, loudness, and criminality or through infrastructure and support for utilizing soundscape analysis to bolster the sonic health of a neighborhood. `39`

Notes

[1] In my initial curiosity about the potential of these recorders for listening to gentrification, I called Wildlife Acoustics and asked a general question what the recorders would be able to hear. The man I spoke to then asked me what I was trying to hear, and my response of "gentrification" audibly threw him off. He did admit, though, that they can pick up "everything."

[2] Lead talkers of go-go bands serve as bandleaders as well as the principle connection between band and audience. They talk to people in the front, give shout outs, call out neighborhoods, etc.

[3] Because the recorders only recorded one minute out of every five, it's important to note that this is not every siren.

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