AURAL CONTRACT

Investigations at the Threshold of Audibility

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Ph.D. submission in
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I hereby declare that the work presented in this thesis meets the full requirements of a doctoral dissertation in the Centre for Research Architecture (CRA) and is my own, PhD Candidate (CRA).

Signed: _____

Lawrence Abu Hamdan, September 20th, 2017

Abstract

There are many studies dedicated to speech politics, yet the politics of listening remains an underdeveloped area of research. The conditions by which judges, lawyers, police, legislators, and witnesses listen—especially given the increasing employment of forensic audio technologies—deserve closer inspection. This practice-based PhD thesis investigates the political and legal implications of radically new modes of listening, recording, and audio analysis that have emerged since the mid-1980s. It borrows strategies from forensic audio analysis and art to map out the contemporary thresholds of audibility—both human and machinic—as new cultural and political frontiers where issues of subjecthood, citizenship, and testimony are being defined.

This thesis is situated at the intersection of art, science, and advocacy, and as such each of the three chapters, together with the methodological introduction, develop their argumentation through a variety of means. The written component develops a historical and theoretical analysis of the ways in which we listen, while in the practice portfolio I test these propositions through both audiovisual artworks and investigative sonic experiments. The textual and practical dimensions are thus mutually constitutive: the historical and theoretical enquiry feeds into the practice, while the practice interrogates and attempts to materially implement these critical assumptions as political audio investigations for human and civil rights.

In analysing the thresholds of sound and voice, we recurrently encounter forms of border-crossing, be they material, juridical, sensorial, or conceptual. In Chapter 1 we see the ways in which the voice transgresses the borders between states, both national and ontological. Chapter 2 discusses the blur between foreground and background, sound and noise. In Chapter 3 the way sounds bleed through the walls of a building leads us to the seepage between sound, sight, and touch.

The title *Aural Contract* refers to a shift from the oral to the aural, and from a contract between speaking subjects towards a new set of propositions for the conditions by which we listen to one another and can produce audible evidence. With this shift of analysis from speaking to listening, new modes of political subjectivity emerge; a new spectrum of sounds and silences by which we can make audible those at the threshold of politics—the political prisoner, the colonised, the ghettoised, and the migrant.

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IMPORTANT NOTE: The portfolio of practice that accompanies this thesis can be found online at the following URL:
www.labuhamdanphdpracticeportfolio.squarespace.com

Introduction: Forensic Listening

Accompanying this Introduction, please review the following relevant material included in the portfolio of practice:

Investigation: Audio Analysis section of the "Nakba Day Killings" Report

Project: *Rubber-coated Steel* (2016), digital video, 21'

URL: https://labuhamdanphdpracticeportfolio.squarespace.com/introduction/

Figure 1 (below): The script from *Rubber-coated Steel*, 2016, by Lawrence Abu Hamdan. A fictional court transcript that documents the sound analysis component of the investigation titled "Nakba Day Killings" by Forensic Architecture. Throughout this introduction the details of this investigation and the transcript I authored (and that of its visual accompaniment, the film *Rubber-coated Steel*) will be discussed, as they are instrumental in introducing the elements and approach of this practice-based research as a whole. The film *Rubber-coated Steel* and the relevant forensic report for the "Nakba Day Killings" investigation are included in the accompanying online portfolio of practice for this thesis.

Judge: Please be seated.

[*Wood creaks. Chairs scrape on the ground.*]

Judge: Defence, the floor is yours.

Defence: Your honour, we categorically deny all charges and have no further comment.

Judge: Very well. Prosecution, the floor is yours.

[*Paper shuffles*]

Prosecution: The Israeli Defense Forces claim they fired only rubber-coated steel bullets on the day Nadeem Nawara and Mohammad Abu Daher were murdered. And yet Nadeem Nawara's father presented us with the fatal bullet, a live round that pierced through the body into his backpack. This too was denied by the witness for the defence who claimed that Ben Deri's rifle was fitted with a rubber-bullet adapter, therefore it was impossible for him to fire live ammunition. Your honour, I quote from the manufacturer's catalogue of this rubber-bullet adapter. Contrary to what the witness for the defence claimed, it clearly states: "Immediate lethal firing capabilities without removing adapter."

I will now call my first witness, your honour.

Judge: Would the witness for the prosecution please take the stand.

[*Audience shuffles. Footsteps.*]

Judge: Please listen very carefully to the questions that are asked of you. Speak loudly, clearly, slowly.

Prosecution: Please tell the tribunal your role in this investigation?

Witness: I made the forensic audio analysis of the gunshots that killed the two boys.

Prosecution: Let us begin with the death of Nadeem Nawara. Two gunshots were recorded by the CNN news crew. Can you please tell the tribunal which of these two shots killed Nadeem Nawara?

Is it this one?

[*Gunshot recording plays*]

Or is it this one?

[*Gunshot*]

Witness: It is the first shot we heard.

[*Audience murmurs*]

Witness: The first shot has a subtle high-pitched crack like a [*imitates sound*].

Prosecution: In your expert opinion, what is this crack sound that we hear?

Witness: It is the bullet breaking the sound barrier.

Prosecution: So only one of these two shots breaks the sound barrier?

Witness: Correct.

Prosecution: Can a rubber-coated steel bullet break the sound barrier?

Witness: No, a rubber bullet travels at around half the speed of sound.

Defence: Objection you honour. I hear no difference in the sound of the two gunshots.

Judge: Objection sustained. I must admit I have somewhat of a tin ear when it comes to these things.

Prosecution: In that case your honour we will now move to visual evidence. In this photograph we see Nadeem Nawara being carried off to the ambulance. If we look closely we see that a rubber bullet has been captured here in mid-flight.

Judge: Do you mean this black blur?

Prosecution: Yes, your honour, and we have the sound of this shot recorded by the CNN news crew.

Judge: What am I looking at here?

Witness: These are the visualisations of the sounds of the two gunshots.

Judge: These are sounds?

Witness: Yes your honour, images of sounds. Along the bottom axis is time, the vertical axis is pitch from low to high, and the colour temperature shows the loudness of that pitch at that time. The shot that killed Nawara is on the left. The shot on the right is the rubber bullet we saw in the photograph. The shot that killed Nadeem is louder in the higher frequencies, which accounts for the high-pitched crack of the bullet breaking the sound barrier. The shot on the right is considerably louder in the lower frequencies, which is consistent with the deep thud of a rubber bullet.

Prosecution: Of all the gunshots you analysed on that day, were there any other gunshots that you heard breaking the sound barrier?

Witness: Yes, there is one other occurrence.

Prosecution: ~~Is that the shot that killed Mohammad Abu Daher?~~

Defence: Objection your honour, leading question.

Judge: Sustained. The typist will strike that from the record.

Prosecution: So, when did this second shot happen?

Witness: At the moment Mohammad Abu Daher was killed.

Prosecution: Your honour there has been no autopsy of Mohammad's body, we only have the sound of the shot that killed him as eviden…

Defence: Objection. The family is withholding evidence.

Prosecution: Your honour, the family believed that this is an open-and-shut case as the only armed person present was an Israeli soldier, an autopsy was for them an unnecessary measure.

Defence: Objection! Your honour the family has invoked their right to silence, any remarks on what they think is merely speculation.

Prosecution: We don't need their testimony because we have the sound of the shot that killed him. The sound was recorded by the Palestinian news crew. They also captured the sound of four other gunshots. Do all of these shots have the sonic signature of a rubber-coated steel bullet?

Witness: All except the shot that killed Abu Daher. It is the only shot that is loud in the very high frequencies.

Prosecution: Are the shots that killed the two teenagers live ammunition?

Witness: No. Well yes.

[*Judge sighs*]

Witness: They are definitely not rubber bullets but these two shots don't sound like an M16 firing live ammunition either.

Prosecution: Your honour, this is the sound of an M16 firing live ammunition.

[*Audience wince at the loud sounds*]

Judge: Order!

Prosecution: What is the difference between the shots that killed the two boys and the normal sound of an M16 rifle?

Witness: An M16 rifle is very loud across the frequency spectrum, but the shots that killed the two boys are significantly quieter.

Prosecution: How would one reduce the sound of gunfire?

Witness: The most obvious method is to use a silencer, an adapter that is fitted onto the end of the barrel that traps and cools the hot combustion gas before it reaches the outside air.

Prosecution: Would any other type of adapter, say a rubber-bullet adapter fitted onto the end of a gun, have a similar effect?

Witness: Yes, but the rubber-bullet adapter would not silence the shot, rather it would make a normal gunshot sound like a rubber bullet.

Prosecution: Your honour, in Ben Deri's calculated attempt to disguise the sound of live ammunition with the rubber-bullet adapter, he has incidentally revealed to this tribunal a signature method for killing. The murder weapon in this investigation is not only the M16 rifle but the rubber-bullet adapter fitted to its barrel. The legal use of rubber bullets provides a cover for these soldiers to suppress the sound of live ammunition and kill with impunity. Ben Deri is not the only one using rubber bullets as his alibi. I quote from an Israeli military blog: "~~When I was in Gaza somebody told me about a common trick, you shoot a rubber bullet and are left with the empty adapter on the rifle. Then you shoot live fire when the officer next to you thinks that you are shooting rubber. In any case the Palestinians take the body and there is no investigation so who cares~~."

[*Audience murmurs*]

Defence: Objection your honour, this is hearsay!

Judge: Objection sustained.

[*Paper shuffles*]

Prosecution: In your expert opinion, can you please identify this sound?

Witness: It sounds like a sound bomb.

Prosecution: Correct! And what is a sound bomb?

Witness: A grenade that makes a very loud, non-lethal explosion to disperse crowds.

Prosecution: Now can you please identify this sound?

Witness: Can I hear it again please?
Once more?
Sorry aga…

Judge: Please now answer the question that is asked of you.

Witness: I hear the ricochet of a bullet, but no gunshot.

Prosecution: Your honour, this is a recording of an Israeli soldier firing at unarmed protestors with a rifle that is completely silenced. Please explain to the tribunal which gun fired this inaudible shot?

Witness: It would have to be the Ruger 'dingo' rifle. It is the quietest gun on earth, if used with subsonic ammunition that travels just below the speed of sound.

Prosecution: Can you explain why these weapons are classified by the Israelis as 'non-lethal' force?

Witness: Well, the sound bomb, although deafening in volume, cannot kill anybody, but the Ruger is very quiet and very deadly. These rifles have the nickname 'hush puppy' ~~as they are used to silently eliminate disturbing dogs prior to stealth operations.~~

Defence: Objection. Are we now on trial for animal cruelty your honour?

Judge: Sustained.

Prosecution: Your honour, I have one last question for the witness. Is it true that you could not initially hear the difference between the sound of live ammunition and rubber bullets?

Witness: Yes, I could only hear the difference in the sound after I examined the visualisations.

Prosecution: Your honour, true experts don't need visualisations of sounds to distinguish subtle differences. The true experts in this case are the young protestors who can identify these sounds instinctively. Mohamad Azzeh testified that he heard the fire of live ammunition at the protest and ran. ~~Some moments later he started to feel something burning in his stomach. His hearing was so acute that he could identify the sound of live ammunition that was cloaked by a rubber-bullet adapter and react before he even knew the shot had hit him.~~

Defence: Objection your honour. Mr Azzeh is not a sworn witness.

Prosecution: Your honour, the young people's expertise at detecting sounds has led the Israeli military to find innovative methods to conduct their killings. At first, they tried to confuse the protestors masking the sound of live ammunition with rubber-bullet adapters. When they noticed that the protestors could hear the difference they tried to deafen them with sound bombs ~~and use a totally silenced weapon that neither film crews nor protestors on the ground can detect.~~

Defence: Objection your honour. Does the prosecution have a witness who can testify to this?

Prosecution: I do not your honour, but some of the youth are here with us today in the audience. I implore any one of you to step up here and testify to these serial killing sounds.

[*Inaudible*]

Judge: Clerk, please summon the interpreter.

Prosecution: You may now speak in your own language.

[*Inaudible*]

Prosecution: Do you hear me?

[*Inaudible*]

Defence: Why don't you come forward and speak under oath?

[*Inaudible*]

Judge: Can you hear us at the back?

[*Inaudible*]

Judge: Can't they hear me?

[*Inaudible*]

Witness: It doesn't seem there is anything medically wrong with their hearing your honour.

[*Inaudible*]

[*Gavel strikes*]

Introduction: Forensic Listening

A Case for a Private Ear

I am an artist whose work would be best described as that of a "private ear" or independent audio investigator. The works I make are adapted and developed for different forums including galleries and museums as well as sites of advocacy and legal work. Most of the cases I have worked on have been part of or inspired by the investigative work produced by the agency Forensic Architecture based at Goldsmiths College, University of London. These have included murder investigations, where the analysis of the particular sound of a gunshot played a major role in determining the level of culpability of the perpetrator, and an acoustic investigation into a Syrian regime torture prison in which the predominant experience and memories of its survivors were sound. I have analysed the voice on a wire-tapped phone recording to see if it belonged to a government minister organising an illicit transfer of funds. I have set up counter-surveillance platforms that repurpose audio analysis technologies for citizen use, and I have testified at the United Kingdom Asylum Tribunal as to the unethical and unscientific practices of voice analysis for the determination of the origin of refugees. This practice-based thesis is composed through a selection of the above cases together with their theoretical and artistic reflections. Each written chapter is accompanied by the casework of these investigations I have been part of producing—as well as visual and radiophonic artworks through which I developed a spatial and aesthetic language to push these investigations beyond their immediate concerns and experiment with the forms by which evidence can be presented.

Technically, it is my training as a musician and with the technologies that surround musical production that allows me to work on such forensic audio investigations. A fluency in the technologies that are made to record and produce music enables one to understand the anatomy of a sound recording. For example, to understand the causes of different types of distortion and noise, or one learns through these softwares different strategies for the visualisation of sound, or to hear

the effects and manipulation of acoustics on sound and to identify different kinds of reverberation. These skills were vital to understanding and employing software specifically used for forensic audio examination that has allowed for the analyses described in the following chapters. Yet it is my formal training as an artist that has augmented this non-expert but proficient training in musical production. The approach of visual art has taught me a sensitivity to aesthetics and an intensity through which to look and listen to the world. Think of Michelangelo Antonioni's 1966 film *Blow-Up*, or more significantly for this study, its audio equivalent, *Blow Out* (1981) by Brian De Palma, in which artists become murder investigators.[1] In these films, the intensity with which the photographer and the film sound recorder observe, hear, and seek to reproduce the world, their close attention to the formal qualities of the processes of reproduction and the composition of every grain of the image or audio recording, results in both artists unintentionally becoming forensic investigators. The artists become witnesses to crimes at the threshold of detectability, because it is at the limits of visibility and audibility that artists are trained to observe, document, and reproduce events.[2]

Moreover through the confluence of form and concept, art allows for a comprehensive representation of events to emerge, enabling me to focus both on the specifics of a case, and to generate a series of reflections on the politics of the senses more broadly. Therefore it is a combination of a technical proficiency in sound production and the expanded and experimental approach of visual art that has fostered my ability to operate within the current regime of truth

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[1] Michelangelo Antonioni, *Blow-Up*, 1966 (Warner Home Video, 2004), DVD.
Brian De Palma, *Blow Out*, 1981 (Criterion Collection, 2011), DVD.

[2] Moreover, artists are taught of the inseparability of a work from its context, that everything in a work of art is legible or meaningful, to the extent that infrastructural forms of display play a role in the work. Every video artist knows that the electricity cabling connecting the screen is an important element of consideration, every painter realises that the light conditions of the room in which it is displayed become part of the painting itself. Artists are always told when installing works, "You are the only one who will see or notice a detail as significant or meaningful", or "You are the only one who will pay any mind to this or that imperfection." In many ways my work as a hybrid of audio investigator and artist embraces being from a profession that is frequently reminded of its peculiarity for noticing this or that minutia, or barely perceptible traces that become exaggerated to the extent that they can distort the intention of the expression. My work as a private ear can be understood as an extension of the artist's obsessive attention to details, where negative space or infrastructural conditions, usually designated as background, become as central to expression as the voice in the foreground.

production, where I work for legal and humanitarian organisations, but also seek to experiment with new mechanisms for speaking the truth that do not adhere so neatly to the forums built for the hearing of evidence. Throughout this thesis, I produce claims which are at the threshold of audibility, in the gaps in speech, paying attention not only to the voice in the foreground but to the buzzing of a neon light in the background; not only to the content of communication, but to the strategies of amplification of the voice itself; not only to the aural perception of sound but to its seepage into the other senses. My work is thus concerned with truths that are manifest in the inseparable elements of the environment in which any sound under analysis resounds. Therefore throughout this thesis, the material sonic evidence is examined inseparably with the means through which it becomes politically perceived. In order to do this I will employ a combination of strategies from the field of forensic audio analysis, visual and radiophonic art, and critical discourse, ranging from law to theology and philosophy, in order to suggest alternative ways for crimes to be heard. It is this intersection of practices that allows this thesis to oscillate between forms of argumentation that both adhere to and experiment with the forensic production of truth.

The undertaking of this thesis would then be impossible within only the textual space of critical discourse. Each chapter includes an audio essay or documentary, which edits together the interviews conducted for this research with a succinct narration. Chapter 1 is accompanied by *The Freedom of Speech Itself*, Chapter 2 by *The Whole Truth*, and Chapter 3 by *Saydnaya (The Missing 19db).*[3] These audio documentaries and essays allow me to explore, inhabit, and construct the specific practices of listening that constitute my research. They also provide to the listener a space in which the sounds speak for themselves, where they can hear, feel, and perceive the polemics addressed in the text through the medium of audio itself. As such, the project as a whole is at once a work of audio/sound and a work about audio/sound. Throughout the audio component of the thesis, you will hear how the interviews I have conducted and the narration I have written are subject to a process of

[3] Each of these sound works are audible in the accompanying online practice portfolio. See: https://labuhamdanphdpracticeportfolio.squarespace.com

audio composition and manipulation that demands and induces certain practices of listening from its audience. By expressing a third of my argument through processes of audio composition and sound design, I intend to amplify the multifarious and complex ways in which we experience voices and perceive sounds and silence. In the audio works, one does not have the critical distance afforded by the page, and is positioned in much greater proximity to the voices and sounds under analysis. At times the audience is invited to listen with the same intensity as the forensic examination of sound. The audio works therefore present listening as a medium for the transmission of research and for critical thought, where listening is not only a receptive activity, but one that plays a fundamental role in the construction and facilitation of the speech of the other person or the sound of an object.[4] One example of such audio argumentation in my project is *The Freedom of Speech Itself*, accompanying Chapter 1, where you will hear how the audio documentary locates its argument both in the content of the words spoken and in the audio production of the piece. In my conclusion, my narration on *The Freedom of Speech Itself* refers to an expanded field of legal listening in which the sonic quality of speech has attained a level of legal audibility. Here I perform the notion of political listening within the audio production, by incrementally applying the "ircam trax", one of the most advanced digital voice disguise softwares, to change the gender of my voice. As the narrator's argument intensifies, his voice slowly undergoes a gender transformation that in turn draws the ears of listeners directly into the argument about the shifting and fluctuating conditions of listening between a voice and its words. The gradual transformation of the voice catalyses an equivalent transformation in listening, as it attempts to induce, rather than explain, the practices of listening

[4] As a methodological reference for these audio essays and documentaries, take the audio adaptation of Marshall McLuhan's *Understanding Media*—which coined the oft-cited phrase, "the medium is the message"—the 1968 LP *The Medium is the Massage* by Quentin Fiore and Jerome Agel. This medium-specific work sonically develops McLuhan's argumentation and voice by embedding them in a politics of amplitude and frequency, politics that are also embodied in contemporary conventions of audio production and consumption. Fiore & Agel's work work is about the modes of attention that media solicits, and in its audio composition it persistently calls upon listeners to shift between these often contesting modes of attention, just as the audio components of this thesis seek to shift and refocus the attention of its listener-readers.

Marshall McLuhan, *Understanding Media* (New York: McGraw-Hill, 1964); Quentin Fiore and Jerome Agel, *The Medium is the Massage* (Columbia, 1968), LP.

that are of central concern to the subject matter of the thesis. My medium is therefore not so much sound but listening itself.

On and Off the Record

Though not a work of audio, the fictional transcript that opens this thesis, and its filmic accompaniment *Rubber-coated Steel*, is also an example of this approach of audio argumentation, in that the specifics of the case, which include a tension between seeing and hearing, silence, and the sonics of violence, are embedded into its scenography. The film and transcript compose an artwork that chronicles the real audio analysis I submitted as part of a larger body of evidence, produced by Forensic Architecture, for an advocacy and awareness campaign called *No More Forgotten Lives* by Defense for Children International.[5] To give some context for the real-life case, Ben Deri, the Israeli border guard in question, was initially charged with manslaughter of Nadeem Nawara. Then in December 2016, the Jerusalem District Court accepted a plea deal for him to be convicted of 'negligence' with regards to the death of Nadeem Nawara.[6] Deri was never tried for the murder of Mohammad Abu Daher. This is despite the fact that, as shown in Forensic Architecture's report for the NGO, the sound of the shot that killed both boys has the same sonic signature: live ammunition suppressed by a rubber-bullet adapter. The findings of my work together with the larger investigation by Forensic Architecture, which include visual and spatial analysis, show that both boys were killed in the same location, indicating that the shooter was aiming from the same vantage point both times.[7] This means that Mohammad Abu Daher was killed just hours later on the same day, in the same location, and most probably with the same gun, derived from the fact that they are both

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[5] See: http://www.nomoreforgottenlives.com/.

[6] Toi Staff, "Plea deal for border policemen who killed Palestinian protester", *The Times of Israel* (December 6, 2016): https://www.timesofisrael.com/plea-deal-for-border-policemen-who-killed-palestinian-protester/.

[7] See the full report, "Nakba Day Killings": http://beitunia.forensic-architecture.org/.
The sound analysis section of this report is included in the online portfolio of this PhD. Rather than a repetition of the findings and methodology of the analysis documented in the report, what follows is a series of conceptual reflections that emerged from working on this case.

killed by a gunshot with the same specific sonic characteristics. The almost identical circumstances that surround the not formally investigated death of Mohammad Abu Daher strengthen the allegation that Nadeem Nawara's death was not an accident. In other words, the inadequate charge of manslaughter and the conviction of an even less serious charge of negligence can only stand for as long as Mohammad Abu Daher's killing is not brought to trial. In the real trial of Ben Deri, the two boys' deaths became separated, which altered the verdict considerably in Deri's favour. Compelled by this distorted narrative, the depiction I wrote in my court transcript that seeks to document the crimes committed on that day holds these two deaths as an inseparable part of the same crime.

In the fictional transcript, unlike in the trial Ben Deri faced in reality, the court deliberates over the real evidence that I produced, together with Forensic Architecture, of the two murders of Abu Daher and Nawara. The pairing of the two deaths is not only to communicate a more comprehensive study of the crime committed by Ben Deri, that was not achieved in the real trial, but also, as I will expand in the course of this introduction, to break the logic of singularity and compartmentalised structures according to which evidence is processed, and by which the possibility to examine the wider structural scale of violence is precluded. This transcript is therefore written not only in order to transmit the audio evidence component of this case, but also to attempt to capture, through a specific focus on sound, the problems of listening inherent to the legal procedures that produce truth. In this way, this transcript is diagrammatic of my thesis's methodology, wherein the audibility of rights receives the same forensic examination as the audio evidence itself. The conditions of listening and the material realities of sound, just like the necessity to examine the deaths of both these two boys, are inseparable. One of the strongest ways I believed this inseparability could be made manifest was by rewriting the trial, intervening into and reimagining the legal record.

Some of the language included in this fictional trial derives from my experiences testifying at another real trial at the Asylum and Immigration Tribunal in London in 2014, when I was as an expert witness to the deportation hearing of a Palestinian asylum seeker, where I was contesting the results of an unjust accent analysis to which he was subject. I was called in by the defence lawyer because I had undertaken extensive research into the company administering these accent tests, Sprakab, and had interviewed its low-level analysts and senior linguists. The specifics of this accent analysis form the main case study of Chapter 1, but the trial that informed the writing of this transcript is useful to speak of here by way of introduction to the legal thresholds for listening. The final exchange between the judge and myself is sufficient to draw this out:

> Judge: In relation to your piece on Sprakab and LADO [the accent analysis of asylum seekers], did you reach a conclusion about the efficacy of Sprakab?
>
> LAH: I concurred with the linguists whom I interviewed, who essentially are against its use to determine people's origin, because of the basic fact that a voice or an accent should not exist as a kind of passport.
>
> Judge: But do you find that Sprakab could work using the methodology that they use, with some tweaking, or do you find that the process is wholly wrong?
>
> LAH: I think it needs to be much more thorough if it is to work. I think that twelve-minute interviews are not sufficient. I think it needs to take into account the people's biographies much more than simply where they come from.[8]

After this exchange there was a recess and the defence lawyer explained to me that he was pleased with the answer but that he didn't like at all that the judge had asked me this question about my option as to whether this was "wholly wrong". He explained to me how this was a well-established trap set by judges to try to identify the person giving testimony as politically biased. If I had answered that it was "wholly wrong", taking his language or similar in my response then this would have nullified the entirety of the evidence I presented that day. He was in effect baiting me at the threshold of legal audibility, and if I took the bait and crossed the line, my entire testimony would be struck through as the opinions of a politically biased and irrational subject. That such a threshold exists is relatively well-known: the law must be seen to remain neutral and to operate within the

[8] Lawrence Abu Hamdan-transcribed testimony at appeal hearing for Mr Mohammed Barakat, at Her Royal Majesty's Asylum and Immigration Tribunal, London Borough of Islington, May 25, 2013.

boundaries written into law. Yet where the judge decides to position this line of neutrality is a political act, which is occluded from those called to testify who are not legally experienced. I had not interpreted that question as a frame for this border between irrelevant political opinion and legitimate testimony, until I was made aware of it from the experience of the lawyer. There were stakes embedded in my response that were coded into the legal forms of listening but that were inaccessible to myself as a speaker. In other words, I was free to speak my full opinion, but there was a very narrow bandwidth in which my voice had to perform in order to be heard legally. If I had expressed anything other than a reformist position to what I believed but could not say to be a wholly unscientific and unethical policy, my testimony would have been withdrawn from the space of legal performativity. It would have been treated as political opinion and not legal speech, in spite of the fact that it would still remain part of the transcript of the trial. We see how this threshold operates as a form of exclusion that does not censor the speaker in a obvious or tangible way, but rather by setting invisible and intangible limits of legal audibility, which mean that one's well-informed testimony can become legally inaudible and therefore irrelevant, while remaining physically audible to all present.

These conditions of legal listening were made doubly audible in this case as it was a trial about what constitutes legitimate ways of listening to the voice of refugees; it pertained to the deportation of an asylum seeker which had been ruled on the results of an accent analysis of his voice (which I will return to as the main focus of Chapter 1). In this we can read a collapse of form and content, in which the legal conditions of listening performed by the judge became inseparable from the issue of the trial. Such cases are the bedrock of this thesis, as I believe that cases in which audio forms a central part of the testimony allow for a more lucid analysis of the problems and challenges of listening inherent to the conventions by which truth can be produced. It was in fact this experience as an expert witness that compelled me to produce the body of work and theoretical reflections of this thesis, because while there are countless readings of the politics of speech, the voice, and

utterance, the politics of listening remains an unresolved and under-analysed area. It is my belief that the conditions by which judges, lawyers, legislators, police officers, and witnesses listen—in particular given the increasing employment of forensic listening technologies for legal ends that I chronicle in the following chapters—are deserved of closer inspection. The title of this thesis, *Aural Contract*, is representative of this shift in focus from the oral to the aural, and from a contract between speaking subjects towards a new set of propositions for legal agreements for the conditions by which we listen. This new set of propositions emerges as all-the-more necessary the more we proceed through this thesis and read about the specific and under-documented ways the law is trained to listen to our voices.

Further, my chronicling of my experience at the Asylum Tribunal underlines how the creation of artworks provides a space in which to experiment with and expand the tight thresholds of legitimate speech offered by legal and political forums, with the potential to open up new kinds of sonic claims. In Chapters 1 and 2, I document how pushing at the boundaries of legal audibility is central to my work as well as to the pioneering forensic audio investigators that form its inspiration. Here we will see how accents become legally accountable and how sounds that were once part of what would conventionally be defined as a field of blurred background noise are increasingly being used to construct accounts of events in space and time. It is in relation to background noise and recording media that I argue, in Chapter 2, that a comparison can be made between the work of forensic audio investigators and the experiments of avant-garde composers, for both expand the thresholds of our capacities to hear and perceive sound. The combined mode of forensic examination and artistic experimentation of Chapter 3 continues in this approach, through which I propose new forms of evidence that are at the very limits of juridical argumentation but which I argue are the most proximate ways to ways of documenting the states of sensory deprivation and severe violence inherent to the crimes inflicted upon its victims.

Similarly, the authoring of my opening transcript, *Rubber-coated Steel*, sought to represent the way in which conditions of legal listening were inextricable from the content of the trial and its judgments, using the artistic licence of fiction to emphasise this. One way in which this was realised was by the amplification of the [inaudible] in the court record. [Inaudible] is the way that transcribers and stenographers categorise human speech or any other sound made by one of the officially recognised bearers of legitimate speech in court (lawyer, witness, judge), which cannot be heard or made intelligible to them in the courtroom. A voice that is not possible to write or a sound that cannot be transcribed does not make the historical record except as an anonymous mark of inaudibility. It is those [inaudible] voices and sounds that are not intelligible to the political ear that become the site of struggle in a politics of listening. Each of the three cases I will present through this thesis presents a proposition to expand the political ear in order to listen past that which has been labelled [inaudible]. My work in its totality, from the technical investigations to the artistic and theoretical reflections, aims to reconstitute the sound of the [inaudible] out of its silencing, while at the same time amplifying the structural conditions which fail to listen to that which they deem [inaudible]. In reconstructing the previously unheard sounds of the [inaudible], I aim to both make them heard in and for themselves, and to broadcast how and why such [inaudible] sounds are unable to be received by the forums in which they are supposed to receive a just "hearing".

The use of the [inaudible] in this script is used to build a legal dramaturgy that in part borrows its structure from a short play written by Harold Pinter in 1988 titled *Mountain Language*.[9] Although not directly referring to these events, the play emerges at a time when the Kurdish language was criminalised in Turkey and Margaret Thatcher had put into legislation the "broadcast ban" in the UK, which stated that no direct statements made by the Irish Republican Army could be aired. The play revolves around a banned language and its acts unfold in the absurd and violent bureaucracy of a prison visitation room. The tension develops from the forcible banning of the "mountain

[9] Harold Pinter, *Mountain Language* (London: Samuel French Ltd, 1988).

language", which forbids even the audience from hearing it. The audience is brought into a relation of empathy that wills the banned voices to be heard throughout the play until at the end the ban is suddenly and inexplicably lifted.

> Guard: Oh, I forgot to tell you. They've changed the rules. She can speak. She can speak in her own language. Until further notice.[10]

The guard informs the imprisoned son to instruct his elderly mother who is visiting him that she can now speak. At this point the play flips from being an agitprop theatre piece against censorship to addressing the violence of representation itself.

> Prisoner: Mother, you can speak.
>
> *Pause.*
>
> Mother, I'm speaking to you. You see? We can speak. You can speak to me in your own language.
>
> *Pause.*
>
> Mother. Can you hear me? I am speaking to you in our own language.
>
> *Pause.*[11]

Her son intensifies his imploring for her to speak but the mother does not respond. With each [*Pause*] that constitutes the mother's silence the audience is given time to digest that the violence of the situation lies as much in the banning of language as in the granting of permission to speak. In either case, a fundamental power is asserted over the speaker.

The play distils the problems of what constitutes legitimate speech in the same way that legal theorist Peter Goodrich defines the law as "a practice of others speaking for you"—a process of translation or dubbing.[12] A significant figure among the 'others' that Goodrich refers to is that of the lawyer. As the translators of 'legalese', they speak on our behalf. Their voice plays the essential role

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[10] Pinter, *Mountain Language*, 10.

[11] Ibid., 10–11.

[12] Peter Goodrich, *Languages of the Law* (London: Wiedenfeld and Nicholson, 1990), 80.

of inhabiting and negotiating the limits of what can and cannot be spoken before the court, as demonstrated by my personal experience with the judge at the Asylum Tribunal. Indeed I was reminded of *Mountain Language* when I was attempting to negotiate the fragile conditions of the [inaudible] in the case against Ben Deri. In my transcript, rather than an actual ban on language, legalese is employed as a technology through which the defence render the prosecution's words unspeakable and unheard. This happens in particular any time that the prosecution wants to bring in witnesses and voices from the perspective of the young protestors. It is intended that the reader of my transcript feels this injustice each time the protestors' voices are struck from the record, and yet the crescendo of tension does not come at the moment these voices are finally heard, but rather when they are implored to *speak* by the prosecution, their champion, when they choose rather to perform their own inaudibility to the court. Although this is a speculative scenario it is reflective of the often paradoxical politics of silence that were articulated throughout my work on the actual case.

The role of the [inaudible] and the meaning of silence is thus a theme that runs throughout this thesis. In Chapter 1, I argue that the right to silence needs to be reconfigured in the advent and proliferation of forensic listening practices. Silence and inaudibility are the central focus of Chapter 2, which looks at the role technology plays in expanding the capacity to listen, as well as in politically reorienting how we define the concepts of noise and silence. Finally in Chapter 3, silence emerges as a tool for the forensic audio analysis of conditions of violence experienced by detainees of the Syrian regime Saydnaya Prison.

Seeing through Sound

The thesis concerns itself with listening at the thresholds of sound and voice, and sometimes at these thresholds sound itself becomes image or becomes replaced by a visual memory (as is dealt with in detail in Chapter 3). Many of the sounds at play in my cases are sounds from the

background—noise that seeps onto a recording, sounds that leak into phone calls (Chapter 2), through walls (Chapter 3), and across national borders (Chapter 1). Sound is thus defined by its blurred borders and difficulty to be contained or isolated. Sound waves are not objects with clear boundaries but rather sources of energy that make the air and objects around them vibrate, making sound inseparable from the media through which it is transmitted. In a continuation of the inseparability of an object from its context, argued for so far in this introduction, throughout this thesis there are moments in which the investigation of a sound necessitates a cross-sensory analysis or exceeds listening to seep across the senses.

The investigation into the murder of Abu Daher and Nawara, for example, could not function through the analysis of sound alone. The audio analysis of Forensic Architecture for this case reveals how sight and sound are inter-dependent, and how sound cannot be treated in isolation. Though the cameras on both occasions were not pointing at the victims at the moment of the bullets' impact, other details captured by the lens were later vital in order to corroborate the sounds of the gunshots. Details such as the rubber bullet incidentally caught mid-flight, in a photograph of the moment Nadeem Nawara was rushed into the ambulance (Figure 2). When this photograph was synchronised with the CNN footage, it allowed us to corroborate the sound of the gunshot with that of a rubber bullet, and then to compare that sound with the sound that killed the two boys, in order to claim with greater certainty that there is significant distinction between the sound of a rubber bullet and the sound of the shots that killed them. In other evidence, a single gold pixel was seen flying out of Ben Deri's rifle (Figure 3). This was significant as after analysing many videos of other soldiers firing M16 rifles, Forensic Architecture found that when firing live ammunition, the empty cartridge is automatically ejected from the chamber; however, when rubber-coated steel bullets are fired, the empty cartridge is not automatically ejected. This gold pixel was identified as the immediate discharge of an empty cartridge after Ben Deri's shot, therefore demonstrating that he fired live ammunition. Even in the analysis of the sounds themselves, the distinction between an

M16 firing a rubber-coated steel bullet and an M16 firing a live round through the rubber-bullet adapter fitted onto the end of the rifle was initially inaudible to me. Only later could I hear the difference, with the aid of spectrographic visualisations of the sound, which showed the bullet's behaviour across the frequency spectrum and by attributing colour temperature to intensity of sonic amplitude indicated to me which frequencies my ears should be attentive to in order to perceive the distinctions between the two shots (Figure 3).

Figure 2 (top): The rubber bullet incidentally caught in mid-flight. When this photograph was synchronised with the CNN footage, it allowed us to corroborate the sound of the synchronous gunshot with that of a rubber bullet, and then to compare that sound with the sound that killed the two boys. This comparison allowed us to claim with greater certainty that there is a significant distinction between the sound of a rubber bullet and the sound of the shots that killed the two boys. Photograph: Samer Nazzal

Figure 3 (bottom): Video still from the weapon analysis chapter of the "Nakba Day Killings" report illustrating that the empty cartridge is automatically ejected from the chamber; however, when rubber-coated steel bullets are fired, the empty cartridge is not automatically ejected. Source: http://beitunia.forensic-architecture.org/weapon-analysis

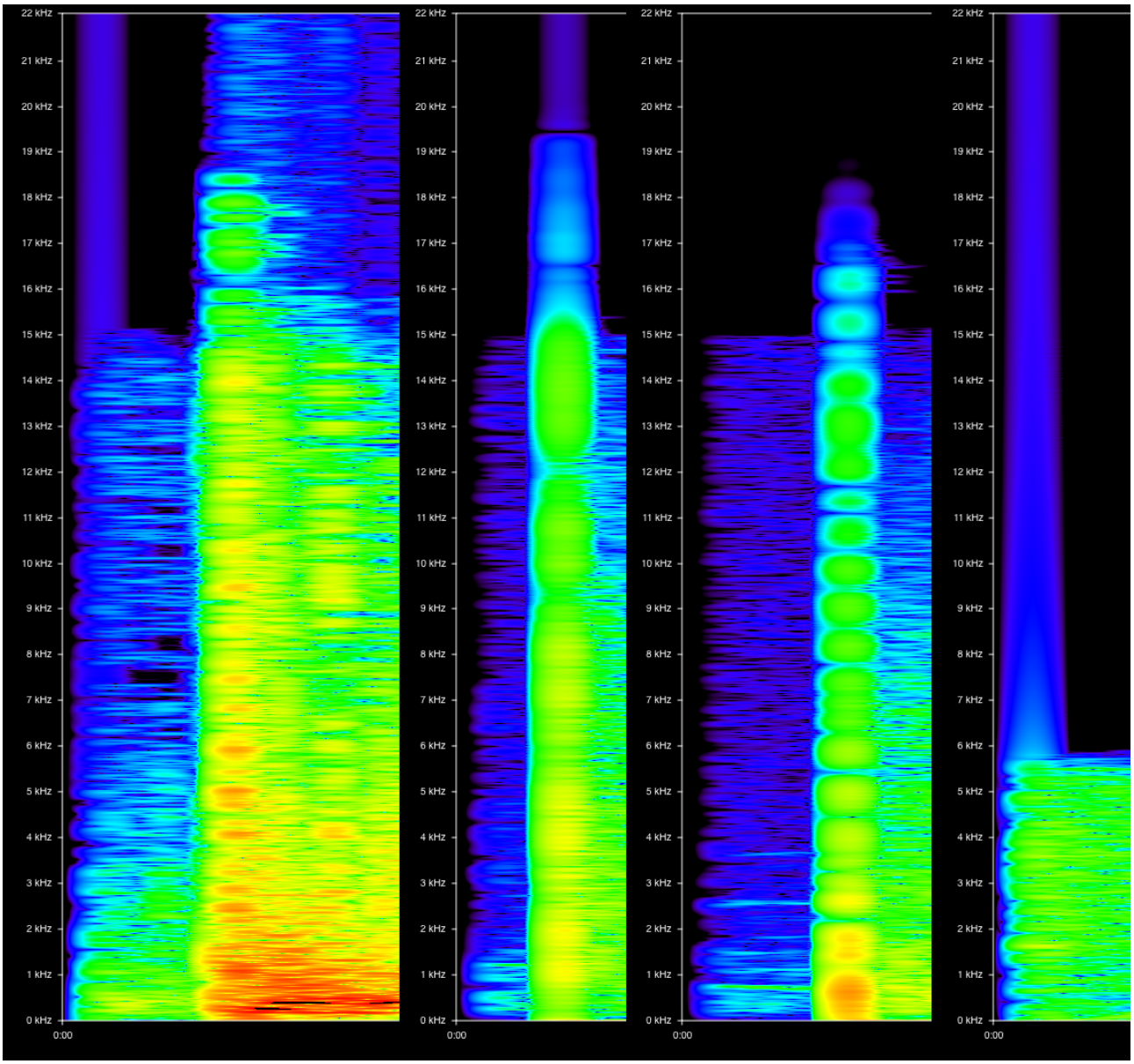

Figure 4: Spectrographs showing the comparison of the sonic behaviour of different kinds of ammunition. From left: live ammunition, live ammunition fired through a rubber-bullet adapter, a rubber bullet and live ammunition fired through a silencer. The spectrographs use time along the horizontal axis and pitch along the vertical axis with the decibel level illustrated by a thermal colour scale, black and deep blue equivalent to low sound levels and deep red to very high sound intensity.

Though I could not hear the difference in these sounds without some visual aid, the distinctions between the shots could be clearly heard by the protestors on the ground. This fact was also perceivable not by sonic but by visual analysis of the crowd's reaction to the gunfire. In studying their reactions, we gained insight into the way these protestors listen, as we found that the speed at which the protestors fled for cover correlated with whether or not the shot was live ammunition or rubber-coated bullets. Through the Israeli human rights organisation B'Tselem and through the testimony of Mohamad Azzeh who survived a shot by a live round to his stomach on the same day that Nawara and Abu Daher were killed, evidence was gathered to support this theory and show that protestors are able to identify acoustically the different kinds of shots being fired at them.[13] The crowd's reflex reaction to the sound of live ammunition shows us that through the necessity of survival and continued exposure to these sounds, they have developed an acute strategy for audibly discerning the distinction between rubber bullets and live ammunition, whether fired directly or through a rubber-bullet adapter. One could conclude from this that the firing of live ammunition through a rubber-bullet extension is frequent enough for it to have become part of an acoustic lexicon that the protestors against the Israeli occupation have learned. This was an important break through that allowed the case to move from the specific murder of these two boys by one soldier to a widespread tactic employed by multiple soldiers on multiple occasions when perhaps the cameras and microphones were not there to capture events.

Let's summarise the oscillations between sound and image necessary for this one audio analysis, where sounds enabled us to see and images allowed us to hear. Shots that were not captured by the lens of the camera were recorded onto their microphones. These sounds then had to be converted to images (the spectrographic visualisations) in order for me to hear the difference between a rubber bullet and a live ammunition. Then, in order to further demonstrate that the practice of firing live

[13] See video of the analysis of the crowd reaction to different kinds of ammunition: http://beitunia.forensic-architecture.org/sound-analysis/crowd-reaction/.

ammunition through a rubber-bullet adapter was audible to protestors, we had to review video material of their reactions. For a comprehensive analysis of sound and of the protestors' listening, the use of image as well as audio was therefore essential.

As illustrated by this introductory discussion of the audio analysis in the investigation of Ben Deri, in this thesis, sound is taken to exceed defined boundaries, be they spatial or sensorial. We will also see how sound exceeds the individual subject or object in its resonance and in its relational qualities. These material and mediated conditions of sound exaggerate common difficulties that arise in the means by which the veracity of any kind of media evidence (not only sound) is assessed. By this I mean that as sound can not be isolated from the space in which it resounds and the people who perceive it, as an article of evidence it can often fail to meet the necessary requirements of legal objectivity. By example in Chapter 1, we will see how the linguistic phenomenon of code-switching means that the sound of one's speech is malleable, shifting according to the person(s) who listen to it; listeners who become, in part, co-producers of speech. We will see how a person's accent is therefore a difficult object from which to derive evidence of national or regional origin, because it is not fixed but potentially transformed by each interlocutor. An accent or a certain vocal tonality cannot be isolated from its interlocutor or from the machine on which it is recorded. As such, analysing sound is a challenge to the ways in which evidentiary fragments are conventionally produced. The relational, leaky qualities of the sounds under scrutiny threaten their objectivity. Sound and speech can therefore act as propositions for soliciting evidence that is based not on individual units of inspection but rather on the idea that truth value can be derived out of their very relational qualities.

Again, the case against Ben Deri is significant in this regard, for using the visual evidence of the crowd moving and reacting to sounds as a collective, rather than only focusing on the victim of the gunfire or the audio alone allows one to understand, by means of analysing group listening, how live

gunfire concealed by a rubber-bullet adapter is not an isolated incident but a known and detectable strategy for serial murder. The video analysis of the crowd reaction alerted us to the movements of the young protestors as they swarmed together and then broke apart upon the live fire, movements that are testament to their collective ear, developed and tuned through their accumulated manifestations of resistance to the occupation. This lived experience—where individual sensing of sound stimulus meets collective action—outdoes the ear of the individual expert, in this case myself, who could not hear the specific constitution of a live round suppressed by a rubber-bullet adapter until I could see it visualised. This attempt to represent the resonance of individual crimes on the collective body embodies an approach that we will see recurring throughout this thesis.

Between the Right to Silence and the Freedom to Speak

Although the listeners in the crowd had highly attuned hearing, they would never testify in an Israeli courtroom and use legally the audio expertise they have developed as occupied subjects. The reasons for this are two-fold: Firstly because they do not recognise the laws and legal procedures of their colonisers, and secondly because the Israelis would never consider these protestors to be credible sources of testimony. As protestors of the state, their voices clearly occupy the wrong side of the legal threshold, outside of legal audibility and inside the realm of political bias, as previously discussed in the context of the trial in which I testified in the UK. This means that the inaudible sound of a gunshot that is itself suppressed is only immediately audible to those whose voices are silenced, both by their own volition and by the refusal of the Israeli authorities to allow them to speak in court. Such a double silencing—one an act of resistance and one an act of suppression—necessitates a doubled act of listening, both physical and political; one that can allow the sounds of the suppressed gunshots to be heard as well as the forces that necessitate the suppression of their voices. A meeting of two forms of auditory scrutiny: that of the law—who can testify, what form the testimony must take—and that of the reception of acoustic stimulus—what can physically or technologically be heard or perceived, and who can hear it. This thesis is dedicated to the analysis

of such moments, where political forms of listening converge with the physical and material conditions of the sound. No better example can introduce this idea than the sonically suppressed sound of a gunshot whose comprehensive analysis can amplify a political act of suppression, both wilful and forced.

One of the main instances of this performance of a politically active moment of withdrawal or silence occurred when, unlike Nadeem Nawara, Mohammad Abu Daher was buried according to Islamic law on the same day that he was killed. This meant that his body could not be subjected to a post-mortem examination, which became a hindrance to the forensic investigation. Such acts of withdrawal are however often overlooked, seen as uninformed or religiously conservative rather than containing their own political message. The burial means that the already violated body does not become subject to suspicion about how it was murdered. That Mohamad was shot by the Israeli soldier in cold blood was witnessed by a large crowd, so the material facts of the crime are seen as irrelevant by the family who view their son's death in the same lineage of colonial violence repeated over and over since the Nakba of 1948. Their withdrawal of his body can thus be seen, rather than only as an obedience to Sharia Law, as consistent with a Palestinian politics of silence in the face of representation. A politics articulated by Edward Said and succinctly summarised by Michael Wood in *Children of Silence:*

> Said doesn't want to speak for the silenced or the ignored—he thinks the Orientalists are already doing that—he wants their silence to be heard. […] the story, as a story, concerns a group or groups of people who are unable to represent themselves not because they cannot speak or have no stories, and not even because they have been repressed, although that is often the case. It is not even chiefly a question of their access to the means of distribution of narrative, although that too is of course important. They cannot represent themselves, Said is saying, because they are already represented.[14]

Wood explains how Said wants silence to be heard over other forms of representation. Many strategies for listening to silence will be demonstrated throughout this thesis, and by way of introducing those ideas let us spend the next paragraphs ascertaining from this case what kinds of

[14] Michael Wood, *Children of Silence* (New York: Columbia University Press,1998), cited in Marianne Constable, *Just Silences: The Limits and of Possibilities of Modern Law* (Princeton University Press, 2009), 75.

silence Mohamad Abu Daher's immediate burial performs, and how can these silences may be heard.

In burying the body of Mohammad Abu Daher before an autopsy, the family performs a withdrawal of the corporal facts that could tell, in a legal context, the specific circumstances of his murder. In doing so they place their son's body in a metaphorical mass grave of colonial violence. Mohammad Abu Daher does not become a victim but another martyred body in a collective struggle for liberation. Mohammad Abu Daher does not become an isolated body in a morgue waiting for the coloniser to investigate the subject of its own violence. He is not made subject to the state's performative self-investigation, and therefore he is not instrumentalised in its broadcasting of colonial occupation as a civil and democratic project. A similar tactic was performed multiple times in the recent protests of July 2017 in East Jerusalem and the West Bank against the installation of metal detectors at the entrances of Al-Aqsa Mosque. Three dead bodies killed during these protests were smuggled out of a Jerusalem hospital and carried in white sheets over the separating wall and into the jurisdiction of the Palestinian authorities. In this case, as it may have been with Mohammad Abu Daher's body, this was done to prevent the Israeli Defense Forces from abducting and disappearing the bodies. An Al-Jazeera news report from August 2017 states: "It is widely known that Israel employs the practice as a tactic for leverage in negotiations. In 2012, Israel released the bodies of 90 Palestinians in a gesture for reviving peace talks between Israeli and Palestinian officials. And, between 2013 and 2014, some 27 bodies were returned."[15] After death, the protesting body is a continued object of political contention, which Palestinian families of the abducted corpses claim is a strategy of "psychological torture" inflicted upon them by the Israeli authorities.[16] As such, even the intentions of a neutral observer to conduct an analysis of the dead body cannot remain neutral, as any post-mortem is a political intervention that can disturb the foundations upon

[15] Zena al-Tahhan, "Why does Israel keep the bodies of Palestinians?" *Al Jazeera* (August 10, 2017): http://www.aljazeera.com/indepth/features/2017/08/israel-bodies-palestinians-170810075805418.html.

[16] Ibid.

which resistance to occupation is fought. If even after death the body continues to struggle for liberation, then the space of post-mortem forensic examination cannot escape the politics of this situation and must proceed in a manner that exceeds the neutrality of science and conducts its investigation knowing the political message behind each of its incisions.

Without his body to analyse, the main piece of evidence we have to investigate the murder is the sound of the shot that killed him. Yet, as we will see in greater detail in Chapter 2, sound in medicine has long been a way for doctors to make non-intrusive analyses of bodies. Just as doctors have learnt to 'see' inside the body by listening with a stethoscope or by doing an ultrasound, here, the shot that killed Mohammad Abu Daher is a sound that allows a non-intrusive analysis into his buried body. In line with the politics of post-mortem practice outlined above, forensic listening here represents both a corporally and politically non-intrusive way to reach some acknowledgment of his killing and advocate against his and other such murders. In conducting a sound analysis of this gunshot, we gain insight into the specific material facts surrounding his death, while respecting the body's silence. In analysing the gunshot to establish that it is not a rubber bullet but in fact live ammunition that has been intentionally suppressed to sound like a rubber bullet, we technically and forensically instantiate and advance the politics of Said, from a metaphorical listening to silence to a material analysis of the silence itself. The means of the investigation is very literally listening to and analysing forms of silencing and suppression, where one important distinction lies in understanding the way the rubber-bullet adapter suppresses gunfire by comparing it to that of a 'silencer' (see Figure 4). So the missing frequencies, the negative sound, become proof of the effect the rubber-bullet adapter on live ammunition, and this in turn allows us to understand the use of the rubber-bullet adapter as a strategy used to conceal the crime itself. In this way, we don't need to disturb the body to know how Mohammad Abu Daher was killed by Ben Deri, as this was witnessed by all present— mostly the unheard witnesses of the colonial occupation. However legally speaking, we do need to be able to decode the sound to distil the fact that the murder was perpetrated intentionally.

In listening to the attempts to silence the gunshot, the investigation remains focused on the representation of the violent act of murder before the shot hits Abu Daher's body. Through this non-corporally intrusive sound analysis, the focus of the investigation is on the perpetrator, rather than seeking to speak for, or stand for, the victim.

The circumstances of these deaths, and the non-intrusive analysis of them via a forensics of sounds, makes clear the crucial link between physical and political listening. In the first instance, in order to comprehend the details of the murders, there is a necessity to listen to the material information of the sound recording, and to physically hear how the live ammunition has been technologically suppressed, and to some extent, the presence of live ammunition 'silenced'. But further, in this act of forensic listening, we engage too in a political listening, becoming conscious both of the colonial silencing of the Palestinian struggle, and this community's own wilful and resistant silence. This meeting of two kinds of listening, out of which various kinds of silence surface, represents the contemporary contribution of this project to the well-rehearsed postcolonial arguments of Said, amongst others, on the importance of *listening to* rather than *speaking for* the suppressed.

What complicates these technically instantiated forms of listening to silence and the anti-representational politics of Said, however, is that we cannot arrive at these material conclusions or fully understand the significance of the withdrawal performed by Mohammad Abu Daher's family without having had access to the autopsy of Nadeem Nawara. For just as it is a bold political claim for Abu Daher's family to withdraw his body, it was equally politically bold for Siam Nawara, Nadeem's father, to pursue the material facts of the investigation at all costs, including subjecting his son's body to an autopsy by the Israeli authorities responsible for investigating crimes committed by the military. For although Mohammad Abu Daher's murder was never formally investigated and no one was charged with his killing, it was only possible for local NGOs like Defence for Children International to bring advocacy and awareness to his murder because of the autopsy of Nadeem

Nawara's body, which confirmed that Nawara was killed by a live round. With the autopsy diagnosis that Nawara's death was the result of a live fire, I was then able to analyse the sound of the shot that killed Nawara knowing that that was the sound of live fire suppressed by a rubber-bullet adapter. What was then needed was to look at how this shot behaved acoustically in comparison to the rubber bullets fired on the same day that were recorded by the same microphones. In this sense Nawara became patient zero in a diagnosis of the strategy of murder, which not only took his life but also claimed the life of Mohammad Abu Daher, wounded Mohamad Azzeh, and, from the crowd reaction stills above, likely also killed and injured many others while the cameras and microphones were not recording.

The physical evidence of Nawara's autopsy enabled me to correctly hear the sound of the suppressed live fire, or rather, to understand what it was that I was hearing. The corporal evidence of one case augmented the auditory evidence of the other; here intrusive and non-intrusive analyses sit side by side. The forms of silencing and suppression behind the sound of those lethal live rounds would have remained [inaudible], drowned out by the loud blast, if it were not for the will of Nadeem Nawara's family to allow his body to speak. In this investigation, it proved necessary on the one hand to listen to silences and to amplify them to the level of speech, and on the other hand to resort to the forms of speech that are readily available in the compromised legal forums that police the truth. This is what Siam Nawara did, even though it is clear that the hearing received is humiliatingly unjust in its verdicts and politically compromising, set within the parameters of the colonial state. Further, he risks being stigmatised by fellow Palestinians as collaborating with the occupiers, and risk his sons body being abducted by the Isreali state as a punitive measure against him and his family. Navigating this duality between the strategies of the families of Nawara and Abu Daher, between a withdrawal and a revelation, between silence and speech, delineates the diagram of this thesis and the reason why this case serves as its introduction. For it is repeatedly the task herein to listen to silences or suppressions, to amplify the [inaudible], and in doing so, to refuse

silence as such. To use the space of forensic analysis as a means to navigate between representational and anti-representational politics, by amplifying negative sound and in doing so to advocate for the crimes of the unheard, without negating the use of silence as a political strategy. By now it should be clear that these separate modes of hearing silence, both materially and politically, are entangled. One prerogative of this thesis is to make apparent how one kind of hearing influences the other, and that it is only by identifying these pathways between material and political acts of listening that the work of forensic analysis itself can become political. I support the ways in which forensic listening can supplement Said's politics of refusal, to provide an additional layer of resistance that does not stop at or become satisfied with political silence and withdrawal, but in multiple circumstances, demonstrated throughout this thesis, can submit silence and suppressed sound as material evidence itself. Evidence that can remain within the threshold of legal audibility while also crossing into that terrain which is legally silent, that of the collective political claims that law courts are not adapted to hear. Through this doubled act of listening to suppression, the analysis of a silenced gunshot can become a form of listening to and documenting collective silence.

Making Sound Legible

As we have seen, the opening transcript of this thesis is a medium through which the transmission of real audio evidence becomes entangled with a theoretical and critical analysis into the ways in which the law listens to concerns and rights. As an audio investigator, I am often tasked with understanding what was heard at a given event; as in the above example of the crowd's reactions, it is often central to the investigation to ascertain how people listen, as a kind of audible evidence itself. This means again that these cases technically actualise the necessity to first of all understand listening in terms of the urgency of the investigation at hand, but then also to understand culturally, technologically, and historically how the contemporary ear has been constructed.

This is where critical literature is of importance to such investigations, thus requiring that this thesis be strengthened by a diverse bibliography. Although some of these authors are not directly cited they have been vital to constructing the bibliographic backbone through which to develop the concepts herein. They include the jurisprudence and legal theory of Cornelia Vismann, Peter Goodrich, and Marianne Constable; the dramatic scripts of Harold Pinter and Samuel Beckett; the philosophical analyses of Gemma Corradi Fiumara, Louis Althusser, Jacques Derrida, Giorgio Agamben, Michel Serres, and Michel Foucault; the psychoanalytical literature on the voice of Shoshana Felman and Mladen Dolar via Jacques Lacan; and postcolonial and comparative literature on speech politics by Tom Keenan, Emily Apter, Judith Butler, Gayatri Chakravorty Spivak, Nancy Rose Hunt, Rosalind Morris, and Edward Said.

Although this is a thesis that focuses on listening, this work has a mostly negative relationship with the burgeoning literature on audio culture and sound studies from the last ten years. With some notable exceptions, such as recent titles including *The Ancient Phonograph* by Shane Butler, *Listening to War* by J. Martin Daughtry, *The Sound of Culture* by Louis Chude-Sokei, and Jonathan's Sterne's *The Audible Past,* this field of study has emerged from a phenomenological discourse in which the writing of Maurice Merleau-Ponty fused with an indeterminate reading of the music of John Cage has been used to argue that sound is ephemeral and intangible. Much of this literature uses Jean-Luc Nancy's *Listening* (2007) as its point of departure to think sonically that the ear, unlike the eye, cannot be shut.[17] Yet in my work, the fact that one cannot physically shut one's ears is incidental to the study of the thresholds of political and juridical listening, which can all too easily become shut to significant signals, or impenetrable to certain sounds.

This dominant contemporary school of audio culture is heavily influenced by Don Ihde's 1976 work *Listening and Voice: A Phenomenology of Sound*, which makes two main claims: firstly that sound is

[17] Jean-Luc Nancy, *Listening*, trans. Charlotte Mandell (New York: Fordham University Press, 2007).

intangible and secondly that it can therefore be used as a form of resistance to an ocular-centric world view.[18] Yet rather than pit sound against vision, I would like to argue for a bleed between the ocular and the auditory that is more democratic, non-hierarchical, and ever-evolving. This research requires that aural and visual evidence, listening and seeing, must work in synchrony. Furthermore, I contest the field's assertion of sound as intangible. The continued prevalence of this school of thought is demonstrated in *Sounding New Media* by Frances Dyson (2009), who states in the introduction: "As Don Ihde pointed out decades ago 'a sound is always multiple, always heterogeneous, being neither visible or tangible, sound is never quite an object, never a full guarantor of knowledge."[19] Sound in such texts is often made exceptional to the world around it, and even transhistorical, as Jonathan Sterne argues: "To say that ephemerality is a quality special or unique to sound, rather than a quality endemic to any form of perceptible motion or event in time, is to engage in a very selective form of nominalism."[20] Sterne then goes on to make the same critique of a non-material approach to sound: "Anyone who has heard fingernails on a chalkboard or footsteps on a concrete floor can recognise that listening has the potential to yield a great deal of information about surfaces."[21] However his biggest critique of what he calls the "audiovisual litany", but what I would describe as the 2000–2010 era of phenomenological sonic discourse, is that in its idealising of the medium it imagines listening as a transhistorical and natural act, and not, as Sterne puts it, "an artifact of the messy and political human sphere."[22] These conditions form the act of forensic listening, where sounds are material and contaminated by the politics of the world in which they resound. The conceptual framework which defined sound as transhistorical and intangible therefore did not match the kinds of sounds that I was analysing and were not useful bibliographic

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[18] Don Ihde, *Listening and Voice: A Phenomenology of Sound* (Ohio University Press, 1976).

[19] Frances Dyson, *Sounding New Media* (University of California Press, 2009), 4–5.

[20] Jonathan Sterne, *The Audible Past: Cultural Origins of Sound Production* (Durham: Duke University Press, 2003), 14.

[21] Ibid., 19.

[22] Ibid., 13.

references for my argument that sound is not in excess of but firmly embedded in the world; a medium through which political and historical debates are registered and contested.

These 2000–2010-era phenomenological readings of the acoustic world that saturated the most cited authors of audio culture such as Brandon LaBelle, Christoph Cox, and Adriana Cavarero, as well as Jean-Luc Nancy, propelled me towards practitioners working with sound in more tangible ways. This requirement was found in part in *The International Journal of Speech, Language and the Law*, a peer-reviewed publication that publishes articles on any aspect of forensic language, speech, and audio analysis. One of its editors, Dr Peter French, is one of the biggest influences on the writing of this thesis. French is the founder of JP French Associates, an independent forensic audio laboratory that has provided evidence for over 5,000 cases since its establishment in the mid-1980s (Chapter 1 will profile Dr French in more detail). During my 2010 interview with this forensic linguist, he told me: "Last week, a colleague and I spent three working days listening to one word from a police interview tape."[23] This exemplifies French's radical approach to both listening and the theoretical paradigms that surround audio culture. Unlike the above mentioned theorists whose focus at the time was on sound's immaterial qualities, French's approach is markedly material. French's formulation renders sound dissectible, replicable, physical, and even corporeal. What enables French's radical approach to sound is the forensic intensity with which he listens, which allows the audio object to reveal a large amount of information about its production and form: the space in which it was recorded, the machine that recorded it, the geographical origin of the accent, perhaps, as well as details of the age, health, and ethnicity of a voice. Contrary to the abstractions of phenomenological sonic theory, French's approach reveals in a single sound the substance of daily material and social life. It is in this way that French's work and the interview I conducted with him provide both the methodological and conceptual approaches to sound to which this thesis subscribes.

[23] Peter French, interview with Lawrence Abu Hamdan, York, United Kingdom, January 28, 2010.

Yet as a part of this thesis is dedicated to historicising the work of forensic linguists like Dr Peter French, it is worth saying here that, as with all cases of legal, social, and ethnic profiling, French's listening and that of his colleagues walks a thin ethical line. This mode of forensic listening allows voices to be crudely defined by race and class and in doing these forms of analysis can have echoes of eugenics and other positivist forms of legal discrimination. This is becoming more and more true with more recent applications of forensic listening, which is today used primarily on two fronts: the speaker profiling of asylum seekers (which I examine in Chapter 1), and developing voice and acoustic algorithmic analysis for the security industry (which I examine in Chapter 2). Currently forensic listening is applied on such a scale that law enforcement agencies and security services often cannot afford the expert listening of professionals like Dr French. Hence we are entering a time in which there is both an over-demand for the governance of the voice, and an inadequacy of authentic means of producing such a governance. Forensic listening is therefore included in this thesis alongside reflections on the forms of exclusion and sometimes legal abuse that it enables. Through a series of case studies, I will argue when there is an imbalance between material and political listening, in which authorities seek to unjustly produce acoustic and auditory evidence. As a response, the following body of casework and research attempts to listen back to the ways in which the subjects of these forms of analysis are being heard and by reassessing, via new auditory evidence, the sometimes incorrect and unjust findings of the authorities and their given experts, border agencies, and surveillance technologies.

Yet in spite of the sometimes oppressive applications of forensic listening, it is not necessary to abandon the field but rather to identify where it has been and can be used to push at the threshold of political and legal audibility and force open the borders by which legitimate speech has been conventionally constituted. In this way, forensic listening practices might solicit new forms of political debate, and might pick up new voices, sounds, and silences that have not previously entered the forum. The thesis therefore oscillates between moments of forensic listening where the practice

can have emancipatory and radical potential, and critical reflections about its negative use as state surveillance apparatus, which seeks to assert new forms of power that mute and control the speaking subject. Each chapter—encompassing audio component, critical theoretical discussion, and investigative casework, together—embodies these contentions, both arguing with and against the series of practices that I define as forensic listening.

Chapter 1: The Freedom of Speech Itself

Accompanying this chapter please review the following relevant material included in the portfolio of practice:

Investigation: Conflicted Phonemes

Project: *The Freedom of Speech Itself* (2012) 35' stereo audio

&

Contra Diction: Speech Against Itself (2015) 35' video documenting live performance

URL: https://labuhamdanphdpracticeportfolio.squarespace.com/chapter-1/

Chapter 1: The Freedom of Speech Itself

In an essay titled "Mengele's Skull", Thomas Keenan and Eyal Weizman suggest that in the mid-1980s international justice entered a new era.[24] The authors claim that unlike the seminal 1961 trial in Jerusalem of Adolf Eichmann, which was archetypal of an era of truth production predominantly defined by the witness testimony of the victims of violence, in the mid-eighties international justice became a stage for a different type of narrative: "a second narrative, not the story of the witness but that of the thing in the context of war crimes investigation and human rights."[25] The authors claim that what brought this new era into existence was the exhumed remains of the German SS officer and Nazi physician Joseph Mengele.

> If the trial of Eichmann indeed marks the beginning of the era of the witness, we would suggest that the exhumation of a body thought to be that of Joseph Mengele in June 1985 signals the inauguration of forensics in human rights and international criminal justice. To better understand the present place of forensic evidence in this context — not only the exhumations that still go on but also the use of DNA, 3D scans, nanotechnology, and biomedical data in these investigations—we must return to the story of Mengele, where it all began.[26]

One year before the forensic examination of Mengele's remains, a piece of legislation was passed in British criminal law which also marked a crucial shift in the conventions of testimony. The 1984 Police and Criminal Evidence Act (PACE) made it mandatory for all police interview rooms to be audio-recorded, and to do so all police interview rooms were to be equipped with cassette recording machines. This meant that all interrogations from then on would be audio-recorded instead of being transcribed so-called 'verbatim' by the police officer present.

The passing of this law, which changed the form of testimony from text to voice, unintentionally catalysed the birth of a radical form of listening that would transform the speaking subject and the laws that govern their voice. This legislation significantly stretched the role of the juridical ear from

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[24] Thomas Keenan and Eyal Weizman, "Mengele's Skull," *Cabinet*, no. 43 (Fall 2011): 61–67.

[25] Ibid., 62.

[26] Ibid, 62.

simply reading words to actively listening to the process of speaking aloud as a new form of forensic evidence. I will argue that the cassette recorders placed in all police interview rooms reorganised the voice as evidence, and therefore PACE—as we will see throughout this chapter—is for my thesis what Mengele's skull became for Keenan and Weizman. That is, the changes it activated are representative of an epistemic and technological shift that emerged in the mid-1980s and which gave rise to new forms of testimony based on the analysis of objects rather than witness accounts. Yet in the cases outlined throughout this chapter whereby the voice itself becomes an object of analysis, there is no clean shift from witness account to the expert analysis of objects, because the witness account and the object under investigation are one and the same thing. The voice is at once the means of testimony and the object of evidence for forensic analysis. This chapter is dedicated to an analysis of the juridical and political place of the voice with the advent of forensic linguistics, whereby the voice became a legal resource that sits somewhere between testimony and evidence. I will document the types of listening that this law inaugurated from 1984, and from this point of provocation develop a discussion about the political, juridical and ontological tensions between a speaking subject and the object quality of their voice.

1984 (The Year not the Book)

The 1984 Police and Criminal Evidence Act (PACE) was a major piece of legal reform in the United Kingdom, of which Code E was seen as a solution to the rising number of complaints that the police were falsifying confessions and altering statements made during interviews.[27] Prior to this, all statements were written down 'verbatim' by police officers and signed off by the suspect. The reform sought to increase the transparency of such procedures, as there would now be a more precise record of exactly what was said, which both parties could refer to in court if necessary.

[27] See Code E full legislation: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/495716/52344_00_Pace_Code_E_Accessible_v0.3.pdf.

Before the introduction of PACE, the complaints against the verbatim transcript made by police officers came in one direction; namely that the police were either falsifying evidence or had not understood what the suspect had said or had intended to say. These complaints were made with little means to verify if they were legitimate or not in court, as it was one person's word against the word of the police officer conducting the interview. PACE was implemented to end these kind of disputes, as there would be an audio recording of what actually had been said rather than a transcript made by a non-objective police officer. However, PACE did not end disputes about what was and wasn't said in the police interview rooms, but rather multiplied them. The information stored in a voice pertained not only to a more accurate record of what was spoken, but a record of the speech itself. This allowed jurors and judges a potential counter-narrative: sometimes the voice on the audio recording confirmed a narrative of events that could have been drawn from a written transcript, but sometimes the voice created its own more complex story, with its stresses and inflections, emotional tonality, class, and geographic origin. What purported to create a stronger signal in fact added noise into the system of justice. Vocal noise became the next site of contest as police quickly discovered that having the recording of a voice was not enough—they also needed experts to prove that two recordings of the same voice matched each other or to determine if an incriminating word or phrase could have been spoken with another intentionality, contained subtly within the event of its sounding. The audio record proved not to be the definitive defence against claims of police corruption but an even more contentious object, around which opposing parties struggled to form differing narratives and debates in the courtroom. What was seemingly evident to a casual listener had to be subject to expert scrutiny in order to make claims beyond reasonable doubt over a given voice. Therefore the audio recording of the interview necessitated both the police and the defence to reach for expert listeners in the form of university-accredited linguists, phoneticians, and philologists to produce reports and testify about the idiosyncrasies of each of the spoken voices that were under investigation.

This is how the recording of police interviews inadvertently created and expanded a new epistemology of language based on speaker profiling, voice identification, and voice prints, through which the regional, ethnic, emotional, psychological, morphological, and lexical identities of any given speaker could be contested. Moreover, prior to PACE, if it was suspected that someone's voice was on an incriminating recording—for example a wire-tapped telephone conversation in which there was discussion of an illicit act, or a CCTV surveillance tape of a masked bank robber shouting "Hand over the money!"—that person was asked to come to the police station and give a voluntary voice sample. After PACE, doing so was no longer voluntary: the police simply had to hold an interview with the suspect to access their voice. Once they had the voice of the suspect on the police interview tape they could then send this together with the wire-tapped recording to a forensic linguist associate or laboratory. This expert would analyse the two recordings for pitch, accent, impediments or other vocal idiosyncrasies and from that derive whether or not those two voices were indeed issued by the same speaker.

The introduction of PACE in 1984 is therefore how the field of forensic listening was born. After the passing of PACE, forensic linguistics was a field of expertise that was suddenly in great demand because of the necessity to provide expert testimony that could decode the noise that the voice added to words. This also gained momentum because the more PACE continued, the greater the capacity these experts had to make more solid claims, because the database of voices, against which it could compare and analyse any given voice, was growing with every new police interview conducted. In 1986 the Essex Police newspaper reported, "in a 20 month period between April 1984 and January 1986, 8,423 taped interviews were carried out using approximately 29000 C90 [cassette] tapes" (Figure 5).[28] This effectively meant that within the first months of the enforcement of Code E of PACE, the United Kingdom had generated one of the largest voice archives in the world. A resource for the general study of linguistics like none other, and yet there were only a few

[28] Author unknown, "Essex Police Introduce Taping of Interviews," *The Law,* no. 180 (April 1986): 1.

forensic linguists who operated in dedicated laboratories of voice and sound analysis who qualified to access it.

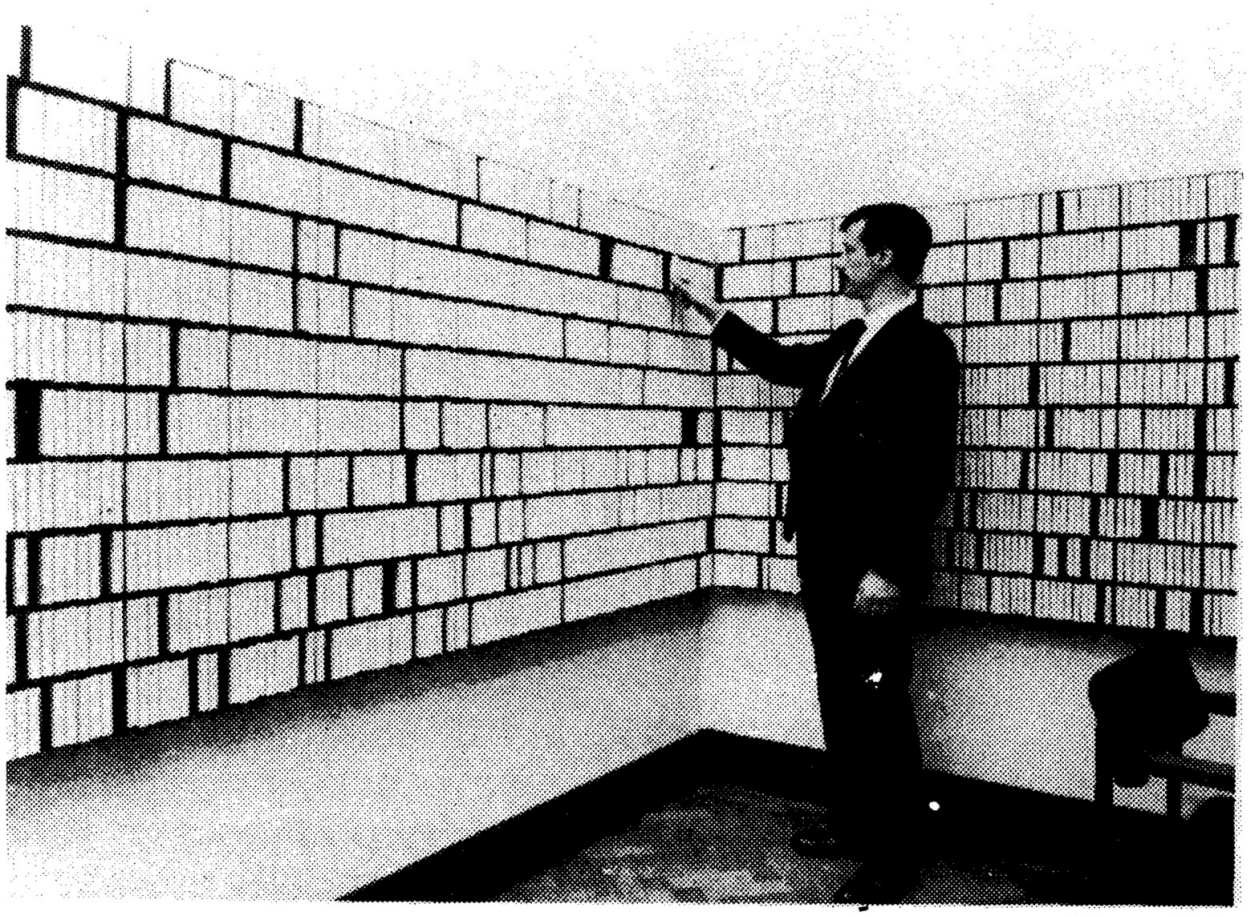

Figure 5: A police officer in 1986 demonstrates the amount of cassette tapes accumulated and stored in one police station in Chelmsford Essex. Source: *The Law,* no. 180.

Peter French of JP French Associates, the United Kingdom's most prominent independent forensic audio laboratory, has worked on over five thousand cases since 1984, including most recently the murder of Trayvon Martin. Its founder, Peter French, told me in reference to PACE that "whereas up to that point I had a trickle of work coming in, all of a sudden it was as though there had been a thunderstorm and it started raining cassette tapes."[29] Contemporaneously, laws similar to PACE began to be put into legislation across the world. For example, in Australia in 1986 it was ruled that all confessions made to the police had to be audio-recorded if they were to be used in court. However in Australia, a forensic linguist named Dr Diana Eades was central to the passing of the law, rather than, inversely, forensic linguistics being a by-product of the law, as it was in the UK. In 1985 Dr Eades was tasked with the analysis of an Aboriginal speaker of English who had been convicted of murder based on an alleged verbatim transcript of a confession made to the police. The lawyers defending the convict thought that the police-authored transcript did not sound like the way that the Aboriginal speaker used English, but needed an expert to testify to this. Eades told me in an interview: "When I saw the confession I was shocked at how different it was from the way that he spoke, and it was supposed to be verbatim."[30] Eades then solicited hours of tape recordings of this man's speech and studied the way that Aboriginal people from that part of Queensland spoke English, in order to compare this data with the police transcript. She testified that that this man could not have said those words in that way and therefore that the confession could not have been a verbatim transcript. With the use of audio recording, she proved that the distance between written language and its spoken form is too great for the law to rest its verdict only on the transcription of speech, and that the audio was vital to understand the intention of the speaker. What is more, her work exposes how in Australia, the greater the distance one's speech is from the English language as a written form, the smaller one's chances of receiving a fair and just legal hearing will be. In 1986, the Australian Parliament acknowledged that the gap between written and spoken English could not

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[29] Peter French, interview with Lawrence Abu Hamdan, York, United Kingdom, January 28, 2010.

[30] Diana Eades, interview with Lawrence Abu Hamdan, by telephone, August 30, 2011.

be bridged and passed a law, following PACE in the UK, that all police interviews must be recorded in audio form.

In Australia, the work of a forensic linguist advocated for the legal acknowledgement of the gap of information between speech and text. In the United Kingdom forensic linguistics was brought into existence because of the legal contests between transcribed and spoken speech. This gap then is the terrain from which forensic linguistics was born. However after the passing of PACE and with the continued practice of forensic linguistics, another gap opened up, not only between speech and text, but between speech and voice. This second gap opened up by forensic linguistics—between two sources of audio, rather than between audio and transcript; between one's voice and one's spoken words—is the space of inquiry of this chapter. I will investigate the implications of operating in the 'borderland' between the two halves of the speaking voice, in order to argue that such forensic forms of investigation force us to rethink the rights and regulations of speech and silence.

Disputed Utterance

An early example of what Dr Peter French calls a case of "disputed utterance"[31] is descriptive of the work he has been practicing since the mid-1980s, and therefore also of this tension between the two halves of an utterance—the verbal and the vocal. French was asked by the police to analyse an audio cassette of a police interview with a British man who had a Punjabi accent. The man was the suspect in a case in which his lover suddenly died next to him in bed. The man denied that they had had any sexual interaction before he died, and is heard saying on the police interview tape "after one cough he died." The police, however, heard the man say "after wank off he died", and used the perceived inconsistencies in his testimony to charge him as a suspect in his lover's death. The foundation for the suspicion against him was that he had initially said there was no sexual interaction and had then changed his story during the interview by pronouncing what the police

[31] LAH interview with Peter French, 2010.

perceived to be a contradictory statement. French's expert testimony and report pertained to the specific qualities of a Punjabi-British accent. French was able to identify for the court that there was a barely perceptible break between the words 'one' and 'cough' rather than the break that the police officer claimed to have heard between the 'c' and the 'ough' of 'cough'. Was it "onec ough" which had a sound resemblance to the words "wank off" or was it "one" and then a new word "cough"? French's testimony contradicted the perception of the police and confirmed that the man had in fact said "one cough". The outcome of the case hinged on a micro-second break in the flow of this man's speech. By proving the existence of a small enough silence between 'one' and 'cough', French convinced the police that this man was telling the truth about not having had a sexual encounter with the victim before he died. As there was no other evidence of the suspect being involved in the death of his lover, eventually this expert testimony led to the his release as a suspect.

I believe French chooses to use this anecdote to describe his work because it has a memorable sexual narrative and engages his non-linguistically versed audience in a straightforward and explicit way, in order to demonstrate the stakes involved in his listening, which for the most part is too laborious and technical to afford such expedient explanation. However, for the argument I am making in this thesis, cases of "disputed utterance" exist as much more than anecdotes about the specific means through which an individual case reached its legal conclusions. Cases like this are highly illustrative about the way in which, with the inclusion of the audio record, the voice itself becomes treated like a crime scene, in which a crucial trace of the criminal event is stored. In the above example, the audio-recorded testimony becomes both witness testimony and a material trace of the event of someone's death. Determining from the audio if he said "wank off" or "one cough" becomes equivalent, or rather stands in the place of, the DNA analysis of traces of the victim's sperm at the crime scene. If it was determined that "wank off" was indeed spoken then this would constitute trace evidence that would contradict his subsequent spoken testimony in court. The manner of this contradiction is startling because it shows us the ways in which once recorded in a police interview,

our voices are no longer our own. It was no longer possible for him to speak to what he had himself uttered; his voice was now an article of evidence in the hands of experts to identify the linguistic DNA of his utterance. This treatment of speech is definitive of testimony in the era of forensic listening, in which, since the mid-eighties, the boundaries between what constitutes testimony and what constitutes evidence become much less defined.

The legal maxim and principle of law *testis unis, testis nullus*, which translates as "one witness is not a witness", provides a potential origin for thinking through the logic of this doubling of testimony into both its subject and object forms. *Testis unis, testis nullus* means that testimony provided by any one person is to be disregarded unless corroborated by the testimony of at least one other. In this sense a certain doubling of testimony is always required. In such cases where there is only one witness to an event, as in the case against the man with the Punjabi-British accent cited above, the voice is made to become a second source of testimony, in addition to the words it speaks, another witness or evidence to the event. The voice comes to double the testimony of the single witness. The double elements of the testimony produce a division of the voice, which in turn establishes two witnesses within one voice. In the case above the testimony provided by each of these witnesses is corroborated by the other, but in other circumstances they can also contradict one another. Here, an internal betrayal occurs within the single utterance—between language and body, subject and object, testimony and evidence. To understand the truth of an event where there is only one witness, their testimony has to be split into *the said* and *the sound of saying* for it to be considered testimony at all.

Just Voices

The problem of the two halves of human speech has constituted one of the central questions of political philosophy. As such, I will now turn to several philosophical conceptions of speech in order to understand the theoretical context through which we can examine the impact forensic linguistics

has had on the speaking subject. Here, for example, is Aristotle's well-known definition of the political:

> Nature, as we often say, makes nothing in vain, and man is the only animal whom she has endowed with the gift of speech. And whereas mere voice [*phone*] is but an indication of pleasure and pain and is therefore found in other animals (and for their nature attains to the perception of pleasure and pain and the intimation of one another, and no further), the power of speech is intended to set forth the expedient and inexpedient, and therefore likewise the just and the unjust. And it is a characteristic of man that he alone has any sense of good and evil.[32]

The spoken word is what makes us distinctly political animals, yet vocal noise, the substance of speech, is what we share with many other 'non-political' species. The distinction between speech (logos) and voice (phone) is made here in parallel with the distinction between being expedient and inexpedient, just and unjust, good and evil. Aristotle draws a correlation between the distinction between phone and logos, and the foundational qualities of ethics that constitute political thought and practice. In other words, when we speak we perform our distinction from other animals, and yet in each performance of this distinction we must paradoxically use our voice, which exposes our proximity to the 'non-political' animal. To be just is to know what constitutes injustice, so the exclusion of injustice is central to justice itself, and the duality of the voice mirrors this. For Aristotle, vocal noise represents the animalistic and apolitical, whereas verbal speech makes humans distinctly political animals. The paradox is that speech needs vocal noise, both as its material form and in order to exclude it as an inferior animalistic sound, in order to claim that human speech has a monopoly of ethical and political thought and practice above the rest of the animal kingdom. At play in this establishment of the political field is always the degree to which the phone (the animal and corporeal qualities of the voice) is excluded and the degree to which logos (the semantic voice) is included. The material conditions of the voice mean that there can never be logos without phone, yet phone is both excluded from the political and necessarily retained at its core. Phone is not a remnant of the evolutionary progress that brought us to politics out of the animal world, but rather

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[32] Aristotle, *The Basic Writings of Aristotle* (New York: Modern Library, 2001), 1253a, 7–18.

is present as a distinction we need to continually perform in order to retain our place as political animals.

Mladen Dolar's important thesis on the voice, *A Voice and Nothing More*, contextualises Aristotle's argument to demonstrate that the duality of the voice is crucial to the functioning of contemporary political institutions.[33] He describes the voice in the construction of the school, the university, the church, the parliament, and, of particular interest to this study, the courtroom. For Dolar, in relation to the courtroom and other legal institutions, the importance of the role of the voice begins in the fact that vocal performance is the material out of which the law is constructed: "For the law to be enacted, one has to have recourse to the voice, to orality."[34] Developing his argument, Dolar quotes the following extract from a French guidebook for jurors:

> The orality of the voice is the fundamental rule of the court. This rule decrees that the court can form its conviction only on the basis of the elements orally and contradictorily debated in the court. This is why the court and the jurors cannot consult the files during sessions […]. This is also why one cannot read the deposition of a witness before she or he has testified: the file is always secondary.[35]

What provides further evidence to Dolar's claim of the centrality of the performed voice in the legal process is the function of speech acts. Speech acts allow the law to become enacted and therefore the spoken voice is an infrastructural component of legal practice. Such speech acts include the moment when a police officer proclaims one's "right to remain silent", the maritally consummating "I do", and the orally delivered oath "to tell the truth, the whole truth and nothing but the truth" before taking the witness stand. These speech acts demonstrate what Dolar argues—that for the law to acquire its performative might, it must be delegated to the spoken voice.

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[33] Mladen Dolar, *A Voice and Nothing More* (Cambridge: MIT Press, 2006), 107.

[34] Ibid., 109.

[35] Ibid., 108.

In the United States Supreme Court, to this day, there is a speech act that is revealing of the way in which the law operates through the voice. When the clerk enters the courtroom at the beginning of the day, they inaugurate the proceedings by striking the gavel onto the woodblock and waiting for the silence this commands of its audience. The clerk then announces, "the Honourable, the Chief Justice, and the Associate Justices of the Supreme Court of the United States", and then, for four seconds, they interrupt their own speech to sing out "Oyez Oyez Oyez", before returning to their declaration that the court is now sitting and that God is now blessing the honourable court. With a second strike of the gavel the clerk sits down. In this ritualistic performance, we see the means by which the law is vocally summoned into existence. The court is endowed with the right to carry out justice only after this announcement is made. It functions as a juridical amplifier, the switch that makes legally inaudible speech audible. This particular vocal act transforms words spoken in the courtroom from everyday communication to the extraordinary conditions of testimony. The clerk uses this speech act to announce that the courtroom is precisely the site where speech acts. But what is striking is that the clerk uses not only a phrase of speech spoken aloud, but a non-verbal vocal strategy—those four seconds when their annunciation shifts from a prescribed set of spoken words to the half-sung sound, "Oyez Oyez Oyez". This call was not always a non-verbal sound; it descends from the Anglo-Norman *oyer*, from the Old French *ouïr*, "to hear". Over time, the meaning of this now archetypal verbal enunciation has been more or less forgotten, and its particular, repeated sonority has eroded its verbal context to what Aristotle might call a "mere voice". This animalistic call of the wild reminds us that it is not only speech, but also the sonic qualities of the voice, which fall under the jurisdiction of the court. That our voices are doubled under the ears of the law, and the juror is there to listen not only to your testimony but to your orality.

For Judith Butler, meanwhile, the orality of the speech act stands in for the body of the speaker. In *Excitable Speech*, she revisits J. L. Austin's *How To Do Things With Words*,[36] via the writing of Shoshana

[36] J. L. Austin, *How To Do Things With Words* (Oxford University Press, 1962).

Felman,[37] and reinterprets his notion of the political 'force' of a performative utterance as only attaining its performativity at the moment of a collusion between body and language. Judith Butler makes a close analysis of the politics produced by the paradoxical relationship of what she calls matter and language (and what Aristotle and Dolar call *phone* and *logos*) to describe the doubling effect that the corporeal excess of what voice (sound or *phone*) gives to the performance of language:

> In speaking, the act that the body is performing is never understood; the body is the blind spot of speech, that which acts in excess of what is said. That the speech act is a bodily act means that the act is redoubled in the moment of speech: there is what is said and then there is a kind of saying that the bodily instrument of the utterance performs.[38]

Butler's speech act theory offers the body in the place of the Aristotelian apolitical animal. In other words, *phone* for Butler is not the excluded pre-social animal voice, but rather the speech of the body. Still, there is a tension between language and its corporeal substance, between two halves of the speaking voice, as it is issued from the body of the speaker. Speech cannot act as word alone, it demands the body of the speaker; the word must collude with the body to attain its legal performativity. The legal writ *habeas corpus*, which translates to "may you have the body", stipulates that a person under arrest must be physically brought before a judge. The judge must see and hear the suspect live. The voice in its legal context is then considered according to similar terms as those proposed by Butler: the bodily instrument of the utterance with its corporeal excess announces to the court the absolute presence of the witness. This essential excess of the voice resides then not in its linguistic functions, but in its non-verbal effects, such as pitch, accent, glottal stops, intonations, inflections, and impediments.

In Butler's speech act theory, the materiality of the speaking body gets us closer to the concept of the voice that forensic linguistics amplifies, in the sense that the object quality of the voice, amongst other bodily signs and gestures (blushing, sweating, etc.), is a site of attention that extends beyond

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[37] Shoshana Felman, *The Scandal of the Speaking Body* (Cornell University Press, 1983).

[38] Judith Butler, *Excitable Speech: A Politics of the Performative* (London: Routledge, 1997), 11.

the Aristotelian view of its presence only as a necessary exclusion. However, for Butler, the matter of spoken language is also "the blind spot of speech"; it is "excess" and it is "never understood".[39] This is where her thought aligns with Dolar's extension of Aristotle's thesis, where *phone* has an intangible quality that must inhabit an elusive and paradoxical site of both inclusion and exclusion to remain by definition *phone*. For Dolar, *phone* can never become *logos,* it must remain its other "both sustaining and troubling it at the same time".[40] In both these conceptions, *phone* is an ineffable force that cannot be made legible, and yet in 1984 this is exactly what forensic linguists sought to do: to reclaim *phone* from its place as a performed exclusion, and formally include it as a new kind of *logos*. This attempt to logosify *phone* (to turn *phone* into *logos*) is then a break with the political philosophy of the voice that has its lineage in Aristotelian thought. Here, *phone* is no longer elusive; the "saying that the bodily instrument of the utterance performs" becomes subject to new forms of scrutiny,[41] filtered through intense and extended acts of expert listening until it emerges as a non-verbal verdict —a *logos* of *phone*.

This approach to the excesses of speech maybe easy to dismiss philosophically as positivist yet I believe it proposes its own distinct ontological and political position towards the two halves of the speaking voice before the law. When we speak in the era of forensic linguistics it is unclear which of these two halves of the speaking voice is testifying. As *logos* becomes decentralised, it is no longer the principal element that is haunted by *phone*. *Phone* is not the outside of speech but rather can become speech itself. The cough, the sputter, the stammer, the accent all start to form a new lexicon. This means that the material and political halves of the voice converge. In the logosification of *phone* there is no clear and simple distinction of voice as sound or speech as language, but rather forensic listening activates a destabilising inversion where *phone* becomes a non-verbal language that can be

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[39] Butler, *Excitable Speech*, 11.

[40] Dolar, *A Voice and Nothing More*, 107.

[41] Butler, *Excitable Speech*, 11.

imbued with as much truth value as the intended meaning of the *logos* issued from the same voice. The distinction, after 1984, between *phone* and *logos* became an inhabited site of analysis, so that the separation between each side of speech became confused.

If, as Dolar suggests, "the distance between the two voices [*phone* and *logos*] opens the space of the political",[42] then forensic linguistics is situated within that liminal space opened up by the two halves of the speaking voice. Where the material and semantic halves of our voices converge and confuse is the site of political listening. What makes this kind of listening a political act, in addition to it being an apparatus of the law, is that by treating that which is "excess", "excluded", and in the "blind spot", not as "excluded" and "excess" but as a form of speech in itself, forensic linguistics expands what constitutes legitimate forms of speaking. A more intensive form of legal listening was inaugurated in the mid-eighties that expanded the possibility for people—such as the Aborigines of Australia, as in the aforementioned example with Dr Diana Eades—whose speech had previously been considered by the legal system as mere noise, to speak. The law began to be able to hear its outside, not as an Aristotelian form of distinction between what is just and unjust, but as a process through which those previously outlawed from *logos* were able to become included in the law's jurisdiction.

However, as the field of forensic linguistics became more expansive, the liminal position it had occupied in turn became an opportunity for the field to not only expand the border of the speakable, but to police it. As has been argued earlier in this chapter, the law is a profession of the voice, in which the truth must be derived orally and audibly. The court's main function is to derive the truth of an event by deciding which of those speaking voices are legitimate speakers and which must be discounted. The central operation of the law is then to police the threshold of legal audibility. Forensic linguistics occupies and works in this threshold space, between what is considered

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[42] Dolar, *A Voice and Nothing More,* 123.

speech and what is considered noise, listening intensively in order to try to derive from the voice a truth in excess of what the speaker themselves intend to say. This requires laborious practices of listening, as Peter French described in an interview, "Last week, a colleague and I spent three working days listening to one word from a police interview tape."[43] This kind of dedicated listening, where one word is listened to for three days by two experts, is definitive of the space in between the two halves of speech, expanding the threshold of what can be defined as *logos.* In a context where the truth must be derived audibly and orally, the voice is one of the most powerful tools at the law's disposal. Forensic linguistics aids the law in its most difficult task to police the border between legitimate and illegitimate speech, between *phone* and *logos*, in this expanded sense, where what has been formerly understood as *phone* can become *logos* and vice versa.

As an invaluable tool in exercising this key function of the law, forensic listening has continued to expand since the mid-eighties. Today forensic linguistics is applied on such a scale that law enforcement agencies and security services cannot often afford the expert and laborious practices of listening of people like Dr French. Therefore the promise of forensic linguistics—to be able to determine the truth from a speaking voice without relying on what the speaker intends or perceives to be saying—is often applied without the careful listening it demands. Hence we are entering a time in which there is both an over-demand for the governance of the voice, and a lack of means to produce such a governance.

Two forensic linguistic labs in particular, Verified and Sprakab, have risen to prominence during this time of high demand and low standards. As I will argue in the next section of this chapter, these labs have pushed forensic linguistics out of its liminal space where the material and semantic halves of the voice converge. These companies insist on the *phone* as the source through which the truth of an utterance can be derived, rather than deriving the truth from the convergence of *phone* and *logos*

[43] LAH interview with Peter French, 2010.

together. *Phone*, as it is considered an unintentional and unconscious by-product of the speaker, is therefore given a blanket truth-value over the verbal account of that speaker. These labs take the *phone* of a voice to be its objective truth, while the *logos* is constructed material, unreliable and subjective. All too quickly, words become overtaken by the vocal sounds, as verbal testimony is replaced by the audible evidence embedded in the voice itself. The subject of speech becomes ambient noise, drowned out by the object quality of the voice's phonic substance.[44] This means, as we will see next, that forensic linguistics, a practice once aimed at opening the space of the political by expanding what constitutes speech, is now more often used to strip voices of their political agency, to force them outside the space of the political recognition, and to institute further borders within the voice itself.

Conflicted Phonemes

In the year 2000 there was a total of fifteen fortified border walls and fences between sovereign nations. Today, physical barriers at sixty-three borders divide nations across four continents.[45] This huge increase in the fortification of borders over the last seventeen years has not only consisted of razor wire and concrete but also of a huge increase in so-called immaterial and biometric strategies including the forensic analyses of migrant voices. Immigration authorities around the world turned to forensic speech analysis to determine if the accents of asylum seekers correlated with their claimed national origins, in order to see whether people originated from areas perceived to be dangerous enough for them to legitimately claim asylum. Borders were thus intuited and constructed within the voice itself; extending national borders to the frontier between *logos* and *phone*. This process, called "Language Analysis for the Determination of Origin" (LADO), first implemented in 2003, produced a proliferation of forensic listening on a scale similar to the PACE

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[44] The term Fred Moten gives to the non-verbal materiality of the voice.
Fred Moten, *In the Break: The Aesthetics of the Black Radical Tradition* (University of Minnesota Press, 2003).

[45] Samuel Granados, Zoeann Murphy, Kevin Schaul, Anthony Faiola, "Raising Barriers", *The Washington Post* (October 12, 2016): https://www.washingtonpost.com/graphics/world/border-barriers/global-illegal-immigration-prevention/.

act in 1984. LADO uses its capacities to supposedly derive the truth of an utterance to help determine the validity of asylum claims made by tens of thousands of people without identity documents in Australia, Belgium, Germany, the Netherlands, New Zealand, Sweden, Norway, Finland, Switzerland, and the United Kingdom.

LADO is mostly conducted by one of two private companies run by forensic phoneticians based in Sweden: Sprakab and Verified. These companies compete for the government tender to produce the LADO reports for each of the countries that use this analysis of asylum seekers. Sprakab is the larger of the two companies with contracts from the United Kingdom and Sweden, while Verified's tender for LADO includes countries such as Norway and Finland. LADO reports are achieved by soliciting the speech of the claimant via a telephone interview organised between the asylum seeker and an anonymised listener hired by one of the two aforementioned companies. These 'listeners' are former refugees, now Swedish citizens, that originate from the countries or neighbouring countries of those who are claiming asylum. Petter Lövgren, a senior forensic phonetician at Sprakab told me in an interview, "I mean, the most we require them to be is native speakers, if they can be found here in Sweden, otherwise L2 [2nd language] speakers may be fine also."[46] These non-professional linguists whose only qualifications are speaking a given language are tasked with making a series of assertions about where they believe the asylum seeker 'really' comes from. These unscientific assumptions are then reworked into reports by linguists who do not speak or understand the languages of the claimants' countries, nor do they ever listen to the original interview recording.[47] The role of these linguists is to bolster the claims of the anonymised former refugee analysts with international phonetic symbols and a lexical variety befitting of a forensic or expert

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[46] Petter Lövgren interview with Lawrence Abu Hamdan, Stockholm, August 16, 2013.

[47] This excerpt from my interview with Petter Lövgren is relevant here:
LAH: So do you then listen to the recording?
PL: No I don't
LAH: The linguist rarely listens to it?
PL: No, but we don't speak Somali, if we did we would have.

report for use in courts in the target countries. The function of the linguists is thus to transform hearsay (third party testimony) into what appears to be forensic evidence.

In June 2004, a group of forensic linguists authored "Guidelines for the use of language analysis in relation to questions of national origin in refugee cases".[48] These forensic linguists were compelled to publish this in response to what they saw as an unscientific and debased application of their work. The purpose of these guidelines was threefold: Firstly to alert the governments using this process that the means through which these tests were conducted were not to the standards that meet adequate forensic linguistic analysis. Secondly to assert their position and distinction away from the companies who are making these analyses. And thirdly to produce a document that defence lawyers could use to argue on behalf of claimants who became subject to such tests. One of the main concerns of this group of linguists is to advocate for the idea that citizenship is a bureaucratic distinction and that the voice is a socially and culturally produced artefact that cannot be tidily assimilated into the tight confines of a nation state. Dr Peter Patrick, one of the authors of these guidelines, told me in an interview that LADO has emerged from an "ideology of monolingualism", a claim that suggests LADO is both politically motivated, in the use of the word 'ideology', but also that its claims are based on groundless assumptions, as he elaborates: "A single native language is really what underlines the whole process of LADO, but it's often not a true reflection of the countries and the communities from which asylum seekers come."[49]

The authoring of these guidelines was organised and led by Diana Eades, the aforementioned linguist who was key in the Australian implementation of cassette-recording machines in police interview rooms in 1986 as a means to prevent the legal persecution of the Aboriginal speech community. For Eades, it is clear why LADO is a perversion of the field of forensic linguistics. Her

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[48] Diana Eades et al, "Guidelines for the use of language analysis in relation to questions of national origin in refugee cases", *International Journal of Speech Language and the Law*, vol. 11, no. 2 (2004).

[49] Peter Patrick, interview with Lawrence Abu Hamdan, Colchester, August 16, 2011.

career as a forensic linguist began with a successful attempt to get the Australian government to formally accept that there is a distinction between different English speech communities. Less than twenty years later, it seems that the idea of difference she sought to implement has been transformed. The issue of audibility has changed: in 1986 it was a problem in which the subaltern voice of the migrant and the Aboriginal could not be adequately heard by the juridical authorities. With the implementation of LADO, we see how those 'different' voices are being heard with more scrutiny than ever, and how the particularities of their 'difference' are now being listened to as evidence. Rather than working according to a strategy of inclusion of different speech communities, this kind of listening has been weaponised to service the exclusion of accents that do not meet the necessary criteria that constitute their 'difference'. For asylum seekers, rather than iron out the peculiarities of their voice to be better heard and comprehended by legal interlocutors, it is instead necessary to perform and amplify what makes their voice different. For example, Dr Peter Patrick worked on a case in the United Kingdom in 2011 where he provided contra-analysis. The case surrounded an asylum seeker from Sierra Leone who was in a legal limbo living for twelve years in London as a stateless person without identification documents. When he committed and was convicted of a crime, the law stated that he must be deported. Hence as a non-documented asylum seeker he was subject to a LADO test. The Sprakab report claimed that the convict was from Nigeria rather than Sierra Leone on the basis that his spoken English was too proficient for a Creole speaker of English. Peter Patrick's contra-analysis argued that this report was baseless given that the asylum seeker had been living in England, speaking a non-creolised English for twelve years, and moreover that his interview was held in English with English questions and not in Creole. Such contra-analysis arguments have been largely ignored in the Asylum Tribunal after a 2010 Upper Tribunal (asylum) case known as 'RB', supported by a 2012 Court of Appeal decision, in which it was decided that LADO reports should be "given considerable weight when carried out by the

methodology of native-speaker analyst plus supervising linguist".[50] Therefore in this specific case, Peter Patrick's arguments were not considered credible and the man from Sierra Leone was deported to Nigeria, a country he claimed he had never been to before in his life. His voice had betrayed him, as was the case with the Aboriginal people of Australia in the mid-eighties. However for the Aborigines, the reason for this was that their English was not spoken well enough to be heard legally, whereas in the Sierra Leonean case, the man seemed to speak English too well to be credible.

The gap between PACE in 1984 and LADO from 2003 is a window through which we can see this shift in the politics of difference. The struggle at the heart of the politics of difference in the mid-eighties was to overcome the as yet unresolved rejection and persecution of cultural and social difference, yet with LADO, we are met with a new axis and obstacle of struggle in the political contest over difference. In LADO, instead of trying to fit a culturally hegemonic vocal protocol, people are expected to adhere to and perform the specifics of their given cultural difference; to perform their difference and therefore their exclusion as an inverted means of achieving inclusion.

I managed to learn from Sprakab, the company that hold the LADO tender for the UK home office, that they have conducted 8,000 cases of LADO from 2008–2013.[51] Yet the full extent of LADO cases since 2003 and the amount of wrongful deportations and refusal of legitimate claims of asylum is very hard to ascertain. During my research I heard of eighteen cases where inconclusive evidence and poor linguistic data resulted in the refusal of claimants based on their accents as sole evidence. Often with minimal legal support and funds, these claims pass through the courts without being challenged or subject to contra-analysis. I will outline two examples of such cases below, which demonstrate how borders are being made perceptible through the voice, and

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[50] Opinion of Lord Eassie in the appeals against The Advocate General for Scotland Representing the Secretary of State for the Home Department. Extra Division, Inner House, Court of Session, United Kingdom (2013). Court transcript, 25.

[51] LAH interview with Petter Lövgren, 2013.

how configurations of vowels and consonants are made legally accountable over and above the words spoken.

Originating from south Somalia and an asylum seeker in the Netherlands, AbdiRahman, showed me the negative LADO report issued against him in 2012. Based on only three data-points during a ten-minute interview, the words 'fiiri' (look at), 'canjeero' (flat) and 'boos' (old) were cited in the decision that "the applicant is definitely not traceable to the speech community of south Somalia."[52] South Somalia is a UN-designated unsafe zone, whereas originating from the north of the same country does not entitle one to seek asylum in Europe. AbdiRahman's claim is that precisely because he was born and originates from extremely dangerous areas in the south of Somalia he had to migrate on two separate occasions: in 1991 during the southern war of the clans and in 1996 during a famine. This meant that he spent periods of his youth in the north of the country, and that these political events had an effect on his speech and lexical variation. What must also be considered is that in 1974 there was a series of efforts to create national unity through unifying all the dialects of the tribes spread throughout the geographic area that came to be Somalian territory. This meant that teachers from the cities in the north were sent to villages in the south with the specific purpose of elocution and standardisation of the language. Finding phonetic and lexical elements from other parts of Somalia in the speech of a southern villager is thus continuous with an intentional policy administered by the government since the 1970s.[53]

I also spoke to Mohammed Barakat, a Palestinian seeking asylum in the United Kingdom.[54] He arrived in 2003 and at the Port of Dover the immigration authorities lost his Palestinian identity card. This meant that Barakat now had to be treated as undocumented and was forced to undergo a

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[52] Expert report given on the accent of Abdirahman, conducted by the Immigratie-en Naturalisatiedienst, Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, the Netherlands, 2008.

[53] Abdirahman, interview with Lawrence Abu Hamdan, Utrecht, September 29, 2012.

[54] Mohammed Barakat, interview with Lawrence Abu Hamdan, London, December 9, 2011.

LADO test to prove his origins. The results of the test were made known to him during his deportation hearing when he was told by the Asylum Tribunal that he did not belong to the Palestinian speech community but that his language use could be traced to the speech community of Libya or Syria. Speculation amongst his lawyers was that there had been a mistake on the original Sprakab report and that rather than Libya they had actually meant Lebanon, as Libyan and Syrian dialects are too distinct to be confused with one another. Although he no longer has the original LADO report Mohammed remembers the key evidence cited against him was his use of the word 'tomato'. Instead of 'bandora' he said 'banadora'. This tiny additional 'a' syllable in the middle of the word was the main element of the evidence used by the UK Border Agency to prove that Mohammed was in fact a Syrian national: a country only twenty-two kilometres away from his hometown of Jenin in Palestine. Therefore, in designating this syllable as a marker of Syrian nationality, the UK Border Agency implies that the extra sound used in the word 'tomato' is coterminous with Syria's borders. This is the process by which borderlines become inscribed into the phonetic constitution of the speech of asylum seekers as they try to cross the borders into the countries in which they seek asylum. This is the case despite the insistent claims made by linguists who contest the LADO process, that "national borders are not the same as linguistic borders".[55]

A Biography of Migration

In the three cases I cite above, as in almost all the cases I heard during my research, the main issue was between a failure to reconcile the biography of the asylum seeker with the sound of their voice. However, forensic linguist Helen Fraser, in her article "The role of linguists and native speakers in language analysis for the determination of origin: A response to Tina Cambier-Langeveld", criticises what she calls the "partisan comments" made against LADO and speaks of "the need to clearly separate linguistic data from potentially biasing background on the applicant's 'story.'"[56] In

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[55] Eades et al, "Guidelines…", 2004.

[56] Helen Fraser, "The role of linguists and native speakers in language analysis for the determination of origin: A response to Tina Cambier-Langeveld", *International Journal of Speech, Language, and the Law,* vol. 18, no. 1 (2011), 123.

her criticisms of contra-analysis she says that these linguists "can be inclined to 'feeling sorry for' asylum seekers" if they know or process their biographical information.[57] This empathy emerges precisely from a context in which they listen to the biographical details of an asylum seeker rather than only the data stored in their voice. She claims that the contra-analysts are focusing too much on the *logos* of asylum seekers' testimony and that this is affecting their ability to clearly judge the *phone* as its own form of *logos*. In this will for objectivity we see how linguists want to auscultate the accent and go beyond the potentially traumatic and emotional story of a person's flight, preferring to find in the sound of their speech another type of testimony. However, my argument is that for adept forensic listeners, this accent object (linguistic data) includes biographical information of migration and flight as much as it includes information of birthplace. Thus the deviations in pronunciation found in both Mohammed and Abdirahman's speech are illustrative of their continued displacement. In other words, the instability of an accent, its borrowed and hybridized phonetic forms, is testament not to someone's origins but to an unstable and migratory lifestyle, which is of course common amongst those fleeing conflict and seeking asylum, often spending years getting to the target destination and living in diversely populated camps along the way. Moreover, it should be remembered that in such camps one may want to conceal the origin of one's voice because of the continual fear of persecution, something which may have a lasting effect on one's speech. For listeners who are not comfortable with drawing a border around a single phonetic article, then, the accent should be understood as a biography of migration, as an irregular and itinerant concoction of contagiously accumulated voices, rather than as an immediately distinguishable sound that avows its defined roots within the confines of a nation state. To return to the case of AbdiRahman, for example, the northern Somali features of his speech are registers not that he is lying about his place of origin but of the very fact that his place of origin for much of his life has been uninhabitable. These uninhabitable conditions and the necessity for his asylum are therefore audible in his *phone* and are corroborated by his *logos*. So this background story is audible in

[57] Fraser, "The role of linguists…", 123.

both halves of AbdiRahman's voice, in his verbal testimony (*logos*) and his vocal evidence (accent/*phone*), and this is because the conditions of migration produce unique forms of speech, which as both sonic and semantic objects are burdened by the stories of migration endured by the body of their speaker. The linguistic data, or accent, should not allow the analyst to escape the 'traumatic' accounts of the applicant; rather the irregularities found in the protean excess of the voices produced under such conditions should in turn provide proof of the applicant's need for asylum and stability. In LADO, analysts are trained to listen to a place of origin, yet what often distorts this authentic sound is that within the migrant's voice there exists a material trace of their migration itself. These traces of migration within the voice are not being heard as evidence of a life lived in flight, and therefore of a need for asylum. Rather the sounds of vocal migration, which have the sonic quality of geographic irregularity, are cited as a grounds for refusal of asylum applications, as LADO promotes a system of vocal governance that deems speakers with mixed and multiple accents as dishonest.

An accent should not be understood simply as a conduit for language, nor as a pronouncement of place of origin, but rather as equivalent to layers of metadata. Accent is an indication of the voice as network, a network with nodes in various places, times, and identities. An accent is formed through and in communication with others; it is relational, in the sense that we hear not only the speaking subject, but traces of their past and present interlocutors. Due to the necessity of greater comprehension and assimilation, the voice has a tendency to mimic the accents of those it speaks and relates to, so that the life of an accent is possessed to some degree by every person it has come into contact with, and is also influenced by the other voice with which it is presently in dialogue. In this sense, the accent as a source of evidence is not equivalent to a single and genetically unique article of evidence like a fingerprint but to a trail of communication, which connotes "socialization rather than origin".[58] Some of these communications last longer than others, and so leave a greater

[58] Eades et al, "Guidelines…", 2004.

residue. When the accent is heard as a network and not a birth certificate, we begin to hear in the non-verbal voice a register of those it is or has been in dialogue with, rather than a geographic location on one side of a border. In sum, an accent does not refer to a geographic territory so much as a community of interlocutors from a diverse set of linguistic and geographic origins.

The End of Dialogue

If we are to accept the idea that an accent is relational rather than national, then a cartography of the voice is muddied by the presence of the cartographer themselves (in the case of LADO, the interviewer), and their voice. Mohammed Barakat's rejected status was owed to an interviewer whom Mohammed claims was an Iraqi whose Arabic dialect was so different to his own that he had to shift his way of speaking simply to understand and be understood. Listening is never simply a passive, objective, and receptive process, but rather an act that plays a fundamental role in the construction and facilitation of the speech of the interlocutor (whether subject or object). Therefore what becomes amplified in such investigations is not the true identity of the *phone* but the agency of the listener, actively shaping the accent of the voice under investigation. This fundamental point was raised in the aforementioned "Guidelines", authored by the group of linguists contesting LADO, in which they state: "In some situations interviewees who are speakers of a local dialect are interviewed by an interpreter speaking the standard dialect of the language. In such situations it is common for people to accommodate to the interviewer's way of speaking, whether consciously or subconsciously."[59] Therefore while the interviewers may speak the same language as the applicant, they frequently are not from the same region, or, as was confirmed to me in an interview with Petter Lövgren of Sprakab, are not native speakers but second-language speakers.[60] This would obviously affect the dialogue and quality of the data gathered during these interviews, if the very common sociolinguistic process of code-switching, where two different dialects converge in a dialogue, occurs.

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[59] Eades et al, "Guidelines…", 2004.

[60] LAH interview with Petter Lövgren, 2013.

On this particular point, the governments administering LADO finally began to concede to the campaigning linguists. Yet rather than abandon LADO as a process, many of the governments moved their tender and contracts from Sprakab to Verified. This was because Verified offered a solution to this issue of code-switching and incorporated the critiques of the linguists into the process through which their LADO tests were administered. In 2011, Verified decided that since dialogue was rendering the tests unscientific, they would use a monologue format instead.[61] In these monologues, the only time you hear the voice of the previously data-corrupting interviewee is at the very beginning of the tape when a voice is Swedish says, "Off you go". Now, rather than soliciting speech in an interview form, asylum seekers were expected to simply speak for fifteen minutes non-stop. They were free to say anything they wanted, because nothing they said had any relevance. Only their accents mattered. With the auditor's silent presence these monologues become like a kind of legally instantiated psychoanalysis where the accent takes the place of the unconscious and the burden of proof is entirely shifted onto the speaker. Listening to these monologues, one hears that there are some futile attempts on the part of the asylum seekers to include narrative information and verbal accounts of the place they come from in order to prove their origins. However none of this information is taken on board, as it is not their *logos* that is endowed with the power to prove their origins but rather the *phone* that must do the work. One Palestinian man begins his monologue listing the names of families from his hometown in an effort to prove his intimacy with that place. These are his opening lines:

> Hello? Now I want to talk about where I come from. Yeah, we, in the city that I come from, we have, well it is an old place, with many tribes, or clans as they are also called, we have many well-known tribes, such as, we have the Jaafaris, we have the Ajlunis; we also have among them the Rajabis, and also the smaller ones like Natsheh and Abu Sneina and others.[62]

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[61] Roderick Martin (senior advisor at Verified), interview with Lawrence Abu Hamdan, Stockholm, September 23, 2013.

[62] Anonymised applicant monologue, recording sent to the author by email by Roderick Martin, trans. Masha Refka, October 1, 2013.

After the third minute of this specific information demonstrating local cultural knowledge, it perhaps becomes clear to him—without having received any direction from his silent interlocutor—that his words are not being listened to, and so he begins to drift into other matters:

> I have… I like football, I like football. We have a field nearby, near our area, we go out and play football after studying, and now school has ended, and there's less interest in football… You know, people go in time, time goes by. Anyway football was my favourite hobby, one of the nicest things that I… I used to enjoy it a lot. Sometimes, we'd go out, my friends and I, we'd go to Bethlehem and to other places, and as I said we'd take the bypass, you go there… There's nothing really…

Incidental narratives start to emerge as he reaches for themes to talk about, in order not to break the flow of speech. The necessity to speak for fifteen minutes without hesitation begins to overpower the will to speak meaningfully about his biography and place of origin. A similar personal and incidental narrative begins to emerge towards the end of a Syrian asylum seeker's monologue:

> But I also had another friend, we used to be together all the time the three of us, our parents used to call us 'the merry trio'. We used to hang out together, we slept over at each others' houses sometimes. Once, she and I, on New Year's Eve, I told my parents that I would like to spend it at her house to hang out just the two of us. Her parents weren't home, they were going out somewhere. We sat together, she had prepared food, she had made *mulukhiyah* and other delicious dishes that we liked. We stayed up late just the two of us, there was nobody else there at all at all. We stayed up almost until the next morning, we didn't sleep until maybe after six o'clock in the morning. We would talk about how our school day went, what our childhood was like, we talked about our shared memories, the bitter and the sweet, and sometimes laughed at each other. Anyhow, we spent the whole night drinking juice and drinking tea, and smoking also of course, smoking was forbidden, it was shameful for a girl to smoke, but maybe to me it was something new, and I felt like trying it. But now that I'm grown up, I feel that my parents were right, they used to always tell me, 'Don't smoke, it's shameful'.[63]

Here again, the demand to speak outweighs the content of what is being said. Yet when listening to these monologues, what seems at first like an anxious stream of consciousness, a nonsensical babble or meaningless insight into someone's private life, is in fact hard evidence of the way in which the concept and international human right of the freedom of speech has been weaponised. Here, the commitment to free speech is upheld in the sense that the speakers can legally say whatever they like, within the confines of the instruction to keep speaking for fifteen minutes without pause. Free speech and forcible confession are not diametrically opposed, but rather entangled in a close

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[63] Anonymised applicant monologue 2, recording sent to the author by email by Roderick Martin, trans. Masha Refka, October 1, 2013.

relationship, which allows LADO to walk the line of the legality surrounding testimony held under duress but never to breach it. In this sense, LADO does not contravene the laws of free speech but rather takes them to an extreme, where the right to speak freely is transformed into the absolute necessity to speak, to say anything at all in order not to be deported. This bending of the intention of the right free expression is only legally possible because asylum seekers are considered non-citizens, who thus occupy a grey legal area. Their cases are heard in tribunals rather than courtrooms, where the standards of evidence and expertise that are normally required by the legal process do not apply. The liminal status of asylum seekers is thus doubled; they occupy a border space, as they do not formally enter the jurisdiction of the target country, which in turn means the threshold of evidence on which their claims are processed is at the very edge of what is permitted lawfully. Moreover, they do not possess the legal faculties to adequately protect themselves against these LADO monologues by exercising their right to silence. The asylum seeker has no legal recourse to silence, as the burden of proof lies not with the prosecutor but with the claimant themselves. It is nevertheless important here to describe the legal functioning of the right to silence, in order to better understand the ways in which LADO complicates such legal conventions of speech.

The Right to Silence

In criminal charges against a citizen of the United Kingdom, the criminal is afforded the right to protection from self-incrimination, commonly known as the right to silence (or in the United States as Miranda rights). This is a fundamental legal right to *not* speak if you feel that your speech would in some way incriminate you. Upon hearing the specific words declaring the right to silence from the police, you know that your voice has been placed in custody and that your voice has crossed the threshold between normal conversation and liable speech. In the book *Just Silences*, Marianne Constable explains that custody begins once you have heard the Miranda warning, and that this is initially, before you are physically placed in custody, a custody enacted upon your speech. Once you

have heard this statement you enter into the formal legal proceedings "in which everyday norms and conventions of speech seemingly no longer apply."[64] The warning marks the moment from which anything you now say will be heard not just by your present interlocutors but by anyone the court deems useful in listening. Constable goes on to suggest that the Miranda warning is a speech act upon the speech of the other: "When Law is a matter of speech and words, the justice of law refers to the conditions of speech."[65] But what is additionally important here is that the Miranda warning is only effective in acting upon the other's speech by being a speech act that inaugurates a zone of legal listening. Hence this speech act can be thought of inversely, not as a performative utterance that allows the arrestee to remain silent, but an order that endows the law with the right to listen, a kind of "listening warrant". As Constable writes: "One need not read Miranda's safeguarding of an opportunity of silence in response to the possibility of coerced speech to be grounded in fairness or in the need for reliable evidence. Rather, the ground may lie elsewhere: Miranda seeks to protect the justice of the hearing."[66] Constable therefore makes a shift from the centrality of the speaker and their rights, to the listener as a legal force. She suggests that even our right to silence has less to do with what we choose to say, and more to do with a permission granted to the listener (in this case the police officer) to inaugurate new conditions of listening to our voices. In her shift from the oral to the aural Constable demonstrates how the balance of legal and political power tips towards the listener rather than the speaker as a bearer of rights. Constable's emphasis on the reorientation of the politics of this speech act towards the listener is a key conceptual ally of the work of this thesis towards a historical and conceptual analysis of forensic linguistics, which argues through multiple examples, the foremost of which for this chapter is LADO, that the conditions of listening to the voice are inseparable from its utterance.

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[64] Marianne Constable, *Just Silences,* 173.

[65] Ibid.

[66] Ibid.

After the passing of PACE and as evidenced by the implementation of LADO, speech profiling and analysis have vastly increased which has led, I believe, to a fundamental impact on the legal conventions of speech such as the right to silence. If as Constable suggests the right to silence acts as a listening warrant for the law, we must also understand that the conditions of that listening mean that it is not only our words that can incriminate us, but the phonological content of our voices as well. As such, my proposal would be to amend the speech act that inaugurates this listening warrant so that it helps us to understand the specific conditions under which voices are being heard, and so that it is transparent in its explanation that both halves of the voice, *phone* and *logos*, are being taken into custody. In the United Kingdom, the revised version might read:

> You do not have to say anything, but it may harm your defence if you do not mention when questioned something which you later rely on in court. Anything you do say, *including the way you say it*, may be given in evidence against you.

This amendment in italics would make absolutely clear the shift outlined by Constable above, that this right to silence is not only a means of self-preservation for the speaker but a warning about the kinds of listening that the law enacts.

Yet even if these alterations to the right to silence were to be made, this would not change the fact that the asylum seeker, on whom the burden of proof rests, has no recourse to silence. If they remain silent they would not be obliging with the conditions of their application for asylum; if they don't speak during a LADO monologue they will be deported. Without the right to silence, the asylum seeker is forced to speak; they must make themselves audible to the system and yet they remain without control over the conditions of how they are heard. What they do retain, however, is the human right to freedom of expression, which only implicitly includes and does not explicitly state that one not only has the right to speak but a right to silence.

Silence is explicitly absent from Article 19 of the Universal Declaration of Human Rights, which states, "Everyone has the right to freedom of opinion and expression; this right includes freedom to

hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers."[67] As we see in the excerpts from the monologues above, such tests do not essentially contravene this human right in the sense that all and any opinions are able to be imparted in a LADO monologue. However if we think more closely about whether LADO constitutes a human rights violation, the words "regardless of frontiers" suggest that it may well do —for here, speech is anything but free to surpass frontiers. Indeed, LADO's act of listening seeks to legally impose frontiers on the speaking voice. To take the example of Somalia, LADO distinguishes between accents from the south coastal and northern regions, imposing legally instantiated linguistic borders in excess of the legal borders of the national territory and jurisdiction. Further, the 'a' sound in the word 'banadora' (tomato), as we have heard, comes to legally define the border between Syria and Palestine. In LADO, speech is not heard "regardless of frontiers", rather national boundaries, as well as the additional parameters of regions within nations, are being used to dictate what is and what is not permissible speech. The question thus arises that if speech has a legal right to be free-flowing and pervasive across frontiers, shouldn't this also apply to accents? A paradox emerges, in the sense that LADO allows the verbal content and opinions of speech to remain free while constricting and tightening the laws around the physical and sonic capacities to speak across borders. LADO implements an interpretation of free speech whereby we see once again the two halves of the speaking voice divided; *logos* can cross frontiers but *phone* remains confined to the geographic location in which it was born.

As the latest and most prominent form of forensic speech analysis, LADO shows that the emergence and prevalence of this kind of listening forces us to redefine the human right to freedom of speech, a concept that must now be extended to encompass not only the words spoken, but also the sonic quality of speech itself. The concept must be amended to state that both halves of the voice, *phone* and *logos*, reserve the right to speak "regardless of frontiers". I believe that the more radical the

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[67] See: http://www.ichrp.org/en/article_19_udhr.

practices of listening at the core of legal investigations become, the more they should herald the advent of a moment in which to redefine and reshape the legal conventions of speech and sound. Now it seems that the battle for free speech is no longer about fighting to speak freely, but to gain power over the conditions under which one is being heard. To include not only the rights of the speaker to be heard, but to legally define what constitutes a free hearing.

By not explicitly referring to the other sides of speech, namely silence and the listener, Article 19 of the Universal Declaration of Human Rights leaves speech unprotected and, as we see in LADO, allows for the opportunity for it to be weaponised against the speaker. With this omitting of the listener and no clause on silence, free speech can become both a human right and a human rights violation. This weaponisation is present in LADO, and mobilised in the highest of offices and amongst the loudest purveyors of free speech. In 2009, for example, President Obama spoke about the upcoming trials for those held in Guantanamo Bay:

> The whole premise of Guantanamo promoted by Vice President Cheney was that, somehow, the American system of justice was not up to the task of dealing with these terrorists. I fundamentally disagree with that. Now, do these folks deserve Miranda rights [the right to silence]? Of course not.[68]

Obama speaks of the necessity for these suspects to have their voices heard, but for them to have no recourse to silence. This is a clear demonstration of the conception of free speech as a right to speech but not to silence, while speech without silence becomes involuntary. Therefore although de jure this might constitute free speech de facto, speech without silence is not free but rather mandatory. What Obama's statement also shares with LADO is the fact that the distance between civil and international law is silence. Silence is only afforded to citizens of countries that employ rules against self-incrimination similar to the Miranda rights in the USA, while those living in ceasefire lines, failed states, autocratic regimes, extraterritorial prisons, or along paths of illegal migration can be forced to speak without those authorities who force them to speak necessarily

[68] See "Obama on AIG Rage, Recession, Challenges", CBS 60 Minutes, March 22, 2009: https://www.youtube.com/watch?v=5GRbya1xgcw.

contravening international law. We need therefore international laws that have a more complete comprehension of the human voice, and which explicitly state that silence and the sound of one's voice also constitute legitimate forms of speech that are inseparable from the expression of opinions.

The Voice Before the Law

Listening as an investigative practice advances further and further into the depths of our voices, and as we will see in the next chapter, technologically we are now able to zoom deeper into our acoustic world than ever before. This requires that the laws governing our speech advance in accordance with the ways in which our voices are being heard. Forensic listening was the by product of legislation, (PACE was a law that catalysed these new conditions of listening) yet as I have argued through the example of LADO, it is now in need of being legislated itself; the use of Forensic linguistics and its implications for the speaking subject must be written into and formally included into the laws and conventions that govern our speech. Forensic listening is no longer a by-product of a law (PACE), a side effect existing at the fringes of legal practice, but a force of juridical listening that is redrawing legal boundaries themselves (LADO). The work of the early pioneers of forensic linguistics, such as the aforementioned Dr Peter French and Diana Eades, sought to challenge the correlation between the borders of audibility and zones of legal exclusion. As I explained at the beginning of this chapter, Eades in particular identifies the beginning of her practice with the necessity to listen to voices that were on the fringes of legal audibility in Australia. Through careful listening she worked to expand the borders of the speakable, by paying close attention to the intersection of the material conditions of the speaking voice and the semantic meaning it was expressing. This inseparability of voice and content was key for these early pioneers, who sought to listen between phone and logos, listener and speaker, testimony and evidence. Their work was to derive truth by inhabiting these borders—the blurred space of definition between sources conventionally perceived to be diametrically opposed. They sought to lift phone out of its Aristotelian place as a form of speech that must be politically excluded, to bring it formally into

politics, amplifying it to the level of logos. In so doing, they sought to bring voices that were heard as Aristotelian phone into the jurisdiction of logos. Yet LADO, though appropriating some of the same techniques of listening, sought to return phone back to its place outside of language and of politics. As such, a practice of listening at the borders of the speakable has been reduced to a practice of embedding borders in speech itself. LADO does not maintain a liminal position by situating the truth at the intersection of phone and logos, testimony and evidence, but finds its evidence only in phone, in that which is considered outside the subject's powers of control and outside of ideological or political intention. As we saw in the monologues of asylum seekers, phone became a barrier to the audibility of their *logos*. In this way, the practitioners of LADO borrowed from a practice of listening which originates in the will to attend to the fringes of the voice and used this mode of forensic listening to become the gatekeepers of the voices at the fringes of the law. Furthermore, LADO polices national borders via practices of listening that are at the very border of what is legally permissible, and in so doing creates a barrier to the access of the law itself. Marginal voices are made to wait at the walls of a given jurisdiction, just beyond the space of citizenship where one would have legal recourse to silence. Here, many thousands of asylum seekers, due to LADO, live in limbo, like Mohammed Barakat who, though having physically entered the UK fourteen years ago, is still waiting at this border. His access to the laws that are afforded to citizens of the same geographic space, which he has inhabited for over a decade, are precluded by a single phoneme. The hard border between phone and logos instituted by LADO in this case came to represent not only a border between Syria and Palestine, but also between tribunal and due legal process, between illegal immigrant and citizen, between free speech and the right to silence.

Afterword to Chapter 1: The Right to Lie

In looking for a legal precedent and a more robust means for our voices to retain their politics and their silence in the era of LADO, I began researching an old and esoteric piece of Shia Islamic jurisprudence called *Taqiyya* (**تقيه**). In the simplest possible terms of this highly nuanced concept, *Taqiyya* is a legal dispensation whereby a believing individual can deny his faith or commit otherwise illegal acts (in relation to Sharia law, such as drinking alcohol or eating pork), while they are at risk of persecution. *Taqiyya* is often understood as a divine right to lie, although it is not strictly lying either; *Taqiyya* is a contradictory condition of being simultaneously inside and outside of the law; it is a law governing speech at the fringes of law. *Taqiyya* is conceived, like international law, to protect the speech of its subjects across borders and in hostile jurisdictions, and—as we will come to understand in this section—it is a form of speech that emerges in the borderlands, where subjects exist in extraterritorial or undefined jurisdictions.

The interpretation and usage of *Taqiyya* differs however across the sects of Islam.[69] In this afterword, I will look in particular at the juridical and theological interpretation of the law by the more esoteric dogma of the Druze, an offshoot of Shia Islam, which governs the speech of its community in day-to-day life as well as in the most perilous of situations. The Druze are a transnational community, spread across the Levantine countries and concentrated in the mountain regions of Syria, Lebanon, and Israel/Palestine. The Druze are a community who have to negotiate their theological-juridical practice in accordance with the laws of the countries in which they are a minority, and *Taqiyya* is the legal device they use to occupy this position. The community occupies then a sometimes precarious position, and while this fluid relation to their home nations has been used to their advantage, it has also made them a target for persecution. The Druze's liminality as legal and speaking subjects is

[69] In Sunnism, meanwhile, *Taqiyya* is a law that should be excised only when the subject is faced with mortal danger and only against non-muslims, whereas Shia jurists extend the law to encompass life-threatening situations as well as any kind of bodily harm or loss/damage of property, and may be used in the face of either muslims or non-muslims.

therefore a particularly pertinent example through which to think through and challenge the laws and political conventions that govern both halves of the human voice.

Taqiyya is foundational to the Druze dogma because it is the legal mechanism which allows their core concept of religious practice to be exercised—that of religious worship in private by oneself.[70] *Taqiyya* is what allows them to counter coercion in Islamic worship, to maintain that those who worship are doing so not out of social and political obligation but rather out of a true compulsion of duty to god. *Taqiyya* then is the concept through which the non-coercive and private religious life of the Druze is justified under Sharia law. This does not mean that *Taqiyya* permits an escape from religious practice, but rather that it encourages an absolute internalisation of worship, where the burden is shifted from the collective to the individual subject. In this sense, we see how *Taqiyya* is not a dispensation for avoiding prayer, but a legal technology interpreted to ensure the absolute undiluted sanctity of prayer. *Taqiyya* for the Druze acts as a mechanism to ensure truth and sincerity amongst its believers, yet the concept emerges out of an interpretation of the right to lie in Islam. This is an important point in the continued debate around *Taqiyya* and the voice—that although the concept permits lying, paradoxically it does so in order to retain religious sincerity is at its core.

If the Druze Sheikhs do congregate in worship, the opening utterance is almost invariably "Let each person search for his/her self."[71] In shifting the burden of religious duty to the self, there is an insistence that the self is only truly itself when it is by itself. *Taqiyya* thus stands in contrast to more conventional notions of identity as expressible and denies that one's professed identity can possibly

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[70] A brief academic disclaimer: As *Taqiyya* is a fundamental tenant of the Druze dogma, and as *Taqiyya* is a strategy of negotiation, compromise and contradiction, when making claims about the Druze dogma one will always encounter exceptions and counter-claims that are continuous with the social and political life of the practice of *Taqiyya*. Ascertaining historical, juridical or anthropological claims about a practice that strides closely to the concept of lying poses a conflicted space of academic research; a space that Jacques Derrida launches himself into in the essay, "The History of the Lie": "Who would dare to tell the history of a lie? And who could promise to tell it as a true story?" To make a claim about Druze jurisprudence, for which *Taqiyya* is a foundational concept, is then to try to explain a juridical and ethical code at the core of which are the dispensation and the loophole.
Jacques Derrida, *Without Alibi*, trans. Peggy Kamuf (California: Stamford University Press, 2002), 67.

[71] Fuad I. Khuri, *Being a Druze* (London: Druze Heritage Foundation, 2004), 3.

connote to an origin or to a true image of one's self; as soon as one's self is made public it is no longer one's self, but a representation of a self that is constructed for the consumption of one's auditors. *Taqiyya* is thus practiced as self-preservation in the sense of a community protecting itself from the intrusion of outsiders, as well as self-preservation of the self before god and against the coercive force of the social. For the Druze, *Taqiyya* is not only a juridical technique that permits lying, but a theological conception of speech as a form of lying itself, where speech is always constructed by and for the listeners with whom it is in dialogue. Under this conception of *Taqiyya*, speech as an external form of communication that mediates internal thoughts cannot be the vehicle of truth it is taken to be in courtrooms and other legal forums around the world. Rather, speech as a technology of mediation of the self and its thoughts is an unfaithful agent, which produces a self made for public consumption, rather than a 'true' self. *Taqiyya* is thus a legal right that recognises the inherently unfaithful nature of the voice; the voice as relationally constructed, remade for, and to some extent by and with, each new interlocutor.

The following definition of *Taqiyya* by Druze theologian Wissam Abu Dargham[72] makes two clear points of relevance to the arguments of this chapter regarding the voice as relationality:

> In our part of the world [the Levant], mothers talk to their newborn babies in a language called *Inghh Apoo*. It is a two syllable word: *inghh* and *apoo*. It means nothing; it is just two sounds used to communicate with the newborn child. […] The child receives these two sounds that don't make any linguistic sense, but that transmit the mother's love, care, and unity. The language will grow with the child, as the mother will raise their communication skills to a higher level. […] When the child grows older and goes to school, the mother will instruct, "Take your sandwich with you." When that child becomes a student in college, there is no way the mother will say to her child "*inghh apoo*". […] So *Taqiyya* is the means of communication that you adapt to any person, based on the amount of knowledge that s/he is capable of understanding. […] You speak to them on the level of the other's readiness to listen.[73]

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[72] Dargham is currently translating into English the most comprehensive philosophical and historical reference for the development of the concept of *Taqiyya,* Dr Sami Makarem's *Taqiyya in Islam*.

[73] Wissam Abu Dargham, interview with Lawrence Abu Hamdan, Beirut, April 8, 2014.

In Dargham's simplest definition of *Taqiyya*, we meet again the two halves of the speaking voice, *phone* and *logos*, in the connection of the mother to the child through the *phone*, a non-verbal, material instrument that precedes language. There is here firstly the idea that within the voice exists a channel of communication separate from the words one is issuing. Secondly, there is the acknowledgement that speech is made by and for those it is in dialogue with. If in *Taqiyya* one must "speak at the readiness of the other to listen"[74], we are not dealing with an esoteric practice, but a form of communication as close to nature as the relationship between mother and child.

This definition of *Taqiyya* is remarkably close to one of Adriana Cavarero's arguments towards her theory of a politics of the voice. She writes: "The maternal tongue is not only the language that we speak because we learned it from our mothers. It is also, before this, the wordless language of vocalizations that the mother exchanges with the infant."[75] For both Cavarero and Abu Dargham, there is a reduction of voice to sound in the early years of life, to material tangibility between mother and child, where "there is nothing but the sonorous bond of voice to voice".[76] No matter if we are speaking words or *inghh apoo*, the voice before language is relationality. Both halves of the speaking voice, *phone* and *logos*, are not an essence of one's singularity but the product of a relation between two or more speaking subjects.

Speaking the Truth

Another aspect of *Taqiyya* is its preservation of 'truth' at the intersection of the two halves of the voice. Lebanese anthropologist Fouad Khouri states that, "From a very early age, Druze learn how to pronounce correctly all the Arabic phonemes, which is not done to my knowledge in any other

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[74] LAH interview with Wissam Abu Dargham, 2014.

[75] Adriana Cavarero, *For More Than One Voice* (California: Stanford University Press, 2005), 170.

[76] Ibid, 169.

Arab group from the Gulf to the Atlantic."[77] The Druze's precise pronunciation is audible to most other Levantine Arabic speakers in their articulation of the Arabic letter 'ق' (qaf), most closely aligned with the English letter 'Q' (though the 'ق' sound is produced at the point of the Adam's apple).[78] Throughout the Levant, one rarely hears this letter of the Arabic alphabet articulated, but rather hears it dropped, yet the Druze sect always pronounce it, whether they live in Lebanon, Jordan, Israel/Palestine, or Syria. The pronouncing of this letter is not a question of regional accent, as in each place you find the Druze they will also have the corresponding accent of that region. Rather, the pronouncing of the ق (qaf) is a conscious and collective decision amongst a geographically dispersed community; a speech trait that is not geographically but ideologically formed. This goes to show how attaching accent to birthplace, as we have seen with LADO previously in this chapter, is a reductive and inaccurate attitude to the workings of the vocal sound, which is can be as politically motivated as the words one choses to use.

The ideological foundations of the pronouncing of this phoneme amongst this dispersed speech community not only complicate the relation of speech to identity, within the tight confines of LADO, but also present an alternative conception of the relation of truth to voice. Abu Dargham explains how the theological properties of this letter relate to truth:

> When you respect the truth of the language, you have to pronounce it as it is. To elaborate your pronunciation properly as the language intends also carries a meaning within it on the level of truthfulness. We pronounce all the Arabic phonemes correctly in order to stick to the basic rules of the language itself. Because if I pronounce the Arabic letter qaf as 'ء' ('af'), I'm not saying it correctly, so I am also not 'speaking the truth'.[79]

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[77] Khuri, *Being a Druze,* 188.

[78] Generally in the Levant, 'ق' is pronounced as "ء", 'af', replacing the 'ق' 'q' sound with a glottal stop; similar to when the British 't' is dropped, e.g. when the word 'butter' is pronounced 'bu'er'. One does hear the ق (qaf) spoken from time to time in certain villages of other sects in the Levant, but the Druze is the only sect to pronounce it throughout the region.

[79] LAH interview with Wissam Abu Dargham, 2014.

In this conception, the truth is enmeshed in the phonetic pronouncement of the word, just as much as in the word's meaning. In fact, both words for 'truth' in Arabic, truth (حقيقه) and trueness (صدق), contain the letter ق. To literally speak the truth one must pronounce the ق. The sound of a word and its meaning exist in a sensitive relationship, as it is believed that God created the Arabic language and that its words are just as much of a divine creation as the things they refer to. The Arabic language is then not a representation of things in the world, but another mode in which each thing exists; a material aspect of reality in a sonic form.[80] This juridical and theological viewpoint contests the Aristotelian division of the voice, where the *phone* is only discernible by its animalistic debasement of language. Truth emerges from the collapse of the *phone* and *logos* distinction.

Theoretical ideas dividing the voice into *phone* and *logos* have left a persistent trace on linguistic theory, up to and beyond the influential writings of Ferdinand de Saussure, for whom "sound is merely something ancillary, a material the language uses."[81] However for the Druze conception of language, truth can only emerge at the intersection of the material and symbolic dimensions. What further reinforces the notion that truth emerges at the intersection of both halves of the human voice is that if one is in a situation where one cannot tell the truth for fear of persecution, the sound and the meaning must be uncoupled. Abu Dargham explained to me this strategy for the uncoupling the two halves of the voice, and therefore the extraction of truth from one's speech:

> According to *Taqiyya*, if I am a Druze living in Beirut [amongst non-Druze], I should pronounce it "af'. If I'm living in the mountain [amongst the Druze], I should not pronounce it "af' unless the "af' would be accepted there—I should vocalise it 'qaf'. But in general, if I speak "af' or 'qaf' in any community in order to get attention to my ego, under

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[80] This belief about the origins of language is also why the Quran cannot be translated into another language and retain its divinity. The Quran must be spoken in Arabic because its meaning, the form of the language, and its pronunciation, are all considered to be equally divine.

[81] Ferdinand de Saussure, *Course in General Linguistics*, trans. Roy Harris (Illinois: Open Court, 1986), 116. Saussure continues: "All conventional values have the characteristic of being distinct from the tangible element which serves as their vehicle. It is not the metal in a coin that determines its value. A crown piece nominally worth five francs is worth half of that in silver. Its value varies somewhat according to the effigy it bears […]. Considerations of the same order are even more pertinent to linguistic signals. Linguistic signals are not in essence phonetic. They are not physical in any way." The Druze's conception of language thus defies Saussure's analogy with capital in the sense that the material conditions of phonation are as determinate of the value of the word as its symbolic reference.

> *Taqiyya*, I'm doing something wrong. So it's a very fine line, because speech is really interconnected and entangled with the ego. […] The question with *Taqiyya* is always: How do I live without identity?[82]

Abu Dargham explains that the ق speaks for itself; it does not speak "at the readiness of the other to listen", adapting to the other's way of hearing, but asserts its difference to the ear of the interlocutor. This difference is that the speaker is Druze, which has historically been fatal to reveal amongst those who viewed the esoteric theological practice as heretic. Abu Dargham shows how one's accent does not only function to display one's identity but can also camouflage it. One's accent, unlike with LADO, is not a bearer of identity but a mechanism by which one can become any identity that one's auditor needs to hear.

In this aspect, *Taqiyya* seems to share some traits with the linguistic phenomenon of accommodation theory or code-switching, the concept that was used by linguists to discredit the LADO interview process.[83] Accommodation theory identifies two types of speaker, the 'convergers' and the 'divergers'. The divergers are those stubborn individuals who maintain a form of speech that is distinct from those they are speaking with; a mark of their linguistic territory or other vocal origin with which they identify strongly. The convergers are those generous souls who assimilate their speech through constant adaptation, always willing and able to inflect their speech to be in greater proximity and conformity with those they are in dialogue. The convergers are ready to deviate from their 'true' linguistic origins, if they possess them at all. Rather than a speech that identifies itself clearly, and is in turn easily identifiable, the convergers speak in evolving accents and with multiple tongues. Their speech is malleable and mimetic, contagious and contaminated. However, those who practice *Taqiyya* accurately are neither convergers nor divergers, but a rare amalgamation of the two forms of speaking: the converger-diverger, someone who adapts their speech to conform in order to never diverge from or divulge their innermost thoughts.

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[82] LAH interview with Wissam Abu Dargham, 2014.

[83] As discussed in my section, "The End of Dialogue".

Druze theologian Dr Sami Makarem writes that "if we put *Taqiyya* [which Makarem translates as 'dissimulation'] in its right context, then it would become totally in line with the core of human freedom; the freedom of speech."[84] Yet as a supplement to Makarem's position, *Taqiyya*—in the way that his past student and translator Abu Dargham explains it—is more like a legally instantiated form of code-switching, in which one's voice is permitted to freely adapt to the context it is surrounded by. In this way *Taqiyya* affords freedoms to the voice that the freedom of speech, in its current use in Western jurisdictions, lacks— the freedom to use your voice to mimic and mutate, to dissimulate in order to navigate those ears that prey upon your voice. It is not the freedom to stake a claim, nor the freedom to say who you are, nor the freedom to say whatever you want, but the freedom to use speech as a tool to become anything you want. *Taqiyya* is then not the freedom to have an identity but freedom from identity.

When I put Makarem's comments on the relation of *Taqiyya* to the freedom of speech to Abu Dargham, the latter pushed the concept of *Taqiyya* even further:

> In the freedom of speech you are given the security that when you speak whatever you think, you will not take this legally against me. This is the fundament of the freedom of speech; I'm legally allowed to say anything, whatever I want. When we think about this in relation to *Taqiyya*, it is more like the freedom of speech is the freedom to remain silent. If I want to express my freedom by being silent, this is my speech. Silence is also a way of communication. So *Taqiyya* means I'm allowed not to speak. […] Freedom of speech should not force you to speak. […] If silence is not part of the freedom of speech then speech will not be free.[85]

This crux of the interpretation and purpose of *Taqiyya* returns us to the discussion around the inadequacy of the international human right to free expression earlier in this chapter, where I explained how freedom of speech does not explicitly give the right to silence. *Taqiyya*, for Abu Dargham, is a seemingly contradictory amalgamation of the freedom of speech and the right to silence. The latter, the legal right against self-incrimination, or pleading the 5th Amendment as it is

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[84] Sami Nassib Makarem, "Remarks on Anis Obeid's: The Druze and their Faith in Tawhid: http://samimakarem.com/pdf_files/Remarks_on_Dr_Obeid's_book25082008.pdf.

[85] LAH interview with Wissam Abu Dargham, 2014.

referred to in the US, is a legal dispensation like *Taqiyya* to not speak the whole truth if the truth may cause you harm. The advantage of *Taqiyya*, though, in its amalgamation of the two rights to speech and silence, is that it represents a practice of silence disguised as speech. *Taqiyya* does not produce the loud presence/absence of silence, rather it is silence camouflaged by words. As the right to silence is not formally an integrated part of the international human right to free expression, this leaves an absence of legally permitted silence in nations which do not subscribe to such a law at a national level or in the cracks between jurisdictions; in the borderlands themselves. *Taqiyya* therefore works to fill that void, as we see in the case of the Druze's usage of the concept, a product of their political geography; a form of communication forged at remote altitudes, at the fringes of failed states, in buffer zones and on ceasefire lines.

For further example, in late December 2013, the al-Qaeda militia took over eighteen Druze villages in Idlib province, northern Syria. Eighteen of the Druze villages in the area were converted to Wahhabi Islam and the area remains occupied by Jabhat al-Nusra. In the first days of the invasion, videos were uploaded by the Al-Nusra Front where we see armed members of the militia watch over as a Saudi Arabian Sheikh, Said Saad Al Ghamidi, administers the conversions of Druze villagers made to pronounce the speech act of Islamic conversion (Figures 6–8). Words were placed in the Druze's mouths under the threat of violence, demonstrating a singular instance through which we see the complex forces bearing down upon the voices of refugees and those surrounded by conflict. In such contexts of forcible speech, adapting the way one talks for fear of persecution can leave traces on the voice, destabilising imprints that could later be used, in the case of LADO, to nullify one's right to asylum.

Figures 6, 7, 8: Uploads from Saudi national Sheikh Said Saad al Ghamidi's Twitter and Facebook profiles documenting and broadcasting his journey to Idlib, Syria, to convert Druze villages in December 2013.
From top to bottom:
Figure 6: Uploaded image showing Druze children uttering the speech act of Islamic conversion, filmed on the camera phone of Ghamidi's assistants.
Figure 7: A still from a video uploaded by Ghamidi, after he crossed the border into Syria from Turkey.
Figure 8: An annotated image uploaded to Ghamidi's Facebook profile, showing the highway leaving Idlib with the caption: "18 Druze villages have entered Islam, God be thanked Dr. Said Saad al Ghamidi."

Taqiyya is therefore in its many aspects an important concept to extend the discussion of this chapter, in that it addresses both the legal and the sociolinguistic borders of speech. In order to rethink the international rights of the speaking subject in the era of LADO and other forensic speech analyses, we must listen to the vocal sounds produced by and at the border, rather than use the voice as a means to produce borders and fix people in space. A law that emerges in the absence of laws is exactly the remit of human rights, and in examining *Taqiyya*, what is absent from the laws of human rights governing our speech is brought to light. There is currently a failure to include the listener as a participant in speech and consequently a failure to understand that silence, as well as speech, must be protected. We can only expand the conditions of international law by listening to the borderlands where these laws come into effect. Therefore we need to listen to the voice of the border itself in order to become perceptive to the laws that could adequately govern investigations, such as forensic listening, at the borders of the voice. *Taqiyya* enables us to hear beyond the geographic and jurisdictional divides of the regions that the Druze inhabit, and to listen attentively to the porous border between the subject and object of the voice which constitutes, since Aristotle, the political. At this border, the intersection between truth and lie becomes audible, as does the intersection of two speaking subjects. We hear the voice formed not by single speaker's identity, but in relation to its listeners. We hear that although the voice is issued from one body, it is constructed in collaboration between speaking subjects.

Moreover, it is in this borderland between *phone* and *logos* that the Druze believe truth emerges. This truth lies in the pronunciation of the word as much as in the meaning it conveys, while lie is the product of privileging either one over the other. I want to suggest then that analyses like LADO have tipped the field of forensic linguistics towards the side of lying, for it seeks to derive the truth about a speaking subject by muting words and listening only to the object quality of the voice. This exposes the use of forensic linguistics as a weapon to defend the borders of a nation state by

imposing an ideology of monolingualism. As an alternative, *Taqiyya* shows us that in the borderlands, accents can have their own ideology.

Chapter 2: Beyond Human Hearing

Accompanying this chapter please review the following relevant material included in the portfolio of practice:

Investigation: The Hummingbird Clock

Project: *The Whole Truth* (2012) 35' stereo audio

&

A Convention of Tiny Movements: Spinneys Supermarket Achrafieh (2015), Graphic work.

URL: https://labuhamdanphdpracticeportfolio.squarespace.com/chapter-2/

Chapter 2: Beyond Human Hearing

As is argued in Chapter 1, the implementation of audio-recording machines into police interview rooms inaugurated heightened modes of listening to and analysis of the human voice before the law that in turn necessitates a revaluation of the fundamental legal protocols that govern speech. In continuation, this chapter will focus on the political and legal implications of specific technologies that emerged after and as a result of the PACE law, which have been essential to the forensic analysis of sound. The logic behind the creation and implementation of these mechanical, magnetic, and algorithmic devices will be a source of study that will allow us to return, in greater resolution, to the question asked by Chapter 1: How has forensic listening since the mid-eighties redefined or expanded what constitutes legitimate speech? I will examine some of the audio infrastructure and invisible technological obstacles that today stand between the enunciation of a claim or testimony and its aural reception by the judicial ear. What we will see in this chapter is how the the shift in attention from *logos* to *phone*, documented in Chapter 1, is extended yet again by technology, from the *phone* of the voice to the ambient sonic world that surrounds us. These transformations stretch the ear of the law to hear testimony within the barely audible field of noises that were formerly understood to be background sound.

Amplified Jurisdictions

I would like to begin this chapter by looking at two moments, one historical and one contemporary, which, though not about forensic listening as such, provide a wider context to how technology influences and effects legal hearings. In this preface, as opposed to in other parts of the chapter, we will see the role audio technology plays, in creating, rather than investigating, the space of justice and truth production. This opening section provides the contextual foundations from which to understand the now essential role audio technology plays as an infrastructure of legal practice, and

how its internal functioning has become an inseparable element of the legal hearing. Let us begin then with a close look into the very first meeting of legal space and technologies of audio amplification: the first ever microphone in court.

Figure 9: Local prosecutors listen intently as does the first microphone in court standing besides them. Source: Edward Caudill, *The Scopes Trial: A Photographic History* (Knoxville: The University of Tennessee Press, 2004), 43.

In Dayton, Tennessee, in the summer of 1925, the much anticipated and publicised Scopes Trial began. This federal criminal trial welcomed the first ever live radio broadcast of a courtroom in history, and has been described as a "contest entirely over ideas."[86] The Scopes Trial situated itself at the heart of the debate over science and religion and their respective roles in public education. It became informally known as the Scopes Monkey Trial as it took to the dock a high school biology teacher, John Scopes, for violating the state's Butler Act, which meant that it was unlawful to teach evolution. The trial drew public attention across the nation, as reporters from all the major

[86] Edward J. Larson, *Summer for the Gods: The Scopes Trial and America's Continuing Debate Over Science and Religion* (New York: Basic Books, 1997), 142.

newspapers swarmed to the small town of Dayton to convey the words of the famous lawyers representing each side of the debate. As well as the newspapers, WGN radio station was broadcasting live from inside the courtroom, situating the nation on the front seat of what was, rather prematurely, called "the trial of the century."[87] When negotiating the radio broadcast of the trial with the local authorities in Dayton, WGN radio received the rights to rearrange the courtroom set-up to accommodate its three microphones: "In a move symbolic of the trial itself, the jury box was removed from the centre of the chamber to make room for three central microphones which fed [as well as the radio] loudspeakers on the courthouse lawn and in four public auditoriums round town."[88] This act of rearranging the courtroom to accommodate the microphones shows how the microphones were not simply the passive receivers of events, but active agents in shaping those events. The microphones manipulated where people would sit, where the jury would sit, the volume people spoke at, and the relationship of the judge to the prosecution and defence. By changing the longstanding conventions of the courtroom's interior architecture, the very first microphone in court represented a radical intervention into the nature through which justice was to be derived.

Not only inside the courtroom did the introduction of the microphone alter the legal space. Through the radio, the trial found other sites to dwell—in domestic interiors, diners, and radio retailers. The vast extension of the space of the trial across America was central to its mode of operation. The radio audience were architecturally, because of the placement of the microphones, and radiophonically, positioned as jurors and as auditors of judgment. The radio audience heard, many of them for the first time, how a US courtroom operates. By momentarily breaking down the walls of the courtroom so that the whole nation could witness the events unfolding inside, the trial instilled the specific and ritualistic mode of vocal/verbal operation as a sound of legally and politically performative activity. In other words, what was established was the bandwidth at which

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[87] Larson, *Summer for the Gods,* 142.

[88] Ibid.

one's voice must perform for it to be heard in a juridical forum. By inviting the radio audience to be the invisible jurors in the trial, the radio broadcasters made the law more accessible, its rules and boundaries more widely known, while simultaneously allowing its interior operation, its specific time and place, to pervade the inter-subjective relationships of American society. The way in which the radio audience came to occupy the acoustic space previously reserved for the jury makes this trial not only the first example of a microphone in court, but also the first example through which we can comprehend the dispersion of legal performance outwards from a series of designated sites (courtrooms, police stations) to cover an entire national jurisdiction.

The medium of the law today is no longer radiophonic but algorithmic and biometric, yet we see the same demand made of new technologies as were made of that first microphone in court: the expansion of the space of truth production. In times past, when someone swore to tell the truth, the whole truth, and nothing but the truth in a court of law, they would undergo a transformation; once those words were uttered they would inaugurate new conditions of listening and their speech would transmute from normal conversation to liable testimony. Yet now we are in an age where we become sworn-in the minute we accept the terms and conditions of a particular communications software or email provider. For example, British police are using speech to text algorithmic search engines and social media aggregators sold by CrowdControlHQ whose CEO James Leavesley is quoted on NPR as saying: "By looking at keywords, it can track conversations. Vulnerable people—who might be suicidal or abused, for example—have been identified and reached out to."[89] Keywords defined by the police, spoken in many different contexts, now activate a legal interrogation and performativity of our voices, whereas before our voices only achieved performativity when spoken by the right person, addressed to the right object, using the right words and uttered at the right time and place. These new keywords which prick the legal ear render the speech act more archaic and of

[89] Martin Kaste, "All Things Considered", NPR (February 28, 2014): http://www.npr.org/sections/alltechconsidered/2014/02/28/284131881/as-police-monitor-social-media-legal-lines-become-blurred.

ceremonial function than ever. These machinic forms of listening make the white magic incantations of "I do", "I swear", and so on, sound as if they come from a lost age, as we increasingly move into a era where there is no specific place and time in which the law acts on our voices and in which we call the law into action. The shift from the speech act to keyword utterance is a recodification of the voice before the law; under these new ears, utterances such as 'suicide', 'gas dispersal', or '**قمبله**' (bomb in Arabic) are words that activate legal functions and inaugurate legal attention. It is no longer simply the police interrogation room and the witness stand in which our words are given the responsibility to speak the truth; our speech is now legally active and accountable in many different contexts of communication and across international jurisdictions.

Beyond charting the history of the mediation of the trial or the technological expansion of space of the law, we see how wherever we probe the collaboration between the space of justice and audio technology—be it in 1925 when a microphone was first used in court or in 1984 with the implementation of audio recording machines in police interrogation rooms—the implications for the speaking subject and the legal conceptions of the human voice are legible. These then are the moments deserved of historicisation and discussion, in order to understand the genealogy of our place as speaking subjects before the law today, and the role forensic listening plays in the further transformation and expansion of what constitutes legitimate speech.

The Whole Truth

Today one of the most prominent technological tools of forensic audio analysis is an automated system of "voice stress analysis." This technology uses a frequency analysis of the non-verbal elements of a voice to determine the extent to which the physiological conditions of stress are present in the voice of the speaker. Though this technology only examines the physical and material conditions of a human speaker it is said to be able to determine from these conditions a series of psychological verdicts based on the presence of jittering frequencies, glottal tension, and vocal

intensity, all regardless of language. At Delft University in the Netherlands, a team of linguists and computer scientists that I interviewed are developing a kind of 'trauma-o-meter' application for emergency calls, whereby the algorithmic listening software would determine the priority of a call depending on the level of stress detected in the caller's voice.[90] The idea behind this is that the tension of the vocal chords produce 'jitter', which in linguistics relates to fluctuations in pitch, and thus that the caller's level of stress can be observed through the intensity at which these minute fluctuations occur. Therefore the scale of the emergency is legible as affect on the body that witnessed it. Regardless of what is being said, the first response to the event would then be a response to the body of its witness. The stress the body undergoes here is considered the objective truth of the event, however in my next example these same physiological attributes are taken to reveal the opposite—a lie.

A piece of software called Layered Voice Analysis 6.50 (LVA 6.50), developed by Israeli company Nemesysco Ltd in 2007, is the major application of this new form of forensic voice profiling. It is currently employed (unlike the traum-o-meter mentioned above, which is still in development) as a lie detection method by the Los Angeles Police Department, Russian and Israeli governments, and insurance companies all over the world. In the United Kingdom, Harrow Council and many others are using it to measure the veracity of benefit claims made by disabled citizens. Harrow Council claims it saved roughly £330,000 in benefit pay-outs in the first seven months of using this software.[91] Lynn Robbins, director of Voice Analysis Technologies, LLC, the main retailer of the software, told me in an interview that based on analysis of the body as it resonates through the voice, LVA 6.50 is not only able to determine whether a person is lying, but deliver a whole series of verdicts, detecting, for example, embarrassment, overemphasis, inaccuracy, voice manipulation,

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[90] Iulia Lefter and Pascal Wiggers, interview with Lawrence Abu Hamdan, Delft University, May 2012.

[91] "Using Nemesysco LVA technology in the Department for Work and Pensions", UK-ITN news clip (February 2, 2010): http://youtu.be/QwJadf V0c00.

anxiety, and whether or not the interviewee is attempting to outsmart his/her interlocutor. In the future, I was told, it will even be able to hear sex-offending tendencies.[92]

Commander Sid Hale, who is piloting the software for the Los Angeles Police Department, explains: "Unlike the polygraph we don't need to cooperate with the suspect, we don't need to wire them up with skin responses or respirators, it does it in real time."[93] In LVA 6.50 we see how this technology produces and appropriates both physical and objective distance. One key, politically sensitive effect of the fact that LVA 6.50 can operate without physical interaction—the voice analysis might be conducted during a telephone conversation, or using a prerecorded sample—is that testing can be undertaken without the consent or knowledge of the subject. This idea of being able to access the body of the person who is the object of one's interest without actually touching it is very attractive to law enforcement agencies, just as it was to doctors who first used the stethoscope at the beginning of the nineteenth century. Reports from that era say that one of the benefits of the stethoscope was that doctors no longer needed to press an ear to the patient's body, and hence it provided them with a hygienic distance from the potentially diseased patient.[94] This is just the rudiments of the historical echoes of the stethoscope in LVA 6.50. In the next paragraphs, I will argue that although this technology develops as a result of the implementation of cassette recorders in police interview rooms, its technological antecedents are as much in the lineage of the phonograph, the first machine to ever record and reproduce audio, as they are with the stethoscope.

The invention of the stethoscope by René Laennec in 1816 formally inaugurated the practice of auscultation (listening to the inner sounds of the body). Laennec's work to classify the sounds of the body is a major contribution to medical diagnosis and the image of the stethoscope is now a symbol

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[92] Lynn Robbins, interview with Lawrence Abu Hamdan, London, June 2012.

[93] "Nemesysco's Investigation Focus Tool Video," National Geographic (August 28, 2012): http://www.youtube.com/watch?v=6nvXHQuUoOQ&list =PL8C31084C75D27F3C.

[94] Tom Rice, interview with Lawrence Abu Hamdan, Brighton, July 6, 2012.

of the medical profession at large. As an international symbol of medical treatment the stethoscope communicates that the doctor is here to listen to the patient's concerns, its intensified auditory capacities equating listening with a humanism of care and patience. Yet its material legacy is quite different to its symbolic representation. What the stethoscope actually did was allow the doctor to bypass the verbal testimony of patients about their symptoms and instead listen directly to their bodies. Understanding how to interpret sounds from hearts, stomachs, and lungs meant that the doctor could listen to the objective truth of the body, to the object of the body itself, as this emerging acoustic lexicon was thought of as a collection of voices which, unlike the speech of the patient, didn't lie. These voices couldn't dramatise, embellish, or exaggerate the patient's condition. The stethoscope thus shifted the medical ear from listening to the patient's self-diagnosis to listening to the sounds of the body.

Anthropologist Tom Rice has produced extensive research on stethoscopic listening, and his fieldwork at St Thomas' Hospital in London is articulate on this shift of attention of the medical ear from patients' speech to "the pivoting and rotation of bones in their joints, the movement of matter through the gut and water across the kidneys […], the muscular action of the heart, the movement of blood through its vessels and chambers […] and the flow of air in and out of the lungs."[95] In the paper "Beautiful Murmurs", Rice recounts:

> A number of medical students I spoke with were also aware that when listening to hearts there was a tendency to encounter a patient simply as a set of acoustic signs. As one student remarked: 'Sometimes I become really conscious that all we do is reduce people to two heart sounds and a murmur.' He pointed out that the stethoscope was, in essence, a small amplifier. It had the effect of amplifying the heart sounds in such a way that they came to drown out other considerations, eventually eclipsing the patient altogether.[96]

Similar to the ways in which, as I discussed in the last chapter, LADO listens to the material constitution of the voice and amplifies it above the words being spoken, what emerges from Tom

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[95] Tom Rice, "Learning to Listen: Auscultation and the Transmission of Auditory Knowledge", *Journal of the Royal Anthropological Institute*, Special Issue: Making Knowledge, vol. 16 (May 2010), 41–61.

[96] Tom Rice "Beautiful Murmurs: Stethoscopic Listening and Acoustic Objectification", *Senses & Society*, vol. 3, issue 3 (2008), 304.

Rice's research is the way in which the testimony of patients is muted by a direct channel to the body's utterance. In this sense, and again in comparison to forensic linguistics, the stethoscope pits the subject against itself as simultaneous, perhaps contradicting testimonies can be emitted from the body and the speaking voice. In auscultation there is a very literal example of this doubling of the voice called egophony. René Laennec, in his legacy-defining treatise on mediate auscultation, describes egophony as follows:

> Simple egophony consists in a peculiar sound of the voice, which accompanies or follows the articulation of words; it seems as if a kind of silvery voice, of a sharper and shriller tone than that of the patient, was vibrating on the surface of the lungs, sounding more like an echo of the voice than the voice itself.[97]

Egophony has been more recently defined as the process whereby, while listening to the lungs with a stethoscope, the patient is asked to say the letter 'e'. If the lungs are clear, the doctor listening with the stethoscope will detect the spoken 'e' ('ee') as sounding like an 'ee'. Inversely, if the lungs contain fluid or a tumour, the patient's spoken 'e' will sound like a phonetic 'a' ('ay'). The 'e' sound is transmuted to an 'a' sound through the body. This 'e' to 'a' transmutation shows us the ways in which the voice becomes doubled in the medical ear and how one voice can produce multiple accounts of itself. Egophony is a stark example of such doubling in that it is not that the sound of the body mutes the patient's voice, but rather the patient's voice that resonates through the body. In the same utterance, two separate statements are made, both "an echo of the voice" and "the voice itself".

The paradox of the stethoscope is that it simultaneously produces an objective distance from the patient and a deeper proximity to their body. As a non-electronic device it simply connects a material path through which vibrations can be channelled from the inner body of the patient to the eardrums of the doctor. This distanced yet deep material form of human contact is also characteristic of forensic listening, where to find out what someone 'truly' said, one listens to the molecular constitution of individual phonemes, rather than to the semantics of language. This

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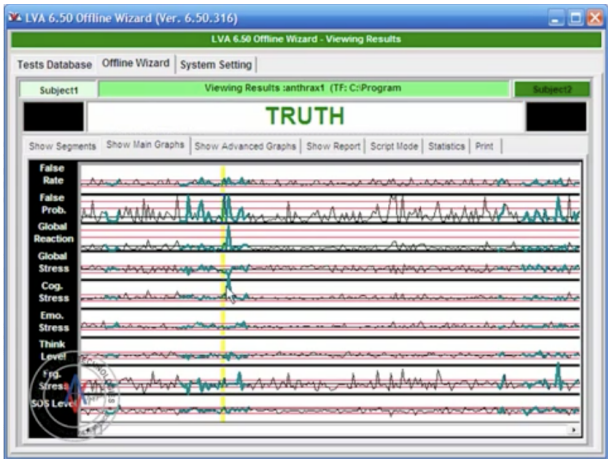
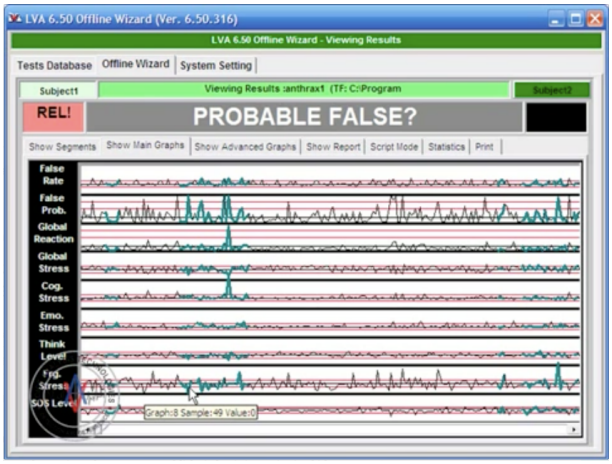
[97] René Laennec, trans. John Forbes, *A Treatise on the Diseases of the Chest, and on Mediate Auscultation* (New York: Samuel S. & William Wood, 1838), 45.

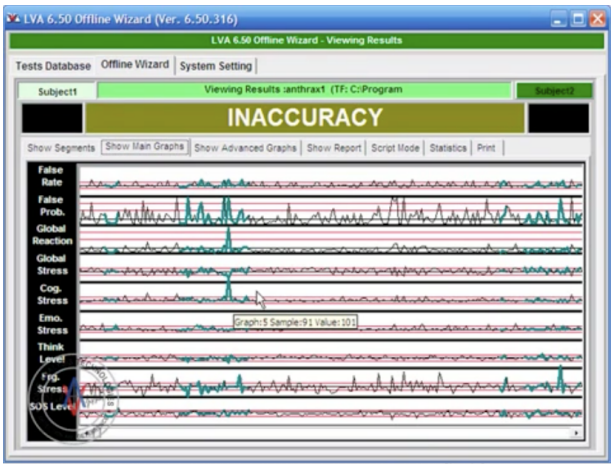
shared practice of listening which transforms subject into object reveals a direct lineage from auscultation to forensic linguistics. Auscultation offers the law, as it also offered medical practice, the promise of amplifying the objective aspects of an otherwise deeply subjective account of an event. With the example of LVA 6.50, a new kind of stethoscopic distance is established between human analyser and their subject. At the border, LVA 6.50 can be performed before a person formally enters the country, or even before they leave their country of origin. In making use of the hygienic distance of audibility, the test enables the extension of the border beyond physical territory. As such, this software simultaneously extends the range of the law's jurisdiction and designates those who must remain beyond its range of responsibility or audibility.

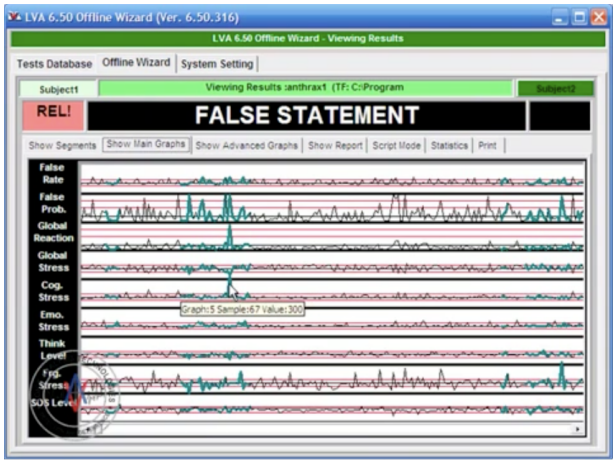
This "voice stress analysis" machine not only distances the user (the interrogator, insurance broker, border guard, etc.) from the subject of analysis, but also works to remove or minimise the presence and role of the user. In an interview situation, the visual interface flashes up its verdicts as the interviewee speaks (Figure 10). While the interrogated subject is speaking, the interviewer has one eye on the subject and the other on the laptop screen operating LVA 6.50, which flashes periodically with bold, colourful verdicts such as "probable false", "inaccuracy", "subject is uncertain". This machine thus reduces or puts into question the interviewer's interpretative and intuitive capacities. The technology thus does not only mute the words of the speaker, but also to a certain extent, with the visual noise of its verdicts, deafens the listener. Although a direct lineage can be traced from the stethoscope to voice stress analysis technologies, the removal of the necessity for the operator to really listen articulates a fundamental break with auscultation as a practice. Auscultation shifted a mode of listening from the speech to the body, yet it still held listening at its core, and in fact inaugurated a new epistemology of listening that is still taught to those in the medical profession today. Though LVA 6.50 practices a kind of auscultation, the software does not teach new ways of listening, rather the forms of verdicts it produces are coded into a black box algorithm where the means of analysis are hidden from the operator.

This machine is so attractive to law enforcement agencies because in objectifying the voice, the subjectivity of the person who causes its objectification becomes amplified in the process—or, the subjectivity of the speaker is replaced by that of the listener, interpreter, or aural investigator. In order to produce the laboratory conditions for justice and a completely objectified realm of listening, law enforcement recognises that listening ought to be relegated to the machine. Yet in voice stress analysis, there still remains the glitch of the subject contaminating the legal laboratory, as these algorithms first have to be programmed by people who could have bigoted ears and economic agendas. To produce a verdict, the algorithm needs to learn the logics of those verdicts—for example, in order for it to profile the voice of a sex offender it first needs someone to teach it the vocal attributes of a sex offender. Someone has to tell this machine in the first place what an embarrassed voice sounds like, and the difference in glottal tension between someone who is lying and someone who is uncertain of the truth. These highly subjective inaugural judgments, then programmed into the system, are inaccessible to any of its subsequent users.









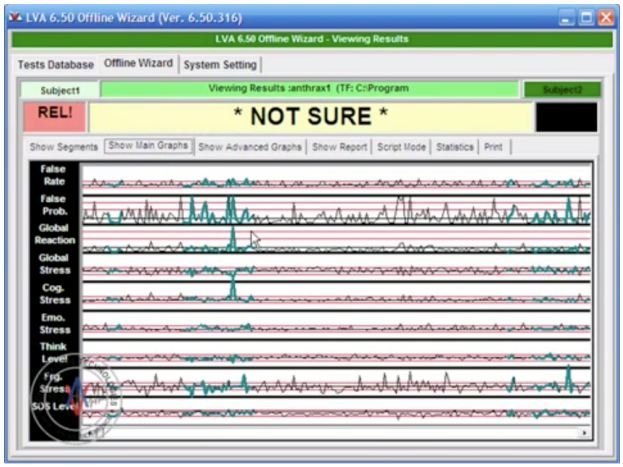


Figure 10: Screenshots from Layered Voice Analysis 6.50, which examines micro-fluctuations of voices in order to corroborate what the subject is saying. Source: www.LVA650.com.

As we can't access the original database that informed the software, a group of speech scientists and mathematicians in the Department of Phonetics at the University of Stockholm, led by phonetician Francisco Lacerda, closely examined the product's technical patent and reverse-engineered the software in order to test its scientific credibility and understand more fully the kinds of judgments it is programmed to make.[98] The claim that the machine would work "regardless of language" was taken seriously by the group, who tested the software using only vowel speech sounds and single phonemes. Interested to see how the machine produced its wide range of judgments the group used the pure object of speech: de-subjectified voices speaking only vowels without thought or semantics. After months of testing the machine and collecting large amounts of data, they understood that the software was operating on a very basic level of amplitude and found that its measurements simply had to do with a person's capacity to hold a steady pitch and volume. They also claim that the distinctions between the various verdicts (e.g. between embarrassment and attempt to outsmart or between excitement and inaccuracy) are placed along this scale of pitch sustainability.[99] According to their investigation, the claim that the technology functions as a lie detector is bogus; one of the mathematicians, a student of Lacerda, working on the reverse-engineering project, Andreas Takanen, told me that its logic was akin to "a horoscope or a prophecy" in its pseudo-scientific nature.[100] Further, what Lacerda and Takenan at the University of Stockholm also uncovered was that LVA 6.50's auscultation of the micro-fluctuations of the human voice are at such a high resolution that it often exceeds the sample rate of the digital audio under analysis. In other words, the digital audio file is sampling at 44,100 samples per second, which is like a frame rate of a film; a series of stills played back at a speed where we cannot perceive the gaps and breaks and so hear the audio as a continuous stream. Their findings showed that on many occasions, LVA 6.50 zoomed into the audio file to such an extent that it was basing its analysis on these humanly imperceptible

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[98] Anders Eriksson and Francisco Lacerda, "Charlatanry in Forensic Speech Science", *International Journal of Speech, Language and the Law,* vol. 14, issue 2 (2007), 169–93.

[99] Andreas Takenan, interview with Lawrence Abu Hamdan, University of Stockholm, August 2012.

[100] Ibid.

gaps. This means that the determination of whether someone was speaking truthfully was sometimes being made by the machine not even listening to sound but to the digital silence between the frames.

Yet regardless of its lack of credibility amongst the scientific community, regardless of whether such programmes scientifically work or not, and simply by virtue of the fact that insurance companies, government councils, and police departments use the forms of listening offered by LVA 6.50, the software is being used as a lie detector. In this sense the particular scientific failings of LVA 6.50, and the social failings in its application, are not employed in this thesis merely to discredit the software, but rather to learn about the contemporary intentions and methodological practices of forensic listening. LVA 6.50 shows us that the will to operate at the frontiers of the perceptible, to find truth at the threshold of detectability, has been taken to the extreme, so that 'truth' is derived neither from a listener or a speaker but in the absence of any sound. The truth judgment is discerned in complete excess of human auditory and enunciative capacities, to the point of hearing and measuring digital silence.

In some ways LVA 6.50 shows where this will to operate in the excess of the perceptible meets a dead end. But it also shows us that forensic listening, since its birth in the mid-eighties, has repeatedly manifested a principle experimented by John Cage in its relation to silence. Cage's silent works shift the attention of the listener from the professional performing musician to the audience, whose sounds, however small—the occasional cough or shuffle in seat—are recast as part of the performance of music. A figure–ground shift occurs where there is an inversion between the sounds in the foreground and the previously ignored noise in the background. Cage's work thus poses a series of fundamental questions about what is background and what is foreground; who is the figure and what is the ground; what is signal and what is noise; who is the performer and who or what is

the audience. Cage's shift, and that of such listening technologies, rather than focusing on an amplified individual, hones in on the noises of the background.

In a similar way to these forensic listeners, John Cage also refused what was defined as silence. "There's no such thing as silence," he said, recalling the premiere of his first 1952 silent works, "You could hear the wind stirring outside during the first movement. During the second, raindrops began pattering the roof, and during the third people themselves made all kinds of interesting sounds as they talked or walked out."[101] Cage believed that what we might think of as silence is in fact a unnoticed world of what is usually called background sound. LVA 6.50 takes this to the extreme in its bogus ability to read the silent gaps between the frames of digital audio as truth or lie. Yet it is at these extremes that forensic listening has always positioned itself.

If Cage's 1952 work, which came to be called *4'33"*, represents a conceptual shift where the background noise became the focus of attention in a musical performance, then in 1984 with the birth of forensic listening we see a similar logic legally instantiated.[102] Unlike Cage's work, though, it is not only that the "raindrops […] pattering the roof" are chance participants in the musical and

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[101] Quoted in Alex Ross, "Searching for Silence", *The New Yorker* (October 4, 2010): http://www.newyorker.com/magazine/2010/10/04/searching-for-silence.

[102] To go further, Cage's work could be considered not only the precursor to the kinds of listening that forensic linguistics performs today, but also to the ways in which surveillance in general is manifest. George Orwell's novel *1984* and Michel Foucault's thesis on Jeremy Bentham's panopticon in *Discipline and Punish* (1975) are perhaps the two most important reference points for the construction of surveillance in the popular imagination as the omniscient eye of the state—big brother watching your every move. However this image and metaphor is outdated and increasingly irrelevant for the understanding of mass surveillance as it is practiced today. It is not that we are all being watched as individual specimens, but rather that we are all actively and knowingly participating in our own surveillance by uploading and agreeing to the terms and conditions of convenient and expedient communication technologies. We are not being heard as individuals but as metadata. This metadata includes not only the single subject but their entire digital network; not what one said but the frequency at which one uses certain words; not who one is but what one is searching for. To listen to metadata is to listen not to an individual but to their environment.

The panopticon and Orwell's *1984* are therefore a distraction from creating an adequate contemporary discourse on surveillance, constantly referred to as precedents for an age which has a totally different model of listening at its core. If we need an example of a precursor to the 21st-century culture of mass surveillance, I would put forward John Cage's 1952 composition *4'33"* as a more accurate model for the NSA. John Cage's silent works suggest a shift from foregrounding the musician to bringing attention to the music of the audience's incidental sounds. *4'33"* thus expresses in its 'silence' a shift from picking out individuals and capturing their voices, to focusing on the noises of the masses as they interact with one another or actively perform as members of a crowd.

sonorous event, but that such background artefacts become acoustic evidence in the very production of truth. Though this logic began in the mid-eighties, as my next two examples will show, it was not until the wider implementation of digital audio, and therefore of 'pure' digital silence, that this Cagean shift to the frontiers of what we formerly knew as 'silence' could realise its full potential.

The End of Background Noise

The advent of digital audio allowed for the the development of a technique of audio analysis in Romania by Dr Catalin Grigoras, now Professor of Audio Forensics at the University of Colorado. In 1991 Grigoras was working to enhance the audio quality of analogue tape recordings for legal use. This involved stripping them of noise and cleaning them with frequency filters so that the central subject of the recording, usually a wire-tapped voice, could be heard. Often his recordings would be filled with mains hum, the buzzing sound of electrical interference, technically known as ENF (electrical network frequency). His initial attempts to filter these sounds out by applying a filter at 50Hz, the frequency at which the electricity buzzed, were unsuccessful. Small electrical noises still penetrated the recordings randomly between 49 and 51Hertz. In February 2014, I conducted a telephone interview with Grigoras in which he explained:

> This is how first of all I found the ENF is not 50Hz, it's just something random around 50Hz. I built in the lab an adaptive noise filter that is able to follow and detect the real ENF and subtract it. […] [From then on] the idea that ENF is something random not predictable was clear somewhere in my mind.[103]

The adaptive noise filter that Grigoras built to clean this oscillating electrical noise off a recording was also by necessity mapping the random fluctuations of the buzz. In the days of analogue recordings this song of electricity was meaningless noise, as the technical moving parts of the tape recorder moved at a fluctuating, unsmooth speed, and so meant that each machine added to that oscillating electrical noise its own small variations in pitch. However, given that digital recording relies not on mechanical circuits but rather encodes audio into a sequence of symbols, the pattern

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[103] Dr Catalin Grigoras, interview with Lawrence Abu Hamdan, by telephone, February 2014.

of oscillation of the electricity buzz was captured without the extra speed fluctuations and distortions added by each analogue machine. Therefore any two digital recorders, regardless of their brand, size, and voltage, would record the buzz in almost exactly the same way, so two digital recordings made at the same time but at two different locations on the same electricity grid would both have the exact same, random pattern of oscillation of electricity hum.[104] Grigoras theoretically derived that because the pattern of fluctuation is so random and the probability of that same pattern repeating over a ten-second piece of audio so unlikely, then by listening to the buzz of a digital audio recording it should be possible to deduce exactly when it was made:

> The recording was full of the hum, noise. I knew first of all how to extract it and then I realised that it's not predictable; unique variations can be used as indication or authentication of time but we needed a database. No electric company was able to record with high enough quality the ENF. So I said OK, let's build my own database. And this is how it started in 1996.[105]

Grigoras developed a system for the better eradication of unwanted noise, and while getting to know that noise closely in order to eradicate it, he understood that it was not noise at all but rather legible sound, logos (Figure 11). By zooming into the background of an audio recording and situating himself at the thresholds of sonic experience, Grigoras, and by extension forensic listening as a field, eradicates noise as a sonic concept but not as a sonic artefact. Forensic listening engages with material realities of noise and refuses, as John Cage refused silence, noise in its sociopolitical conception, as excess or unwanted signal.

Many inventions and attempts have been made to eradicate pervasive electrical buzz since the dawn of technological audio reproducibility. Mains buzz epitomises unwanted noise and is an infrastructural sound that our ears are used to filtering out on a daily basis. Yet in attempting to eradicate ENF with his adaptive noise filter—by listening closely to it—Grigoras realised that the electricity was in fact not making noise but rather singing. The melody of this buzz did not follow

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[104] The oscillations in the frequency of the mains buzz is a result of the electrical grid's function to avoid power surges, and therefore to regulate the distribution of electrical current.

[105] LAH interview with Grigoras, 2014.

the logic of a musical motif; its rather strange song will almost never repeat itself. But this total unpredictability, each five-second phrase unique to the next, paradoxically made it easier to decipher as a unique timestamp. By inverting the conventions of signal to noise, Grigoras's work traces a kinship between the field of forensic listening and radical aesthetic practices, in this case most closely with so-called "noise music", which employs acoustically or electronically generated noise as a musical instrument, and often amplifies the infrastructural elements of music production (broken cables, devices susceptible to electromagnetic interference, digital glitches, etc.). The comparison here between Grigoras's work and its implications for forensic listening more broadly, and the work of avant-garde musicians, is that both fields amplify the infrastructure of sound to situate themselves at the threshold of perceptibility, at the limits of the human capacity to listen. Avant-garde noise music and forensic listening practices have a correlating desire to challenge and remodel the cultural conventions of what constitutes the logos by which our speech and hearing is too often confined.

The expansion of *logos* by forensic listening, however, primarily proved not aesthetic but political, as Grigoras's theory that the electricity buzz could work as a kind of digital clock was actualised and became an active participant in legal investigations. He recounts his early experiments as such:

> The very first big tests that I made were in 1997 […] I started step by step, I made two simultaneous recordings in the same office, and then in the same building, then in the same city, then I went far, to different cities in Romania and then on a European scale.[106]

Grigoras realised during the course of these tests in Romania, that the European Union (with the exception of the United Kingdom, whose case I will return to), plus parts of Ukraine, are interconnected by one vast electricity grid. The oscillations in the frequency of the mains buzz are a result of the electrical grid's function to avoid power surges, and therefore to regulate the distribution of electrical current. Therefore the electricity grid stabilises the distribution of electricity across the continent, which in acoustic terms means that it maintains the same buzz

[106] LAH interview with Grigoras, 2014.

across the grid. This meant that from Grigoras's lab in Romania, he was able to create a database and archive of mains hum, which allowed him to analyse recordings and ascertain exactly when they were made for cases he then worked on in countries beyond Romania's borders such as Germany, France, Spain, Cyprus, and Denmark, over the next twenty years. Yet his database began ten years before the European Union formally included Romania in its jurisdiction. Preceding the 2007 inclusion of Romania into the EU, the continental electricity grid nonetheless synchronised independent legal authorities into a single pattern of oscillation, which through Grigoras's work came to be legally recognised as a register of time for any recording in any place across the continental infrastructure. In this sense, Grigoras's database defined the region according to the common infrastructure it relied upon, rather than according to national or continental borders. By shifting the concept of jurisdiction to infrastructural capacities, Grigoras's invention challenges the conventional conception of what constitutes the space of law. It involves a process of listening that expands the jurisdictional reach of the European Union across the continental grid, pervading any space where the electricity is, almost silently, humming. Furthermore, if the grid is read as a timestamp, then this distorts the way we conceive of different time zones across the continent, as we perceive of another method of telling time through technical infrastructure rather than the geographic place of a nation according to the rotation of the earth around the sun. In Grigoras's lab, time and continental space are flattened into an unpredictable yet linear pattern of sonic oscillation between 49 and 51Hz.

For legal reasons, Grigoras could not share with me details of the cases he has worked on, though he did summarise a few of the circumstances where his analysis has been most effective. Firstly, the timestamp of the mains buzz can be used as a way for someone to prove where they were at a specific time. The recording of the buzz can work like an alibi so that if the police accuse them of being present at a crime, and they have a recording of themselves somewhere else with a conflicting

timestamp to the event in question, then ENF analysis can be effective in proving the exact time of that recording thus proving they were not present when the crime happened.

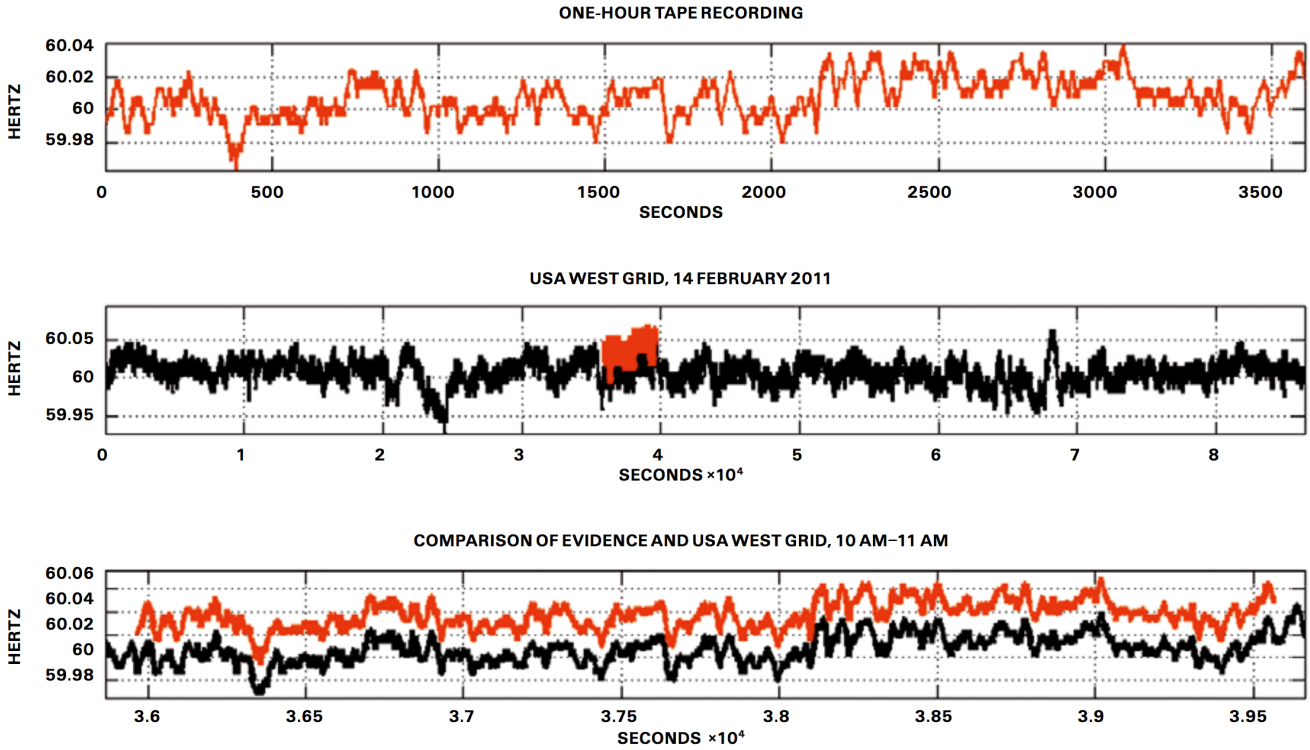

Figure 11: How to use variations in the frequency of the electrical grid to date audio recordings. The top graph shows the Electric Network Frequency (ENF) extracted from a one-hour (3,600-second) recording to be used as evidence. The middle graph depicts the computer-determined correlation between the variations of the evidentiary ENF (red) and the ENF variations for the USA West grid (black) for twenty-four hours on February 14, 2011 (86,400 seconds) as archived by the National Center for Media Forensics at the University of Colorado, where Grigoras is now based. The bottom graph shows an enlarged view of the matching portion of the middle graph (the red line should lie precisely on the black line, but has been shifted here for the sake of visual clarity). Images courtesy of Catalin Grigoras.

Secondly, proving that someone has prior knowledge of a crime is often important in legal disputes or a point of contestation in corruption cases. Here ENF analysis could be used to prove somebody knew something before they claim that they did; for example, there is a recording of someone speaking about illicit activity, and they would be guilty if it can be proved that this recording was taken before a certain date and time. Finally, to come to the most commonplace use of ENF: someone is caught on a recording that is being used as evidence against them, but they know the recording has been edited to make it sound as if they said things they didn't say, or that contextual material has been edited out to change the sense of their statements. In this case, the timestamp of the mains buzz at different moments in the recording would prove that it has indeed been edited, by showing that the mains buzz is composed of a patchwork of different times pieced together. This last example was crucial evidence in the conviction of three men for illicit arms dealing in a 2012 trial in the UK, where ENF analysis allowed prosecutors to show that a wiretapped voice recording, which became vital to their case, was *un*edited and therefore authentic.[107] Defence lawyers of the subsequently convicted arms dealers had suggested that the recording could have been edited by the police to incriminate the accused, however ENF analysis showed that the pattern of mains buzz oscillation throughout the entirety of the audio recording matched a buzz from their database that correlated to the same time the recording was made, proving that there were no interventions, and that the buzz was continuous with the national archived pattern of oscillation across the country. This trial, as well as leading to the conviction of the arms dealers, revealed for the first time that ENF analysis was being used not only by Grigoras in mainland Europe, but also by the British police force as a surveillance system. (This was a previously undisclosed fact as the UK has its own national grid not conjoined with the European continental grid.) This piece of information communicated for the first time that whether emitted from a neon light in Glasgow, a fridge in Southampton, or a laptop in London, the police were recording, and if necessary, listening to the nations buzz.

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[107] Rebecca Morelle, "The hum that helps to fight crime", BBC (December 12, 2012): http://www.bbc.com/news/science-environment-20629671.

Techno-juridical Frontiers of Sound

As is demonstrated in this last example, the opportunities opened up by the advent of digital audio technology in the mid- to late nineties radically increased the capacities and resolution at which forensic audio could be detected and analysed. The more that digital audio was used, the more the field of forensic audio was able to radically increase its sonic scope and its capacity to listen more deeply to the background of the noises that surround us. Another catalyst for this was that digital audio technology allowed several emergency telephone response centres throughout the UK to record and store the emergency phone calls they received without amassing another cumbersome archive of magnetic cassette tapes. They wanted to record the emergency calls for two reasons; both rapidly increased the necessity for forensic listeners. Firstly the response centres wanted to catch the prank callers who were wasting their time and resources. In such cases, forensic linguists would be called in to analyse the voice of the caller and make a profile of the speaker or match it to a known suspect. Secondly, the emergency event could at times be heard amongst the background noises of the call, and when the police realised they could hear remnants of a crime taking place in the emergency phone recording, they turned to the expert linguists, like Dr Peter French, who they had first contracted to listen to and profile the voices on police interview tapes. However here, rather than asking these forensic linguists and phoneticians to zoom into the background noise of vocal language (its accent, impediments, grain and pitch, as we heard in Chapter 1) the police began asking the same group of speech scientists to use their audio equipment and labs to listen past the voice speaking to the operator in the emergency call and to identify the sounds behind them. For the first time, people trained in linguistics and the sonics of the human voice were applying their skills to, for example, gunshots, architectural acoustic environments, electrical buzz, and any other noise that could provide information about the nature of the crime recorded in the background. This is how these linguists began to expand their audible horizons to include not only the speech of the human voice but also of the speech of the body, architecture, ammunition, and infrastructure.

A direct correlation thus can be drawn between each of the incremental legal (and therefore forensic) incorporations of audio technology and the increasing of elements in our sonic and acoustic world that become legally audible or legitimate. With the introduction of the tape recorder in police interviews in 1984, there was an expansion from words to the voice, which meant that not only our words (*logos*) but our voices (*phone*) could be made to testify. With the implementation of digital audio technology in emergency phone call centres in the nineties, we see an expansion from profiling the voice of a caller to defining and archiving a new lexicon of sounds from the world behind that voice. Then, at this present juncture, the introduction of forensic algorithmic audio analysis in the mid-2000s crossed another frontier in listening,[108] where the vast archive of voices, buzz, and other sounds amassed by forensic listeners since the mid-eighties could be input into a database to be cross-checked and analysed, along with new sounds coming in, all in a matter of minutes. This possibility to algorithmically make forensic comparisons between sounds and voices sharpens the possibility to distinguish between the sounds of the increasingly noisy world around us. What happened to the voice in the mid-eighties—the process by which the sound of speech could be legally considered speech itself—can now be applied to almost any sound. For example, the next section of this chapter will be dedicated to ShotSpotter, a technology that can not only confirm the presence of a gunshot on an audio recording, but analyse and automatically cross-check the grain of that gunshot with hundreds of recordings of similar shots, to reveal with greater certainty the kind of ammunition and firearm used. Listening to the background, to the material and infrastructural elements of sound, demonstrates the ways in which the speaking subject that once dominated the foreground of political practice is increasingly diminished, as attention is given to a field of noises, of which human speech is but one part. The many parts of this collective cacophony of testimony, out of which the truth is meant to be drawn, might audibly contradict or corroborate each other at any given moment of a sound recording.

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[108] In 2004, Grigoras began automating his system of analysis and Nemesysco released its first trials of voice stress analysis.

Each of these technologies, beginning with the first microphone used in court, expand the resolution of legal audibility and with this, pull sounds out of the background and into the foreground. Whether it is the specific phonemes that constitute someone's accent or the buzz of a streetlight behind where they stood at the time of the recording, forensic listening increasingly hones in on and expands our audible horizons. With each of these moments of correlation between the incorporation of audio technology and the expansion of legal audibility, the definition between what constitutes foreground and background for the listener (and subsequently, for the law) is definitive of this process. I will now turn to one of the latest pieces of forensic audio technology, ShotSpotter, to think further around the tensions and conflicts that emerge with the expansion of the frontiers of listening. This technology proves a current and articulate example of the implications of focusing on background noises, and what happens to those voices left behind in the foreground of an audio recording.

H[gun shot]ow c[gun shot]an I f[gun shot]orget?

In December 2014, new audio evidence emerged that captured the moment when unarmed teenager Michael Brown was shot to death in Ferguson, Missouri. The audio was submitted by an anonymous man who incidentally caught the moment of the shooting outside his window as he was recording and sending a personal voice message from his phone using the Glide app. Glide promotes the use of voice rather than text in order for its customers to "Get a little closer!" In this case, Glide audio happened to allow the world to get a little closer to the shots that killed Michael Brown. The following is a transcript of that recording:

> "You are pretty. [6 gun shots and a gap in his speech lasting 1.8 seconds]. You're so fine. Just going over some of your videos. [gun shot] H[gun shot]ow c[gun shot]an I f[gun shot]orget?"[109]

In this recording it is audible that Brown's killer, a police officer by the name of Darren Wilson, fired his gun ten times. From the autopsy of Brown's body we know that six of these shots hit him, mostly

[109] Jason Hanna, "Audio captured at time of Michael Brown shooting, company says", CNN (August 28, 2014): http://edition.cnn.com/2014/08/28/justice/michael-brown-ferguson-shooting-audio/index.html.

in the head; all were above the torso. That ten gunshots were fired was the most rudimentary information that Dr Robert Showen, one of the key expert listeners in this case, and the founder of ShotSpotter™, was able to deduce from the recording. His analysis of the gunshots focused mostly on the echo they created. Using the impulse sounds of the shots and their reflection off nearby walls, he was able to define the space around the shooter. As each echo of each shot had the same exact delay in time between the original and the echo, it was possible to conclude that the murderer was stationary and was not moving while he was firing the shots. This evidence corroborated several eyewitness testimonies and was also key to denying the veracity of other contradicting accounts that Darren Wilson was moving towards Michael Brown as he was firing. These echoes were of central importance to the legal technicalities necessary in making a claim of self-defence. Although Darren Wilson had shot an unarmed man in the head repeatedly, these echoes accompanied a legal narrative that proved he was acting in self-defence, and therefore was not convicted by the grand jury.

ShotSpotter™, which Dr Robert Showen founded and created, is a gunshot detection and echo location system that works by installing microphones throughout a neighbourhood. When these microphones detect a loud bang, they automatically triangulate where the sound is coming from. The loud impulse is uploaded and automatically analysed against a database of bang sounds to quickly verify if the sound registered is indeed a gunshot. If it decides that the sound is gunfire, rather than a firecracker or an engine backfiring, it sends the location of the gunfire to the Police Department. In 2014 alone ShotSpotter™ detected and processed over 61,000 recorded gunshot incidents many of which were later used as evidence in court.[110] This system is now installed in

[110] Robert Showen, "The Intelligence which Scientific Analysis Can Derive from Gunshot Audio", ShotSpotter Blog, (August 27, 2014): http://www.shotspotter.com/blog/the-intelligence-which-scientific-analysis-can-derive-from-gunshot-audio.

eighty poor and mostly African-American neighbourhoods across the US and is currently expanding to South Africa.[111]

Dr Showen told me in an interview that ShotSpotter microphones are typically placed on the rooftops of buildings so that one can "listen to the horizon", a statement that encapsulates the pioneering drive of forensic audio to listen at the limits of the perceptible.[112] Here the possibility to "listen to the horizon" is made possible by people donating small portions of their rooftops to ShotSpotter microphones to create this audio vista. Showen explained:

> We went out with the police officers and knocked on doors and asked if the people would allow us to put a sensor on their building to help protect the community from gunfire, practically everyone agreed [...] everyone was just willing to donate their roof for the benefit of the community.[113]

I was surprised by Showen's statement that "everyone was willing" to donate their rooftops, not because people in this community are not willing to participate in the control and potential eradication of gunfire in their neighbourhood, but because the statement contradicts the ShotSpotter™ public message. The rhetoric of ShotSpotter when it is sold to the municipal authorities in the US suggests that communities affected by gun crime are composed of people who had been unresponsive to gun crime and who failed to report more than 80 percent of the gunshots they had heard. The idea was that ShotSpotter™ would replace these insensitive ears with law-abiding microphones to be able to algorithmically detect this 80 percent of previously unreported gunshots. Showen says: "Our sensors' microphone sensitivity is almost identical to what is on a cell phone and a speakerphone."[114] However the capacity of human hearing is in general much more sensitive and adapted to interpreting sounds than a cell phone microphone placed on a rooftop. Therefore, the issue is not that people don't hear the gunshots and the microphones do, but rather

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[111] Dr Robert Showen interview with Lawrence Abu Hamdan interview, by telephone, October 1, 2015.

[112] Ibid.

[113] Ibid.

[114] Ibid.

that people hear the gunshots and choose not to report them to the police. One reason for this high figure of unreported gunshots could be that people living in these areas are afraid of the repercussions of reporting to the police from gangs operating in their neighbourhoods. Another reason could be rationally deduced from examples such as the deaths of Amadou Diallo, Manuel Loggins Jr., Ronald Madison, Kendra James, Sean Bell, Eric Garner, Alton Sterling, and Michael Brown, that it is often enough the police who are firing the gunshots they are hearing, and even if not, the repercussions of calling the police could lead to more violence and unnecessary loss of life. Showen, although attempting to use his technology and expertise to reduce gun crime, has never analysed a gunshot that has led to the conviction of a police officer but has worked on two cases in which his acoustic evidence showed that police officers were using legitimate force when killing and maiming young Black men.

A further example of how ShotSpotter technology is focused only in one direction, civilian gunfire and not police violence, emerged when Showen explained to me the inauguration ceremony that happens in each community when ShotSpotter is installed: "When we install a system, we have the police go out and shoot and we see the accuracy and the sensitivity of our system."[115] This shows how Dr Showen and ShotSpotter consider police gunfire to be safe despite multiple examples of police gunfire being used unlawfully and dangerously against these communities in which the police are openly firing in order to calibrate the newly installed ShotSpotter system. Though calibrated by police gunfire, ShotSpotter is deaf to violence the police themselves bring to these communities, and ignores that the 80 percent of unreported incidents is a silence that is, at least in part, the result of police violence. In replacing the 80 percent of previously unreported incidents of gunfire, ShotSpotter algorithmically automates a law-abiding community. Rather than seeking to sensitively restore a communication breakdown, it digitally simulates a channel of communication between the community and the police.

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[115] LAH interview with Dr Robert Showen, 2015.

The 80 percent of unreported gunshots represents a silence that needs to be heard in its own right. If we, forensic listeners, are to follow John Cage's claim that "there is no such thing as silence", then this must also extend to political or social silence. In other words, this silence should not be interpreted as a negative sound but rather interpreted as a legible utterance that speaks on its own terms about police brutality. This silence, defined in public rhetoric as the 80 percent of unreported shots, was recorded on the day Michael Brown was murdered. The recording that captured Brown's death by the man using the audio messaging app Glide was widely held to be significant because it captured the event of Brown's killing, yet it is also incredibly significant for this study, because, as I will explain, it also captured in high fidelity the sound of this particular community's silence.

When this anonymous recording was broadcast on news networks and played back in the grand jury trial, a kind of Cagean figure–ground shift was being asked of the audience, to not listen to the voice in the foreground, but to listen past it to the sound of the gunshots in the background. Yet my argument is that it is only in paying attention to the interplay between foreground and background, between the speaking voice (and its pregnant pauses) and the gunshots, that the more comprehensive politics of this murder emerges. As I began to outline in the introduction to this thesis, what constitutes a fair hearing, in court or in society at large, is a question of what is literally heard—a gunshot—versus what is sociopolitically not heard, or ignored—here, the community's silence. My argument is that this community's silence is indeed audible in the voice of the caller in the foreground, despite the sound of gunfire ringing out loud outside his window, as he continues unfazed to send a message to the subject of his admiration. It seems insignificant to him that his message of desire and affection is underscored by the sounds of brutal violence. "You are pretty," he says, before a short pause of 1.8 seconds that is long enough for a volley of six shots to ring out, and then a brief break in the gunfire in which he resumes by saying "You're so fine". This short pause is his only acknowledgement of the gunfire, as he waits for it to subside so he can carry on with his

message. This pause lets us hear that he can hear the gunshots. He is interrupted by the gunshots but does not verbally acknowledge them.

The trial of Darren Wilson, aided by the analysis of Robert Showen, ignored the sound of this man ignoring the gunshots. The voice, especially its aposiopesis, was pushed into the background. This was the sound of a man desensitized to violence in itself, which speaks to the extent of violence, including that which is perpetrated by the police, in these communities. Moreover, as he does not respond by alerting the emergency services, we hear the sound of the distrust of the police, who, as he may have known or not, were at that moment outside his house committing the murder of an unarmed citizen. This pause in speech, his silence fused with the gunshots, provides us with an extraordinary example of the meeting of quotidian and spectacular forms of institutionalised violence, where in which we hear the desensitised voice of a young Black man coincide with the killing by the police of another young Black man. What we can hear, upon this more sensitive listening—what is captured in the interplay between Brown's death and this man's pause—is not simply the murder of one unarmed Black teenager but the sound of institutionalised racist violence in the US. The fusion of the foreground and the background details of this recorded sonic landscape simultaneously make audible an endemic distrust of the police, and the sound of the police as perpetrators in the violence and persecution against a community. The 80 percent of unreported gunshots is so central to ShotSpotter's argument for their own necessity as a security infrastructure; it is one of their most repeated statements, yet when its founder is confronted with this recording, which he listens to over and over again, which includes a clearly audible trace of a desensitised populace, he ignores it. The 80 percent are only useful to ShotSpotter as silence, and therefore their silence is doubled; their silence becomes silenced.

The above arguments represent my contra-analysis to Showen's expert evidence of the recording of Michael Brown's death. To go into more detail, I agree with the principle put forward by Showen

that the 0.136-second time delay between each gunshot and its first echo do appear to be consistent between the ten shots fired.[116] However, there is another time delay, which is omitted from Showen's report, and which also needs to be taken into consideration when evidence is provided in cases that deal with such race-related violence. This is the 1.8-second time delay in which the utterance of the voice in the foreground is interrupted by a volley of six gunshots. For the reasons outlined in the preceding paragraphs, the 1.8 seconds between "You are pretty" and "You're so fine" are vital in order to comprehensively understand not just the ways in which these shots acoustically echoed at the time of Micheal Brown's murder but the ways in which the sounds of violence bleed into the homes and lives of these communities. By listening to and amplifying this time delay, as well as those of the delays between the shots, we can hear the echoes of this individual murder while also expanding the range of our audibility to encompass a quotidian violence perpetrated not against a single victim but rather against an entire community, which results finally in their desensitisation or purposeful ignorance to the sounds of gunfire out side their homes.

When ShotSpotter was first installed, many news articles in the *Guardian* and the *New York Times* appeared with their main focus on concerns that ShotSpotter could constitute a Fourth Amendment violation—warrantless search and seizure of public sounds. They decried a pervasive method of surveillance that could be used to record private conversations amassing a vast sound archive available for all kinds of security applications. Yet according to ShotSpotter's privacy policy: "The entire system is intentionally designed not to permit 'live listening' of any sort. Human voices do not trigger ShotSpotter sensors."[117] Rather than see this, as the media did, as an insidious method to capture our voices under the guise of policing gun crime, I take ShotSpotter at its word, following my arguments above: the company are not interested in human voices. Human voices and human silences are replaced, overdubbed, by ShotSpotter, rather than collected and distributed by this

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[116] Robert Showen, "The Intelligence which Scientific Analysis Can Derive from Gunshot Audio".

[117] ShotSpotter Privacy Policy, April 2017. See: http://www.shotspotter.com/privacy-policy.

technology. ShotSpotter does not represent a system for listening to a populace but rather for listening past them, to the horizon beyond their voices. Much like the implications of LVA 6.50, there is a correlation here that suggests that the more these technologies can probe deeper into our voices and our environments, the less our voices and circumstances are actually being heard. These technologies do not always represent an Orwellian version of surveilled society, where everything we say is overheard, but rather a shift in the fundamental concept of what constitutes legitimate speech, that is moving further and further away from the subject's verbal account of itself. A call to privacy may not then be the best strategy for the contestation of ShotSpotter surveillance, as it is does not adequately address how ShotSpotter listens. I would like to highlight via a final example how the appropriation of ShotSpotter technologies by citizens, rather than a withdrawal to a state of privacy, may place these technologies at the true service of the communities that are hosting them.

The "blue wall of silence", an unofficial code amongst police officers to not testify against each other to what they have witnessed, has been one of the most obstructive obstacles to families trying to receive justice in the face of illegitimate use of force by the police. However every week, the city of Minneapolis releases a map showing all the gunshots that were detected by ShotSpotter microphones in the city (Figure 12). The gunshots included here also include all of the police gunfire, and so unintentionally, the city of Minneapolis are building an archive that could help civil rights groups to gather data on when and where police gunshots are fired—data that was previously occluded by "the blue wall of silence". In order to identify what is police gunfire and what is not, it is necessary to corroborate gunfire that has been geographically and temporally registered by ShotSpotter microphones with eye- and ear-witness testimonies of citizens on the ground. This would then lead to a small crack in the blue wall of silence, from which one could gather information and archive police gunfire. This would allow ShotSpotter to be used to show that the community's silence, identified by ShotSpotter and municipal authorities as "the 80 percent of unreported gunfire", is due in part to the extent of police gunfire in those neighbourhoods. This

database could be used to demonstrate that unlike "the blue wall of silence", the communities' withholding of information is not exercised as a legal right but rather as a result of legal violence; that the failure to report gunshots is a result of the fact that the police themselves are regularly firing guns throughout specific neighbourhoods. Therefore, I would suggest that instead of demanding our privacy be granted and rejecting this technology as a Fourth Amendment violation, we should instead be working to reverse-engineer its very selective ears. Our energy should be spent finding ways to embrace such technologies as tools that may extend the audible capacities not only of the police, but of the public. In this way, we might seek to build an alternative database of sounds from which this software can become artificially intelligent to a parallel reality of violence.

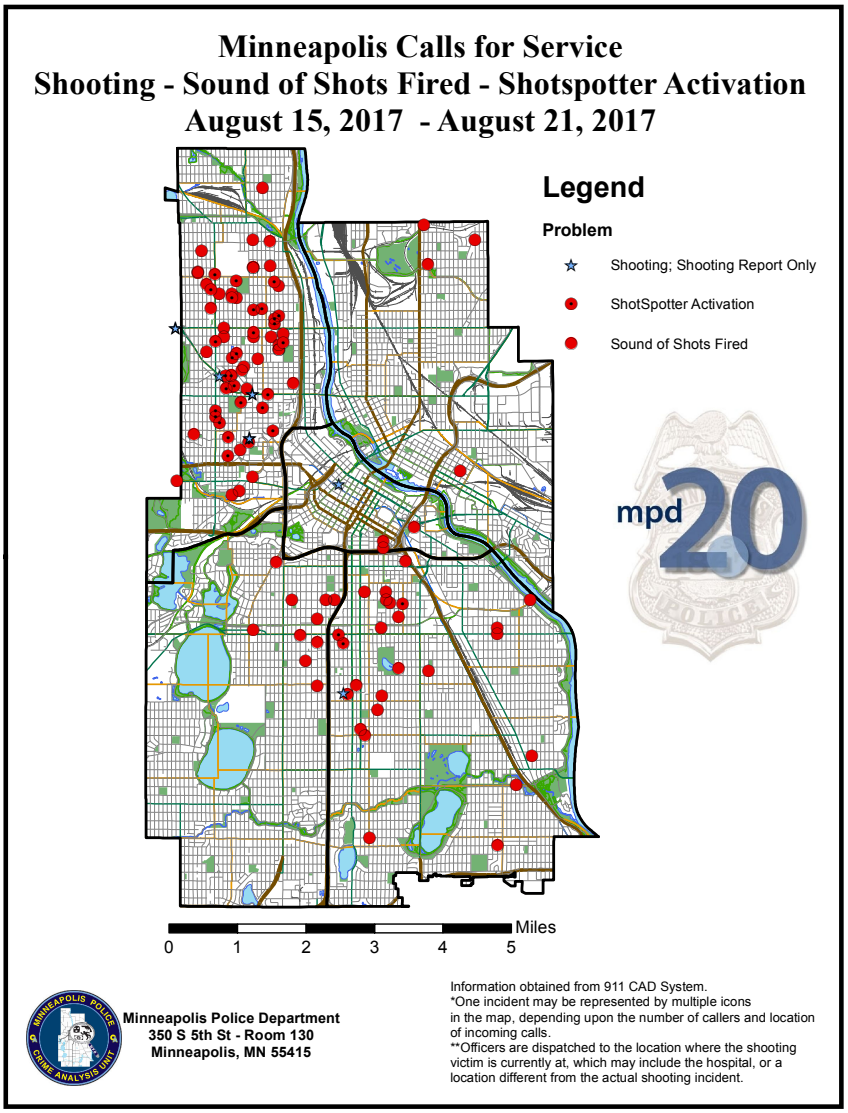

Figure 12: An example of Minneapolis police department weekly uploaded map showing all the shots fired. Source: http://www.ci.minneapolis.mn.us/police/statistics/crime-statistics_codefor_shotsfired.

Avant-garde Audio Technology

This chapter has used numerous examples of established and emerging audio technologies designed for legal and investigative purposes to document the tensions and conflicts that emerge with the expansion of the frontiers of listening and its implications for the attention given to the foreground and background of an audio recording. As I have highlighted, such tensions between foreground and background need to be approached with caution and sensitivity: on the one hand, a sensitivity for those voices, and silences, that are subsequently unheard; on the other, for the inner workings of the technological principles that codify these listening practices into law, because the implications for the speaking subject need not be considered as purely negative. The expansion of these technologies beyond the capacities of human hearing play a part in an exclusionary process where human vocal agency is being transformed and in the process is losing some political potency. Yet at the same time, and by the same means through which these technologies expand the horizons of the audible, they produce new forms of inclusion, where sounds previously designated as noise or silence become able to speak.

For example, to return to the stethoscope, it would have been incredibly reductive to decry the benefits of auscultation to the inner sounds of the body because of its break with humanistic conceptions of care. The stethoscope's medical contribution outweighs the transformations to the doctor's ear from patient testimony to the testimony of the body. Contesting the transformations and expansions of listening would have come at the cost of a more precise and expedient set of medical diagnoses. Similarly, I would argue that fighting for imperfect legal conventions, such as Fourth Amendment rights in the US, to be upheld in the face of such transformations in listening is a conservative approach, which fails to recognise that the conditions of listening have themselves transformed and so render such older legal conventions irrelevant. My argument is that we should not contest but be sensitive to the nature of these transformations to listeners' capacities and methodologies, because they are indicative of the ways in which the speaking subject must also

transform and expand to include, at the very least, the murmuring of their internal organs, and further, the electricity humming in the background, the reverberant echo of the room in which they are situated, and so on. This chapter therefore holds that wherever technologies of forensic listening are used to recalibrate the legal ear as to what constitutes legitimate forms of speech, they have both exclusionary and inclusionary potential. Out of this acknowledgment, an expanded sense of the speaking subject can emerge, so that when they pause their speech, this 'silent' pause, containing the sounds of their background, can be understood, measured, and its value weighed proportionately to its political demands.

This sometimes difficult technological transformation of the legal conventions that apply to our voices, including their complete silencing, necessitates too a transformation of the way we think about the political agency of speech. This chapter has kept its sights on the moments in which and through which such transformations occur and argues that by paying close attention to precisely what is at stake in these shifts we can transform the means of our contestation with them. Rather than falling back on the languages of the law that preceded these new abilities to listen at the fringes of human speech and human sonic perceptibility, we must learn a new legal parlance. Rather than foreclosing the possibility of an electrical hum to speak, we should ourselves be learning how to speak mains buzz; that is, to speak back with the same intensity and expanded context with which our voices are now being heard and our world surveilled.

In acknowledging key examples of technology that expand and distort what constitutes the space of legitimate speech I am not arguing for a return to the human verbal accounts that previously monopolised *logos*, but rather for a nuanced understanding of the newly expanded field of hums, vocal jitter, and echoes that now constitute legal *logos*. With the expansion of legal listening into our bodies and across the aural environment that they occupy, the borders of the speaking subject must expand beyond verbal capacities alone, alongside these technologies, into its background

surroundings and beyond its individuality. To do this we must also learn from experimental strategies of expression like those of John Cage, who shifts the focus from the individual performer to an audience as a collectivity of authors, or from so-called noise music, which shifts its expression from the musical instrument to the infrastructure through which the music is amplified. Just as forensic listening legally instantiated such practices, it is now necessary to integrate them not only as methodologies for listening but as creative means of legal expression and contestation. Such figure-ground shifts, common in avant-garde and forensic approaches, need to now work their way into the broader language of how we contest and call for new laws that govern the currently grey legal area of our audible horizons. While our individual voices might be receding into the background as a result of technologically expanded forms of listening, they can potentially reemerge as part of a collectivity of sounds, which—as I demonstrated in the necessity of a fusion of foreground and background in the evidence of the Micheal Brown case—speak beyond the individuality of an event and testify at the scale of community, to the structural as much as to the personal forces of violence.

Chapter 3: Sound Bleed

Accompanying this chapter please review the following relevant material included in the portfolio of practice:

Investigation: Saydnaya: Inside a Syrian Torture Prison

Project: *Saydnaya (the Missing 19db*) (2017), stereo audio 12'

&

Saydnaya (Ray Traces) (2017), light installation

URL: https://labuhamdanphdpracticeportfolio.squarespace.com/chapter-3/

Chapter 3: Sound Bleed

On January 17, 2005, Fabian Bengtsson, a Swedish electronics executive, was kidnapped and kept in a narrow wooden case for seventeen days before he was released. Bengtsson never saw his kidnappers or the place he was held, however through the walls of the wooden box the sound of the assailants' voices leaked along with other acoustic signifiers. Most importantly for the police investigation after his release, Bengtsson identified what time the jingling song of the ice cream truck passed by outside the address every morning. This information was key in enabling investigators to find the apartment where he had been held and to locate and convict the kidnappers. This story was widely circulated at the time by Swedish news agencies and pricked the ears of Anders Eriksson, a Forensic Phonetician at the University of Gothenburg, and his student Lisa Öhman. They realised that although countless experimental studies had been conducted into the veracity of eyewitness testimony there was very little research in relation to the memories of earwitnesses. They set out to rectify what they defined as "a neglected research area"[118] by embarking on a major study into the reliability of auditory memories, to "investigate how good witnesses are at describing voices."[119] The study tested a total of 949 witnesses and focused only on the ability of witnesses to blindly identify unfamiliar human voices. This focus only on human voice recognition means that to this date there still has been no major scientific study on earwitness memory to non-voice-based acoustic stimuli. This chapter is dedicated to earwitness testimony and its role in the production of truth, taking as its central material the testimony of six earwitness survivors of a torture centre of Assad's regime in Syria, Saydnaya. Following on from the previous chapters of this thesis, Chapter 3 uses the material and conceptual perception of sound to analyse the contemporary conditions according to which we are being heard, and by which we in turn can listen to crimes. Before arriving at my main case study

[118] Lisa Öhman, "All Ears: Adults' and Children's Earwitness Testimony" (2013). Department of Psychology, University of Gothenburg, Sweden, 2.

[119] Ibid.

of Saydnaya, it is necessary to first establish some of the important contexts and physical properties that concern earwitness testimony and its reception in before the law.

Earwitness testimony is an overlooked field of research in contrast with research into methodologies for soliciting eyewitness accounts, despite the fact that earwitness testimony is extremely common in legal investigations and trials. The widespread use of earwitness testimony is due to the fact that crimes are often heard and not seen; intentional crimes are most often designed to take place out of sight, in the darkness of night, in an occluded area, with the perpetrator wearing a mask, and so on. Moreover, illicit acts like domestic violence or home intrusions take place within the privacy of a home, in which the barriers to an eyewitness observer are multiple, while the vibrations of the violent event and the shouts of its victims or perpetrators may leak outside the visual frame into the auditory range of potential earwitnesses living in or passing through neighbouring spaces. Earwitness testimony has been therefore a vital tool in determining the verdicts of hundreds and thousands of trials all over the world, and this testimony has focused on a broad range of sounds, including but not limited to the voice: the sounds of cars, gunshots, doors, music, and so on. All of the most recent high profile and mediated trials, whether Amanda Knox in Italy, the Trayvon Martin case in Florida, or Oscar Pistorius in South Africa, devoted large portions of the legal process to measuring the authenticity of what nearby witnesses claimed to have heard through the walls and windows in proximity to the crime scene. In the case of Trayvon Martin, the question was whether the screams heard by witnesses in the neighbourhood could be attributed to the murderer George Zimmerman or to the victim. In the case of Oscar Pistorius's trial for the killing of Reeva Steenkamp, it was vital to determine whether the sounds of arguing voices were heard by witnesses directly before or after the fatal gunshots rang out, and more specifically, which frequency range these voices occupied, for this information indicated the gender of the shouts.[120] The court

[120] "Pistorius witness 'heard shots, screams, more shots'", BBC (February 20, 2013): http://www.bbc.com/news/world-africa-21514428.

deliberated not on whether or not he killed his girlfriend, as this was not contested, but whether or not he heard her voice and therefore through the toilet door and therefore if he intended to kill her rather than someone he believed to be an intruder. Moreover, in this case, Pistorius himself was primarily an earwitness to the killing he perpetrated, as there was a closed door (and wall) between himself, who was firing the gun from the bathroom, and Reeva Steenkamp, who was in the toilet. Pistorius testified in response to the earwitness testimony of his neighbours that he did not hear the screams of Reeva Steenkamp because the gunshots he had fired through the bathroom door had temporarily deafened him stating on the court record: "When I had finished firing the gunshots, I was screaming and I couldn't hear my own voice".[121] This is just one example of how a trial can often be built on layers of contesting earwitness narratives. It is also an example of the ways in which earwitness testimony is sublimated to eyewitness testimony: the wall that visually divided the perpetrator and the victim, in the sense that Pistorius did not see the person he was killing, was his greatest legal defence (Figure 13).

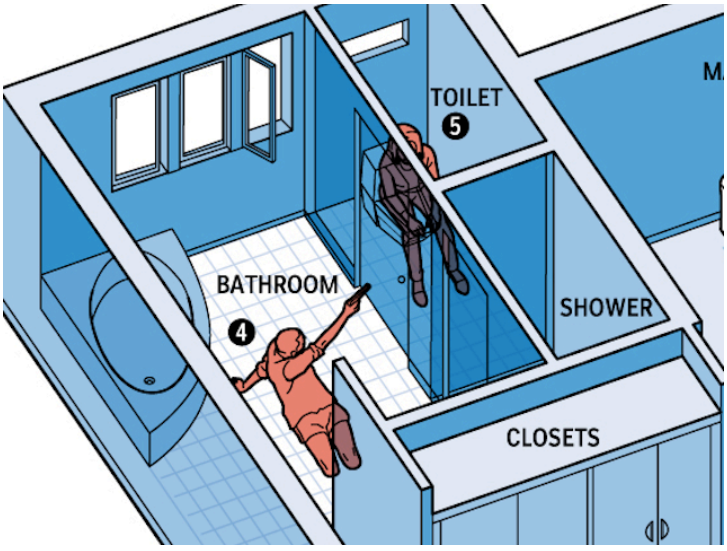

Figure 13: A diagram demonstrating the position of Pistorius and Reeva Steenkamp, and the wall and door that visually separated them at the moment of the killing. Source: *http://balleralert.com/profiles/blogs/oscar-pistorius-found-not-guilty-of-premeditated-murder/*

[121] "Oscar Pistorius: Blade Runner tells murder trial he did not hear Reeva Steenkamp scream", Australian Broadcast Company (April 12, 2014): http://www.abc.net.au/news/2014-04-12/pistorius-tells-court-reeva-steenkamp-did-not-scream/5385714.

One reason for the prevalence of earwitness testimony is that sound is of course omnidirectional. This means there can be more listeners in earshot of an event than those for whom the sound is intended. In purely acoustic terms, the sound of an unsuppressed gunshot includes many more auditors than the target it is aimed at. To put the multidirectional nature of sound in context, US military statistics from 2011 stated that 745,000 veterans (of all wars) were receiving compensation for tinnitus, meaning that hearing damage accounts for more than any other war-related injury.[122] Though these are extreme cases, where irreparable damage to the cochlear organ has occurred, they are articulate about the ways in which the acoustic element of warfare includes more people than its intended targets. The same logic is applied to crime scenes, whose sounds might not be at ear-splitting volumes, but whose presence as sound usually extends beyond the limits of the visual. While the omnidirectional quality of sound brings more people into its range than visual information can, this also means that a witness experience of an acoustic event tends to be non-direct, mediated by the acoustic environment, with earwitnesses often testifying to something they overheard by chance.

This non-directional and mediated way in which we perceive sound is due to the fundamental difference between sound waves and light waves (electromagnetic waves): light waves do not need a material medium to propagate. This means that light, if uninterrupted, can travel a much greater distance and at much higher speeds, but a surface such as a concrete wall will interrupt the path of a light wave by reflecting and scattering its energy. A concrete wall is composed of grains of calcium carbonate and aluminosilicates, and if thick enough and of the density of a conventional dividing wall, these grains will not allow the photons of light to pass through. Inversely sound waves require a material medium in order to propagate, and so unlike photons of light, the sound is not the moving object but rather it makes the molecules of objects around it vibrate. Therefore walls which often

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[122] J. Martin Daughtry, *Listening to War: Sound, Music, Trauma, and Survival in Wartime Iraq* (Oxford University Press, 2015), 94.

define the limits of visible space can in acoustic space function as a medium for the transmission of sound waves.

Although walls are much less sensitive to air pressure than the oscillating sensor of a microphone, the physical principle is in essence the same. A solid wall will move in response to the oscillating pressure created by a sound wave; it is much less elastic than a microphone sensor or our tympanum, but it still has enough elasticity to atomically deform under pressure. If the side of the wall facing the sound wave oscillates, then this too, depending on the energy of the initial sound, is likely to continue to vibrate the molecules until it reaches the other side of the wall, where it will vibrate the molecules of air it is in contact with and propagate the sound throughout the adjacent room. In this sense the wall does not only behave like a microphone but also a loudspeaker in the sense that it not only absorbs sound, but also broadcasts it by vibrating the molecules touching its surface;. Walls then can play the role of a comprehensive system of amplification, both collecting and transmitting sound. This, in turn, is what has enabled many earwitnesses to crimes to partially hear the events behind walls. Yet like all kinds of media, whatever transmits also distorts its original signal, and to some extent the medium is always audible or visible in the circumstance of a mediated event. Walls rarely give a crystal-clear amplification of the sound; they are a medium that not only leak sound, but reflect, filter and absorb its frequencies.

Though every wall is different, a recent study into the properties of walls for filtration, absorption, and transmission of sound by the Department of Applied Physics at the University of Seoul found that usually only 3.5 percent of the original intensity of a sound passes through an unperforated wall.[123] This 3.5 percent refers only to the percentage of pressure relative to the original sound, most of which is reflected off the walls back into the room in which the original sonic event occurred.

[123] Jong Jin Park et al, "Giant Acoustic Concentration by Extraordinary Transmission in Zero-Mass Metamaterials", *Physics Review Letters*, 110 (June 14, 2013), 244–302.

This huge drop in intensity is due to the fact that conventionally walls absorb and filter off the high- and middle-range frequencies of the sonic spectrum. This higher frequency spectrum of sounds run out of energy faster and therefore do not have the acoustic force necessary to move through a wall. Inversely, the lower frequencies with longer wavelengths travel greater distances and can move through thicker surfaces much more easily. This filtration process whereby the higher spectrum of a sound's frequencies does not penetrate surfaces means that the affected frequency range, depending on the thickness of the wall, is that which the human voice occupies (on average 120–200 Hz). This means that walls mediate the lower frequencies of an event and leave the witness on the other side of the wall with an often muffled and distorted account of what people behind the wall are saying. This is perhaps why the most common form of earwitness testimony is to sounds of high acoustic pressure, such as shouting, gunshots, loud music, or car engines (Figure 14).

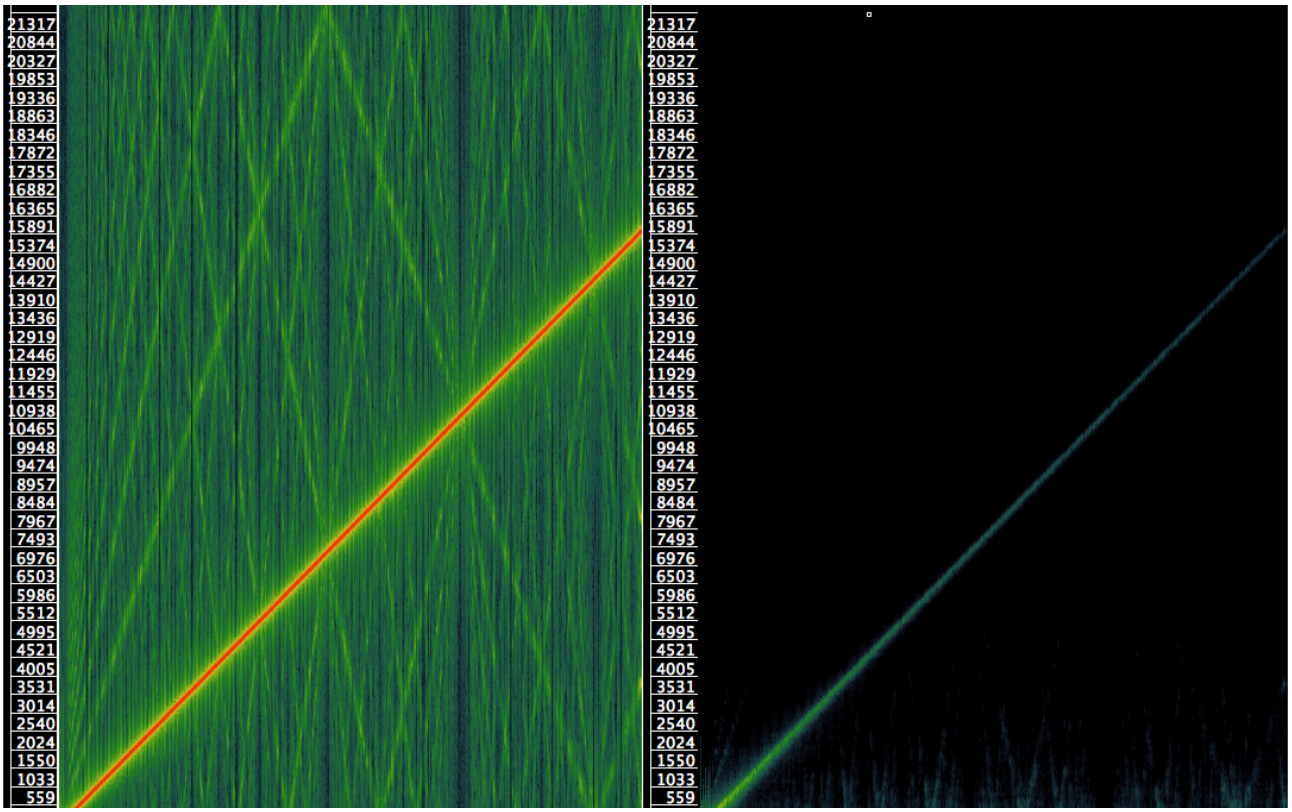

Figure 14: A comparison of two audio recordings of a sine wave (the most simple tone) sweeping up across the frequency spectrum (from low pitch to high pitch) over an 8-second period of time (from left of each image to right of each image). On the left, the sound is recorded in the same room as the sound source; on the right, it is recorded on the other side of an adjacent wall to the room in which the source is located. Spectrographs show the intensity of the signal based on the intensity of the colour across the spectrum: black is equivalent to no sound and bright red signals a very high sound intensity. By looking at the intensity of the colour in each image across the frequency spectrum we can get a sense of the process of filtration and manipulation that a 110 mm internal plaster wall achieves on a sound signal.

On the one hand, walls are a medium through which an event that is occluded from vision can be experienced. On the other hand, the viscosity or thickness of walls becomes an inseparable part of the experience of the sound of the event, allowing the seepage of sounds but in doing so filtering, blurring, and distorting the original sound. We meet here the paradox of earwitness testimony, where the multidirectional and vibrational medium of sound creates the conditions for witnessing but also distorts the earwitnesses's capacity to act as a highly credible source of testimony. This is because the logic of the accumulation of legal evidence is based on objects and testimonies that are defined by distinct boundaries or must be singular identifiable entities, which like photons of light can be traced as they move through different media. Sound waves, as discussed earlier, unlike photons, do not themselves move through the medium but rather cause a rippling effect that creates a rapid series of movement of the molecules around them; the object of sound is not itself moving but rather causing movement. The vibration of sound is therefore a collaboration between molecules of distinct objects, which each act to filter, resonate, scatter, absorb, and reflect the event to the extent that it is no longer singular and traceable by the same means as that which was witnessed by the eye. Sound waves are not objects with clear boundaries but rather a source of energy that blur the boundaries between objects themselves. These material conditions of sound make it a difficult article of evidence and is perhaps indicative of why less academic research has been devoted to understanding its use as a source of testimony. However it is precisely the complex nature of earwitness testimony that necessitates its closer study. This chapter is dedicated to just that task, asking how we can develop strategies for specifically accumulating evidence from an earwitness, in a way that works with and not against the forms of relational and collaborative propagation specific to this type of molecular vibration.

Visual barriers and acoustic filters such as walls and curtains were always present during the earwitness experiments conducted by Öhman and Eriksson at the University of Gothenburg on their test subjects. However once they began to conduct their tests, they realised that the results they

were receiving were not only affected by the blurring and seepage specific to architectural space, as described above, but by another significant blurred boundary—between what was heard physically and how it came to be stored in the memories of their test subjects. They saw that "auditory information about a perpetrator can have a negative effect on visual memory" and "that visual information can impair auditory memory."[124] The acoustic space of the brain, they found, had its own architecture of leakages, absorption, and information that was being cognitively filtered. It is in this terrain of confusion between architecture and acoustics, between sight and sound, and between an event and its memory that this final chapter is dedicated to exploring through the role of the earwitness. I will draw upon the experience of six earwitness survivors to a Syrian regime torture centre, Saydnaya, who I interviewed in Istanbul in April 2016. The chapter will discuss in depth the methodological processes employed and the narratives these provoked, in order to build a series of conceptual reflections on our capacities of listening to violence. Unlike the other chapters of this thesis, what follows reads more as a report of this set of encounters and a reflection on a series of experiments that, to varying degrees of efficiency, sought to create new conditions by which earwitness testimony could be heard.

Through this case study, I will argue for the importance of listening to leakage itself. These interviews focusing on acoustic bleed become an extended methodology for grasping the ways in which trauma and violence itself leaks, causing seepage between the senses, and across spatial, temporal, and ontological boundaries. The obstacles surrounding the earwitness, as defined by Öhman and Eriksson—namely the interference between the senses, the mediating force of architecture, and the inseparability between the processes of memory retrieval and the memory of the event itself—will prove in this case not simply to be obstructive, but at times provide a fuller impression of life in the prison. Yet like the walls themselves, such factors were both barriers and amplifiers to the truth of Saydnaya. I will argue throughout this chapter that these leakages and

[124] Öhman, "All Ears…", 16.

interferences became a source of knowledge that in a few specific moments granted the power to transform testimony into evidence and memories into matter.

Figure 15: A satellite image of Saydnaya, currently the closest we can get to seeing the prison. Photograph: DigitalGlobe, Copyright 2016.

Listening to Leakage

In March 2011 mass anti-government protests began throughout Syria. As a result, tens of thousands of these anti-regime protestors, including activists, lawyers, doctors, journalists, bloggers, teachers, and students were kidnapped and taken to secret service branches all over the country and tortured. Many of these people were subsequently blindfolded and thrown into the back of a thick-walled and acoustically isolated refrigerator meat truck and taken to a place they later came to know as Saydnaya. Amnesty International estimate 17,723 people to have died in custody in Syrian regime-controlled prisons, and 13,000 to have been executed by hanging in Saydnaya Prison since

the beginning of the revolution.[125] Saydnaya is located twenty-five kilometres north of Damascus and within its walls torture is used not as a means to gather information but primarily to suppress, terrorise, and punish any opposition to the authority of the Assad regime. The prison is still in operation and is inaccessible to independent observers and monitors. Moreover the ability for the survivors and former detainees to testify is severely impeded by the fact that they were kept in darkness, confined to one room for the majority of their 'sentence', and blindfolded as they were moved through the prison's corridors and stairwells. With the blindfold placed over their eyes, the leaders of the Syrian regime knew that the prisoners' status as a possible future witness would be fundamentally changed from eyewitness to earwitness, therefore limiting their credibility and capacity to fully remember and recount their experience, should they survive. Along with restricted vision, the detainees at Saydnaya are held in an enforced state of silence; this form of torture also allowed them to hear clearly almost everything happening inside the prison. What was required from forensic listening in this case was to help solicit the sounds that emerged from the silence at Saydnaya and to give language to the survivors' acoustic memories. Leading the audio component of a larger team of investigators from Forensic Architecture at Goldsmiths, University of London, and Amnesty International, my task was to design dedicated earwitness interviews to uncover the witnesses' acoustic memories, to reconstruct the acoustic space of the prison, and through this process to understand what is happening within its walls and build evidence about the conditions in which detainees are being held.

In order to design these interviews, I first read carefully the conclusions drawn from the earwitness experiments developed by the phonetics department at the University of Gothenburg. Eriksson and Öhman's study concluded that the biggest obstacle to soliciting earwitness testimony is that the standard police interview process is geared towards an eyewitness account of events and so specific

[125] Amnesty International, "Human Slaughterhouse" (London: Amnesty, 2016): https://www.amnestyusa.org/files/human_slaughterhouse.pdf.

techniques of "gathering information from earwitnesses need to be developed."[126] These findings prompted me to prepare interviews for the survivors of Saydnaya that were dedicated to dealing with a crime that was primarily heard and not seen; to design interviews that played to the strengths rather than the limitations of the material conditions and psychological/subjective experiences of sound. For example, understanding the way the sounds propagated through the walls of the building was taken into account not as a distorting factor but rather as a key element through which we could learn about the functioning of the building. This meant studying the vibrations the survivors experienced through the walls and floors into their eardrums as a mediated event, through which the building was transmitted. The physics of sound propagation became one of the means by which we could build an argument for the inseparability of the violence perpetrated and the building in which it was contained. These mediated sounds of torture became a means through which we learned about both the torture itself and the architecture of the building. One an example of this can be found in Jamal's[127] explanation of his first moments entering the prison blindfolded, moving through in a line while being beaten.

> They hit me many times. They told us to stand up, but we couldn't. They said, quickly, go, quickly. So we moved quickly, I heard an echo. Someone was screaming and his voice was echoing, suddenly the voice was deeper, and from the echo I knew we were in a narrow place, we were in a cell, I felt like we were in a toilet.[128]

We hear how the screams ahead of him acoustically illuminated his surroundings, like echolocation. Listening to how the architectural environment acoustically manipulated the sounds of the beatings allowed Jamal to form a generalised map of the spaces that lay ahead of him. That narrow place he sensed through the resonance of his fellow inmates scream, was a cell designed for solitary confinement with anything between five and nine inmates crammed inside. The acoustics of the scream, which was itself the result of a beating, communicated to Jamal the tight confines of what

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[126] Öhman, "All Ears…", 41.

[127] Throughout this chapter, for reasons of anonymity, I will refer to the prison survivors/earwitnesses by their first names only. Some of these names are also pseudonyms to protect their families if they are still inside Syria, who could be targeted by the regime forces for their testimony.

[128] Jamal, interview with Lawrence Abu Hamdan, Amnesty International Headquarters, Istanbul, April 13, 2016.

would become his cell. The particular acoustics of this scream and Jamal's short testimony above carry with them layers of information pertinent to a human rights investigation. Firstly, that someone was being beaten, connoting the presence of torture; secondly, that Jamal was forced to wear a blindfold, which could also be argued to be a violation of their rights as prisoners; and thirdly, the reverberant quality of the scream itself expressed that these prisoners were being kept in spaces far too small to host the eight other people Jamal was incarcerated with. Forensic Architecture later calculated these cells to be 2.35 by 1.65m in size. We see through such testimony and its analysis not only how the architecture of the prison can be documented as a site where torture is practiced, but how the architecture itself is used as a weapon of torture (Figure 16).

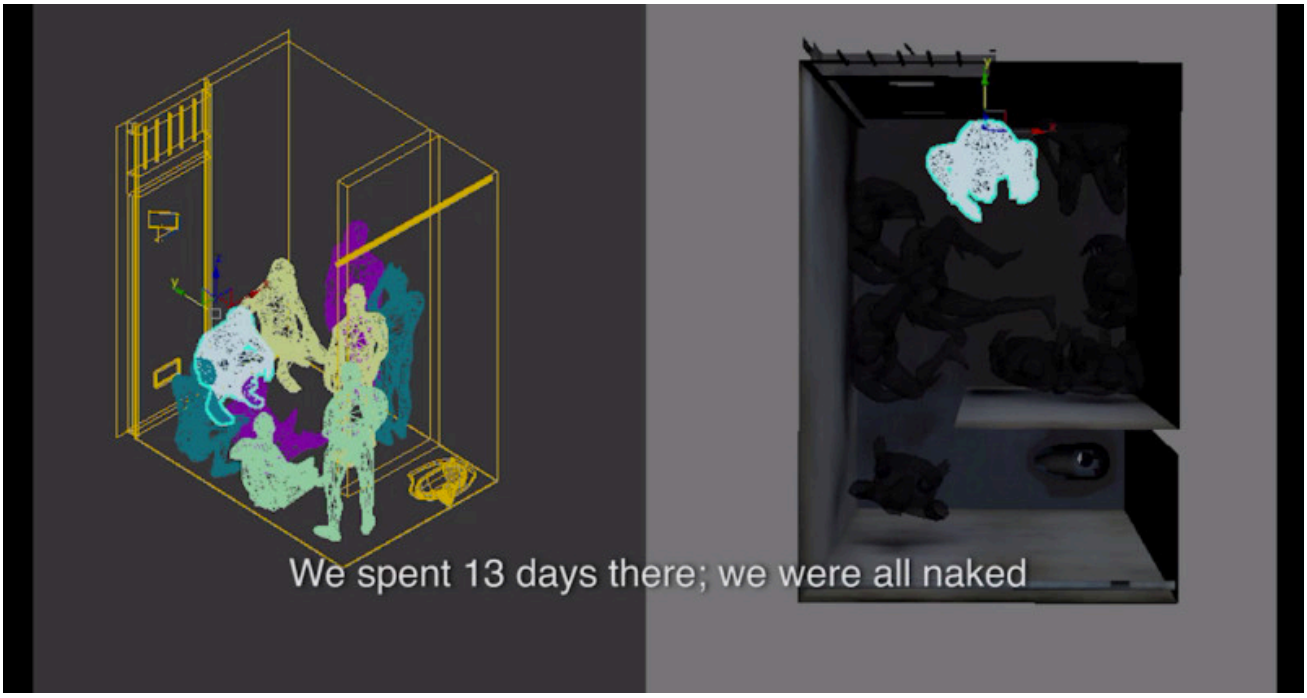

Figure 16: Video still from one of the many videos that are part of the *Saydnaya: Inside a Syrian Torture Prison* website by Forensic Architecture. Here we see a 3D reconstruction of the forced overcrowding of cells built for solitary confinement : http://saydnaya.amnesty.org/

Such examples of the space itself being used as a tool to enact violence are multiple and extend, as above, to the building's acoustics. Reconstructing the architecture of the building as best we could was thus a way in which to gather evidence not only about where the torture was being perpetrated but about the use of the architecture and its acoustics for the violation of human rights. As in the example of Jamal's echolocation, searching for the architectural and acoustic details of the prison was a practice continuous with the investigation of the violence perpetrated there, as the voiced impulses through which the blindfolded prisoners experienced the architectural space were often themselves the products of torture. From the perspective of acoustics, every sound is constituted in part by the acoustic space in which it is heard. Therefore the way in which the architecture manipulates the sound of torture in Saydnaya means that the distortions of sound could not be disregarded as obstacles to witnessing a human rights violation, but rather must be heard as key signifiers for the fact that, just as sound is inseparable from its space, the violence here is inseparable from its site.

The acoustic reconstruction and 3D-modelling process served three main purposes. The first was to create evidence of illegality, to prove that Saydnaya should be the subject of a war crimes tribunal or equivalent for the Syrian regime. Second, to generate further memories and narratives that perhaps without the use of visual and acoustic stimuli would be remain buried. And third, to provide as exhaustive an image of the prison as possible in order to unburden the survivors in a cathartic sense; extracting Saydnaya from their minds' ears and eyes in order to reconstruct and objectify the site outside of themselves. In this way, they were able to show that despite the deprivation of their senses and the limits to their movement, they could still prove intimate

knowledge of the prison, in which almost everything but its violence had been hidden from them.[129] To be able to claw back any knowledge about the prison was something of a victory against the violation of their memories. Precision and dedication to solving the prison's details in our analysis were therefore essential for each of these three purposes. Details that one might at first consider insignificant to a human rights investigation—the size of tiles, the reverberation of the room, the placement of the door, the thickness of the bars, the light in the cell, the temperature of the room, the size of the hatch through which the food was delivered, the bowls for food, the appearance of the plumbing—all played a significant part in serving these three intentions.

In the instances when the witnesses were particularly confident in their capacities to hear and recall the sounds of the prison, I used a technique called echo profiling. This involved a playback of different impulse sounds, such as a click or a strike, varying the reverberation time, and in doing so virtually and digitally extending or contracting the size of the acoustic space. To do this I used a convolution reverb algorithm, which works to simulate the acoustics of a physical space. It does this by filtering the frequencies and extending or contracting the reverberation time of any sound based on the spatial qualities of a pre-recorded audio sample taken from a given site. In simple terms, this algorithm can effectively convolve any sound with any space in order to simulate audibly how any sound would resonate through any given space. In this case it was used to model the size of the various spaces of the prison by playing back to the witnesses sounds of doors slamming, the clicking of fingers, strikes, and other echo provoking impulse sounds, convolved through recordings of rooms and corridors with varying sizes and equivalent material qualities to that of Saydnaya, in order to match the sounds with the spaces we were trying to reconstruct. The more significant use of this

[129] We were also in part trained by Amnesty International interviewers and consulted with the Forensic Psychology Unit at Goldsmiths College, University of London, to create interview conditions which would not themselves be traumatic for the witnesses. On their advice we devised a system whereby the interview process could be as collaborative as possible with the witnesses; the 3D models and acoustic software on large screens in front of the witnesses meant that there was a focus point in the room that kept them from sinking back into buried traumatic memories and immersing themselves mentally back into the prison. The technology that surrounded them and the kinds of detailed questions we asked, rather than immersing them in the prison provided some distance from it, as it allowed them to see the building as a constructed object rather than a space they were forced to virtually inhabit.

tool was not to use this reverberation time to understand the size of rooms but to understand the amplitude at which sounds leaked into their cells. This in turn helped to locate the cell the ex-detainees were held in according to their acoustic relation to the main gate of the prison, the call to prayer from the mosque in the distant town of Telfeta, and the old kitchen on the ground floor where torture occurred. Understanding the extent to which the sounds from these spaces leaked into their cell, moreover, allowed us to understand at which intensity they were exposed to such sounds, and in turn to what extent of certainty they could testify to what they had heard. The most effective way of understanding the mediating force of the walls themselves—the extent to which the sounds they heard were manipulated by the acoustic and architectural barriers that stood between them and the sounds they heard—was a convolution reverb software and acoustics processor called Altiverb,[130] which has a setting called "next door", in which twenty-two pre-recorded samples modulate the ways in which sound leaks through walls, floors, doors and windows at various distances (Figures 17/18). I was able to use this tool to understand the position of the earwitnesses as auditors in relation to certain events; if, for example, the sounds of names being called out of people we later believed later to have been executed were in the adjacent cell, or in the cell four doors down from them. Another example is how I used this software to estimate the proximity at which ex-detainees could have heard trucks bringing new prisoners or taking prisoners away, from the window of the corridor outside their cell. At one point, this involved simulating the sound of a caterpillar digger at varying distances outside, through the walls of the cell, as an attempt to verify testimony that some witnesses had heard the sound of mass graves being dug outside their cells. It was thus important to both create an architectural and acoustic virtual model of the spaces of incarceration, and to work to simulate the bleed between the spaces of Saydnaya as articles of evidence in themselves. In other words, the task was not only to define the boundaries between the rooms, but also to include the porosity and thickness of the walls that divide these rooms as something deserved of investigation and comprehension, as this could attest to the veracity of their

[130] Altiverb was engineered by Arjen Van der Schoot and Coll Anderson.

claims and also locate where their cell was inside the prison, therefore affirming the specific auditory perspective that they had.

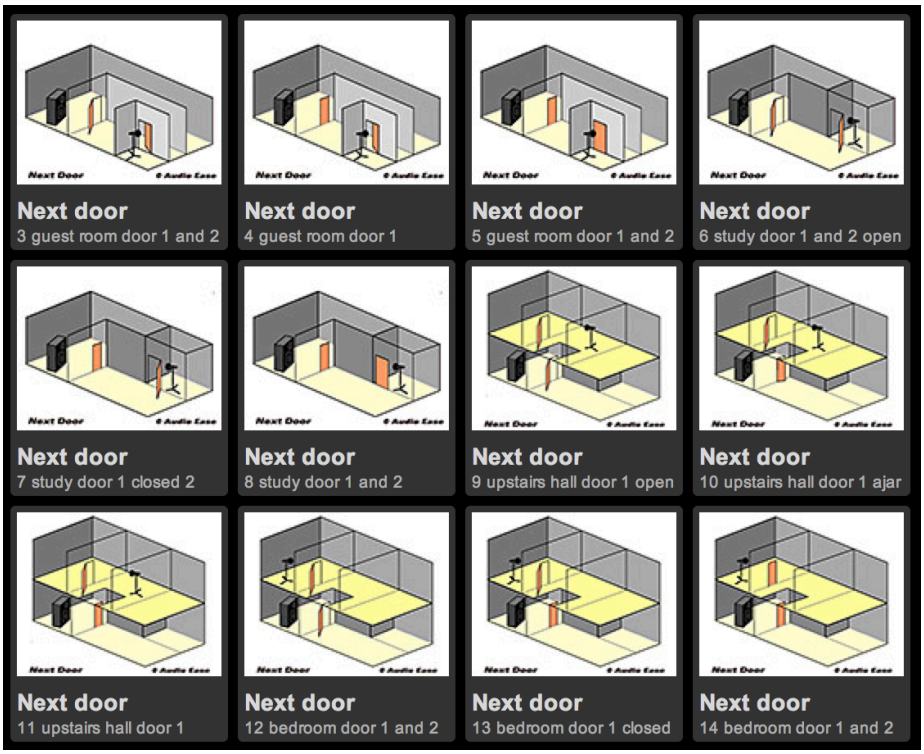

Figure 17 (top): A screen grab from the Altiverb setting called "Next Door", which virtually simulates sounds coming through walls, doors, floors, and windows. These are a few of the many default selections. For each of these settings you have a diagram illustrating the the position of the listener (microphone) and their spatial relation to the the position of the sound source (speaker).

Figure 18 (bottom): A video still from my interview with Salam where you see the "Next Door" effect being used in order to map the distances of Salam to the sounds he heard through the walls and floors of his cell. Source: http://saydnaya.amnesty.org/

There were a few times when this methodology proved useful, most notably in locating Salam's cell at the extreme end of the prison's northeast wing, by identifying the direction from which he heard the faint sound of the dawn call to prayer from the mosque at a high altitude some fifteen kilometres away. For the most part, however, it did not succeed in practice as well as I had theoretically envisioned. Measuring the amplitude at which sounds of torture leaked into their cells and therefore their proximity to the sounds of beatings and violence was useful in order to get some understanding of how the acoustics of the prison supplements the physical violence being perpetrated. This information afforded a higher precision around how the acoustics of the building were a medium through which torture was being exercised, and confirmed that in Saydnaya each singular beating was designed to audibly leak to a wider audience of inmates and therefore to create a wider circle of victims. However, the amplitude and acoustic pressure of this torturous leakage was inconsistently identified across each of the six witnesses I interviewed.

As it is impossible to get inside Saydnaya, its echo in the mind's ear of its witnesses were all I had to work with. Hence the process of attempting to measure the physical echoes of the prison often led us not to an accurate image of the space, but rather illuminated the specific ways in which the prison resonated in the ex-prisoners' subjective memories. Like the phoneticians at the University of Gothenburg, in attempting to measure the acoustic effect of the architectural filters, I met a filtration process specific to the ways each inmate had committed those sounds to memory. This added to an already complex set of leakages: how a sound vibrates molecules of air, which in turn deform and exert pressure on the elastic atoms of the concrete wall, which with each ripple transform the original sound before vibrating the molecules of air on the other side of its surface, which then vibrate the inner ear of the auditor, where the vibrating molecules of air become transformed from kinetic acoustic force into neural activity. These nerve pulses travel to the brain through the phonological loop, where they are perceived and encoded. Finally, in their retelling, the sounds are transformed yet again by the process through which memory is retrieved and put into

language, where it is transformed through speech into sound waves. Remaining aware of each stage in this transformation of sound was key to my work with the victims of Saydnaya, and it meant that I had to constantly oscillate between an investigation of the physical acoustic environment and the ways in which these sounds were psychologically perceived by each of its victims. This meant conducting the interviews with the view that the experience of sound is a combination of vibrating molecules and neural activity. This convolution of physiological, psychological, and acoustic effects is called psychoacoustics. It is in this psychoacoustic field, where acoustic phenomena and the thresholds of perception intersect, that this investigation was necessarily situated. Throughout this chapter we will see the ways in which working at this intersection between the mind's ear and the acoustic space, inhabiting the zone between the physical and psychological experience of sound, was simultaneously a barrier to and a productive force towards uncovering the hidden truth of Saydnaya.

At the Limits of Logos

As explained above, and as is the case in all acts of testimony, the retelling of the sound events involved a process of transformation of the original auditory event. Some of the work of these interviews was therefore dedicated to the formal qualities of the process through which sounds are converted into words. My acoustic investigation had to extend to the sonics of language itself in order to solicit greater precision in the answers to the questions I was asking. Some of these questions were designed to use the survivors' earwitness memories to estimate the amount of inmates held in Saydnaya: "How many cell door hatches in your wing did you hear opening at meal times?"; "Could you hear footsteps from the floor above you?"; "How often would you hear new inmates arriving to the prison?" Other questions related to the identification and number of guards, by focusing on their gait, accents, and the kinds of torture they heard them administering: "Did the guard speak with the ق (qaf) ?"; "What kind of footwear were they wearing?"; "How could you distinguish the difference between the sound of the *dolab* (a weapon for beating prisoners made out

of a truck tyre) and the sound of the *alakhdar brahimi* (a weapon for beating prisoners made out of a ventilation pipe with an iron bar in the middle)? Although these witnesses were highly sensitised to the sounds they heard in Saydnaya, the language at their disposal to speak about sound was limited. Along with their necessarily very limited ability to see the prison with their eyes, they also had, as we all do, gaps in their vocabulary for describing the kinds of sounds they experienced. Two of the main words specifically referring to sound in colloquial Arabic "صوت" (voice or sound) and "صدى" (echo) were used exhaustively, interchangeably, and so imprecisely throughout the interview process. Language was at a double loss, in that both violence or pain, and sound, are extremely hard to represent verbally.

Sound lacks a specific language and so must be expressed via other adjectives, metaphors and similes, which lack precision. Sounds were described as 'shaky', 'sharp', and 'strong'. With insufficient language, the witnesses and I began to use our mouths to recreate sounds, mimicking with our lips and lungs the vibrations felt, reenacting with our feet the gait of the guards, tapping on the tables with pens, clapping, and utilising belts or other implements we could find in the room. I accompanied the questions asked with the playback of sounds from film (foley) and sound libraries to simulate prison sounds such as doors, locks and footsteps, not explicitly with the purpose of being able to find the precise sound present in Saydnaya but to act as memetic devices and to try to give the discussion about sound between us a higher detail of precision. As well as these illustrative sounds, I asked witnesses to listen to test tones (sine waves), like those in a hearing test, and asked them to match the volume of the tone to the levels of specific incidents inside the prison, to try to understand their proximity to certain events and as a tool to measure the silence in which they were held. The sounds we began to generate, reenact, and utilise allowed us to speak a non-verbal language together, where we would attempt to link specific sounds with unexpected words to rebuild a language for the violence they had endured. The dedicated earwitness interview process

necessitated the creation of a formal language through which to recount, thus expanding the range of sounds we conventionally think of as speech.

Again, this thesis finds itself at the borders of the human voice, as these interviews fluidly moved between *logos* and *phone* both, as testimonial sources. In order to transform the interview process through which we derive earwitness testimony, it was necessary to be positioned at the edges of language, at the threshold where language becomes sound. From this border between language and sound, *phone* and *logos*, we learned in the interviews that: in Saydnaya, the guards who wore sports shoes with rubber soles rather than the standard army boots walk in a specific way in which they distribute their tread slowly and softly on the floor in order to approach the cells unnoticed (inaudibly) and catch the forbidden act of prisoners talking to each other. We learned the precise sounds of all the weapons of torture and so were able to corroborate the sounds between the witnesses and attain a comprehensive list of all the weapons in use at Saydnaya. We learned that life in the cells was so silent that, "One of the biggest [loudest] sounds" was the killing of lice, which was a described as sounding paradoxically as minute as the crushing of a single sesame seed between one's thumb and forefinger.[131]

The Spread of Silence

"In Saydnaya silence is the master"[132] explained Diab, while below, Jamal states how speech, even whispered speech, is punishable by death:

> Once the guards heard the voice of a guy whispering, so the guard came to the cell and said, 'Who made the sound? Come forward or I'll kill you all.' One guy confessed, so he guard said, 'I'm going to take you to Azrael' [the Angel of Death]. This wasn't our cell, it was the one across from ours, so we didn't know what happened, we just assumed he was exaggerating. The guard took him and all we could hear were hits landing from a distance, without any sound being made from the man being beaten. The hits were so brutal, eventually it stopped and the guard returned and we heard him say, 'I emptied out a spot for you so you can get more comfortable in

[131] Samer, interview with Lawrence Abu Hamdan, Amnesty International Headquarters, Istanbul, April 11, 2016.

[132] Diab, interview with Lawrence Abu Hamdan, Amnesty International Headquarters, Istanbul, April 12, 2016.

> there, your friend went to Azrael, whoever wants to join him, I'll send you over there too.' He was beaten to death.[133]

At the times when the guards were in closest proximity, detainees were afraid to audibly move in the cell or even to scratch an itch. Those too sick to suppress a cough break the violently enforced silence and suffer potentially fatal consequences. Samer explained that even "breathing out loud was forbidden."[134] Silence is a commonly cited experience amongst those who have endured periods in prison isolation cells across the world, but the difference in Saydnaya is that cells designed for isolation purposes are overcrowded, with up to nine people crammed in, and reports of people spending the entirety of their sentence with thirty others in rooms 6.5 x 8 m. Silence here is not because there is no one around to talk to but rather the opposite; one is forced to negotiate a very overcrowded space without making a sound. The silence in Saydnaya is designed not as an act of torture based on sensory deprivation, as it functions in conventional isolation cells, but more as a function of torture closely related to the "stress position", which is usually defined as forcing the human body to adopt and remain for great periods of time in squat positions or equivalent, where the body's weight is placed on just one or two muscles. The order of silence is used to restrict prisoners' physical movements and to suppress their respiratory functions, forcing them to remain still, to not stretch or exercise their muscles for fear of making a sound. The silence these prisoners endure is thus physical as well as psychological. What compounds the idea that the silence of Saydnaya is felt physically is the explanation, here from Jamal, that even if one is being beaten it is forbidden to make a sound.

> In other prisons the guards wouldn't leave the prisoner alone until he screams, if the prisoner doesn't scream the guard would take it as though the prisoner is challenging him. He has to yell. […] Saydnaya is completely opposite, if you yell the beatings would intensify. If you keep quiet it would go down until he finally stops.[135]

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[133] LAH interview with Jamal, 2016.

[134] LAH interview with Samer, 2016.

[135] LAH interview with Jamal, 2016.

Saydnaya was distinct from other prisons and sites of incarceration throughout Syria for its use of silence and hence this prominently featured in all the testimonies of its survivors. The extent to which silence was incorporated into the practice of torture exceeded that which our accompanying investigators at Amnesty had ever heard before. Salam, another of the witnesses I interviewed, explained:

> In the entire building, at all floors, there isn't a single sound being made. If they are killing someone no one should be able to hear his voice, all that can be heard is the sound of the whip, or the instrument they are torturing him with. Its normal to hear the sound of these instruments but a scream is never to be let out.[136]

Beatings in Saydnaya always happen out of sight, even if someone is being beaten in the same room, as one must cover one's eyes at all times in the presence of the guards. Listening to a person being beaten without screaming, one is left only with the sound of the beating itself, the sound of a weapon in contact with a body. Without hearing a voice attributable to a tortured subject, one does not hear a subject at all but rather a corporal surface, a body no different to the one that the auditor occupies. What becomes audible the more one is exposed to such sounds is the exact way in which a body is being destroyed. Silence amplifies the brutality in acoustic terms, in the sense that in the silence, one hears more clearly the strikes and beatings, and also amplifies the physical scale of the violence felt on the beaten victim. Samer explains: "It was forbidden to scream. Some people would go crazy and defecate or urinate themselves. We could hear that."[137] Silence is not only brutally enforced but part of the brutality itself. As part of the acoustic investigation into the prison, it was crucial to find ways to measure this silence and the pressure it exerts on the bodies of the detainees.

As the prison is still operational and access is completely denied, we cannot measure its silence with a decibel metre at the site, we can only attempt to reconstruct this through the voices of its former detainees and their acoustic memories. My primary way of doing this was to understand that the level at which the detainees could whisper and not be heard by the guards through the doors, walls,

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[136] Salam, interview with Lawrence Abu Hamdan, Amnesty International Headquarters, Istanbul, April 14, 2016.

[137] LAH interview with Samer, 2016.

water pipes, and ventilation system marks a measure of the silence at Saydnaya. Whispering is achieved by allowing the breath to pass through the larynx without vibrating the vocal chords; this 'unvoiced' sound (a speech sound uttered without vibration of the vocal chords) does not contain low- and mid-range frequencies but relies upon the upper frequencies and percussive elements of consonants to convey meaning. By restricting the vibration of the larynx, a whisper ensures that the energy at which it vibrates the molecules of air around the speaker is also restricted, so that, under the same conditions, a whispered sound won't travel as far as a voiced speech sound where the larynx vibrates. To understand the surface area of a whisper in Saydnaya is therefore to understand the restrictions placed on the larynx and on the prisoners' restricted ability to move in the cell; to better define the nature of the space in which the prisoners are confined.

Recording and analysing the level at which inmates could whisper in Saydnaya is a means of mapping the threshold of audibility. The threshold of audibility is a vital zone to define in the study of the violations taking place at Saydnaya because the border between whisper and speech is concurrently the border between life and death. It became clear through the interview process that the silence of the prison had lasting physical effects on survivors' speech capacities after they were released. Jamal explained that, "When I came out of Saydnaya I used to speak like this, [low screeching] 'eeeh eeeh', like someone ululating (*zalghouta*). After whispering for so long my tongue wasn't used to speaking loudly. Speech was very difficult for me."[138] Likewise Diab told me during his interview that, "When I came out of prison, for about a month I felt like my family's voices were so loud. I'd tell them 'stop yelling, lower your voices,' and when I'd talk to them, they'd tell me 'raise your voice, we can't hear you'."[139] After hearing these statements and similar ones, it was clear that I should shift the focus of study from verbal testimony to listening to the way the whisper might be stored in the muscle memory of the survivors' voices. I asked each of the six witnesses to reenact the

[138] LAH interview with Jamal, 2016.

[139] LAH interview with Diab, 2016.

whisper level at which they could speak in their cells. However the reenacted whispers amongst the group of survivors were each of an inconsistent amplitude. The witnesses remarked that this was due to the extent that their voices have now been fully reformatted for the noisier acoustic world they currently occupy as refugees in Turkey. Salam explained to me:

> My hearing is now a third of what it used to be since I was in Saydnaya. I don't rely on it as much now that I am free. Maybe the silence was even lower than that, I am exposed to so much more noise these days and I could be remembering it even louder than how it truly was.[140]

Due to these inconsistencies, the re-enacted whisper was useful as an indication of the silence but not precise enough evidence of the force it exerted. In order to try further to materialise the silence that the prisoners endured, I asked them if they could tell me, rather than how loud or quiet they spoke, how quiet their interlocutors would speak to them, thus shifting the frame of investigation from the oral to the aural, from their voice to their ears. To do this I asked each of the former detainees to listen to the sound of a test tone in very well acoustically isolated headphones. They were asked to match the volume of the test tone with the level at which they could whisper to one another in their cells. Starting with no sound, I would slowly raise the volume of the tone until they stopped me at the level at which they could remember hearing their fellow inmates whispering to them. The results were highly consistent, and it seemed that by abstracting the noise of speech and reducing it to a pure amplitude they were able identify not the sound of the whisper but the level at which they had to strain their ears to hear one another—so not recalling the sound, but the intensity with which they had to listen. The results of Samer, Salam, Jamal, and Anas were within a precise 5db window, with two of the witnesses (Salam and Samer) identifying exactly the same amplitude of -84db. To give some context here to the ways in which decibels are measured, it is generally understood that 3db is an imperceptible change in the loudness at which we experience sound. In this regard 5db is only just above the threshold at which we can perceive a difference in the amplitude of a sound. This is why a distance of only 5db between the witnesses' testimony can be

[140] LAH interview with Salam, 2016.

concluded as a consistent set of results. The amplitude at which the sound of the whisper was identified when tested in a controlled acoustic environment was audible at a maximum of 26 cm distance from the sound source. The level of fear of being caught speaking meant that their humanly audible voice should not extend more than 26 cm outside their bodies. To give some perspective on this, under the same acoustic conditions in which I measured this 26 cm distance, a normal human voice would have the capacity to be audible up to 180 metres away. So where the physical capacity of our voices to reach outside our bodies is 180 metres, the absolute limit in Saydnaya is just 26 cm. This demonstrates the range of audibility the detainees of Saydnaya inhabit, a 26 cm radius that confines the space in which they can be audible and creates an alternative image of the architecture of their incarceration. The silence at Saydnaya was an acoustic tool with which to tighten the space of incarceration, in addition to the already tight architectural limits of the space in which they were confined.

The process of making these tone tests to measure the silence of Saydnaya was also revealing of another aspect of life in this prison. All of the witnesses identified a barely audible tone of whisper between -84 and -79db, except for one, Diab. Diab's whisper was 19db greater than the loudest of the other witnesses. A tone of 19db is perceived by the average human ear as a sound that is four times louder. Diab's four-times-louder whisper was consistent with a biographical distinction between him and the other witnesses I interviewed. Diab was released in 2011, when all the previous inmates of Saydnaya were freed in order to use the prison exclusively for the political protestors that were starting a revolution across the country. Diab explains:

> My fellow inmates, we were the old crowd from before 2011. The prison got emptied out, the regime emptied it out in 2012, not a single person was left imprisoned from before the politics, before the revolution. The regime transferred everyone to public prisons, and sent to trial a lot of people, took them out of incarceration. The ones without trials were sent to the public prisons, and Saydnaya was emptied out completely. But it was only emptied out from us, the old wave of prisoners, so new ones would come in. Everyone jailed after the

> revolution was put in this prison, the levels of torture that they were subject to were even worse than those that we experienced.[141]

As a response to these protests in 2011 a new era of extreme violence and terror took hold at Saydnaya. The 19db drop in the capacity for inmates to whisper is a measure of this increase in violence at the prison since 2011, correlating to the infamy the prison has attained throughout Syria since the protests began. It also speaks to the increased alertness of the guards as the lowering threshold of whispered speech is equivalent to the lowered threshold of tolerance amongst the guards before they would beat, kill, or maim the detainees. This 19db drop in whispers allows us to give a scale to what Diab describes as "the levels of torture" being "even worse."[142] The 19db drop after 2011 allows us to hear the transformation of Saydnaya from a prison into a death camp. The mass murder taking place there is audibly corroborated, not only in the ex-prisoners' testimonies but in the level of whispers of their voices while imprisoned there (Figure 19).

The Syrian regime denies the presence of torture and executions at Saydnaya, though it has not allowed independent observers access in order to verify their claims. Paradoxically then, one way to dispute this negation is through the silence of its former detainees. That is because this 19db drop in sound does not only support claims of the ways in which Saydnaya's violence increased since 2011, it is rather, in the absence of any other material evidence, a way of using the phonic substance of the voice to measure the extent to which this violence has increased. Inmates being allowed to make four times less noise than they could before 2011 means that they could move four times less, including not being allowed to breath audibly, nor walk in the cell without fear of violent repercussion. All who could not live under these silent conditions, all who were too sick to suppress a cough, were met with fatal consequences. As opposed to the 26 cm radius of permitted audibility around each inmate after 2011, Diab was permitted an audible range of two or three metres. The contracting of two or three metres to a space of 26 cm is one of the registers through which we can

[141] LAH interview with Diab, 2016.

[142] Ibid.

perceive how violence has vastly increased at Saydnaya, to the extent that it can no longer be understood as a prison but as a site of extreme torture.

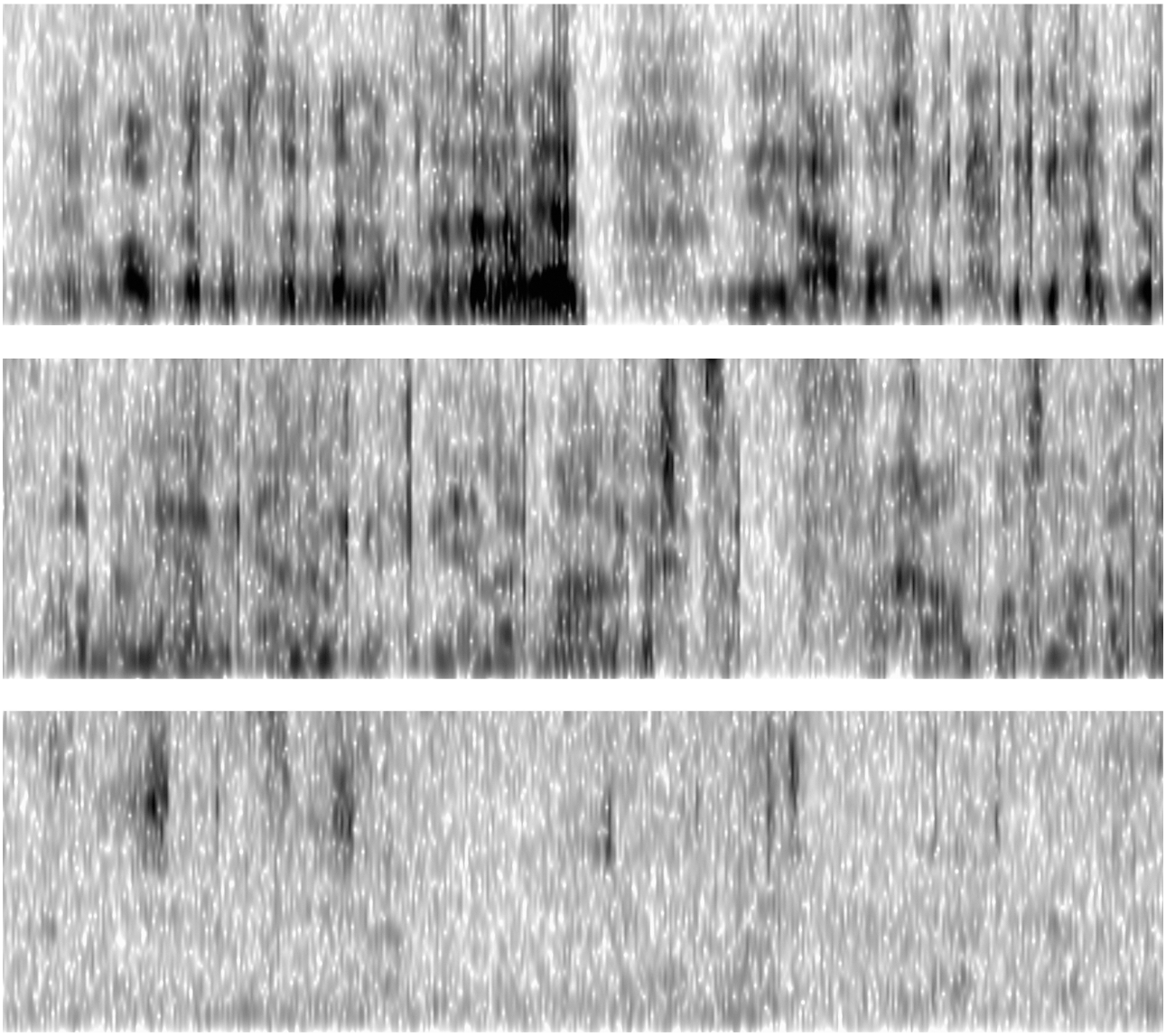

Figure 19: Above are three monochrome spectrograms where the intensity of sound pressure is measured across the spectrum of light: from white, which represents almost no sound, to deep black, showing a relatively louder sound intensity in a given recording. Time is the horizontal axis and pitch (from low to high) is the vertical axis. The top spectrograph is a spectral analysis of the sound of Diab's voice as he was talking to me at normal conversational volume during the interview. The middle spectrograph shows Diab re-enacting the level at which he could whisper (before 2011). In contrast, the bottom spectrograph shows Samer's re-enacted whisper (after 2011). As explained above, using tones rather than re-enacted speech was much more consistent, however these images are illustrative of the ways in which the level of speech dramatically dropped in Saydnaya after 2011 and how Samer's voice had to speak with a whisper that totally lacked any of the low and mid-range frequencies used at normal conversational volume, with only percussive consonants and plosives (which do not penetrate walls or travel as far) registering on the spectral analysis.

The Uses and Abuses of Silence

There are precedents for using silence as a means to trace invisible crimes. Bryan Pijanowski, a self-styled soundscape ecologist at Purdue University, has been setting up audio-recording machines throughout the Costa Rican jungle in attempt to document the extinction of amphibian life since 2008.[143] Sound recording is an effective means to do this because the frogs make a sound that is vastly louder than what would be expected given their size. These jungle frogs are often only the size of a fingernail and are very difficult to see because they have camouflaged skin. However they have long been the most audible animal in the jungle, constituting a very high percentage of the sounds that define the jungle soundscape. Pijanowski has now amassed years of recorded material which he subjects to chronological analysis to show that although the vegetation in this jungle looks fine and healthy to the eye, there is something dramatic happening under the surface which is leading to a vast silencing in the jungle.[144] His comparative spectrographs from 2008 and 2015, which compress a years' worth of recordings into one single image show quite dramatically the scale of amphibian extinction (Figure 20/21), legible through the drop in jungle amplitude that was primarily amplified by its frog life. In a similar way to how we measured silence at Saydnaya, Pijanowski uses negative sound as evidence of an absence, in the absence of other visible evidence, to show that mass disappearance has occurred.

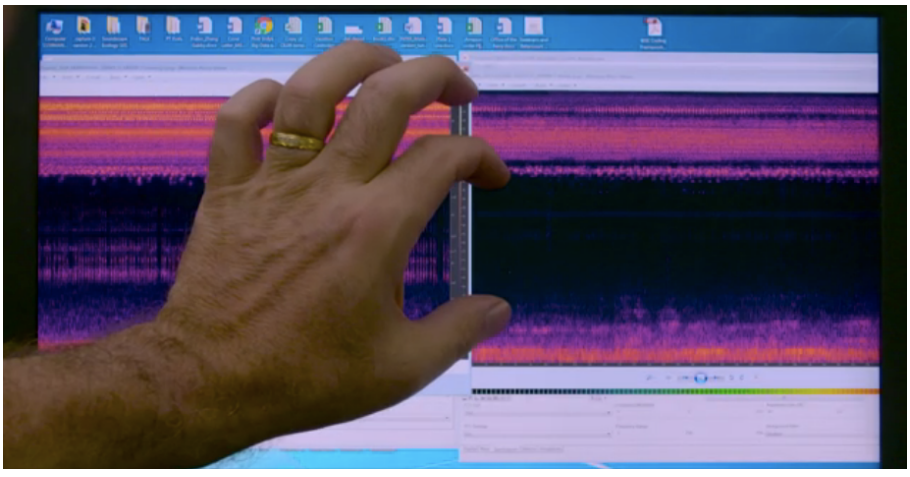

Figure 20: Bryan Pijanowski indicates the missing part of the frequency spectrum previously occupied by amphibian life in the Costa Rican jungle. Source: http://edition.cnn.com/2016/12/11/world/vanishing-sutter-amphibian-extinction/index.html.

[143]Sutter, John D, "Listening for the amphibian apocalypse", CNN (January 9, 2017): http://edition.cnn.com/2016/12/11/world/vanishing-sutter-amphibian-extinction/index.html.

[144] Ibid.

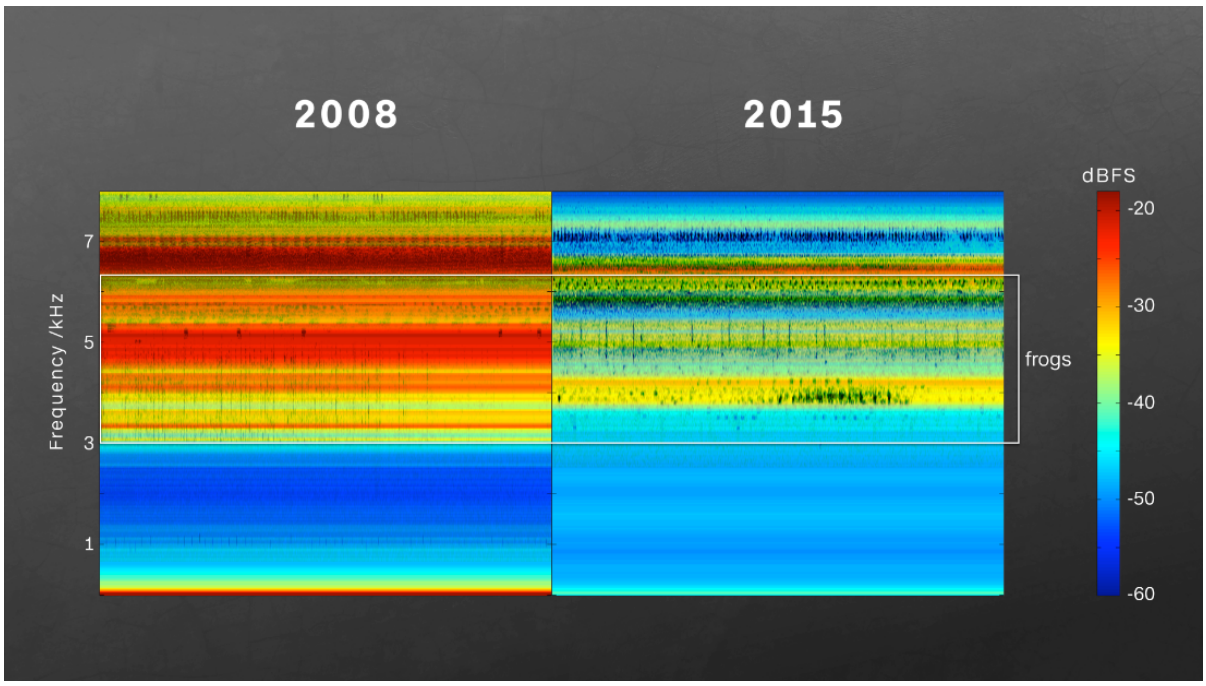

Figure 21: Comparative spectrographs by Bryan Pijanowski showing the drop in jungle amplitude linked to amphibian extinction between 2008 and 2015. The decibel level is illustrated by a thermal colour scale; deep blue equals no sound and deep red very high sound intensity. Source: http://edition.cnn.com/2016/12/11/world/vanishing-sutter-amphibian-extinction/index.html.

It was the identification of one particular fifteen-minute-long silence by the ex-detainees of Saydnaya that was early in strengthening Amnesty International's suspicions that executions might be happening there (which was later confirmed to be true when they interviewed defectors who were former guards).[145] Samer was the witness who most expediently explained this:

> There are two group cells at the entrance of the prison, in our wing, they'd stay empty, but every fifteen days they'd bring prisoners into them, a guard would roam around among the inmates and read a list of names. They'd pick some out of the crowd and open the doors of the cells to take them out. The inmates that are taken out and gathered in a wing, they'd collect their names then bring them into our group cells, they'd put about 150–200 of those inmates in group cells. We were about 300 in there. The next morning at around 5.00 or 4.30, they'd collect them, put them in trucks and leave. For fifteen minutes the sound of the trucks would disappear, and then the truck would return. Where did they move these inmates to? […] We decided to memorise their names and once we'd get out we could ask about them. […] Once we got out – I have memorised the names of those who were taken, I asked about them, some of them were missing no one knew what had happened to them, and some I heard had died. So this proves that those fifteen minutes of silence between the truck going and coming back are the sounds of executions.[146]

[145] Amnesty International, "Human Slaughterhouse": https://www.amnestyusa.org/files/human_slaughterhouse.pdf.

[146] LAH interview with Samer, 2016.

The sounds of executions defined by Samer are not the typical representation of someone being killed but the sound of a truck driving away fading out of audibility and then coming back into audibility fifteen minutes later, emptied of its contents. The fifteen-minute silence seemed too short to be for the release of prisoners, which was confirmed to Samer when he asked, after his own release, about the whereabouts of those names that had been called out and that he had memorised. This passage speaks to the intensity with which the earwitnesses to Saydnaya listened to the prison, and the ways in which they began to render audible and commit to memory its acoustic lexicon. Despite constant exposure to the sounds of torture and extreme violence, their hearing was so accentuated in the silent conditions that they could accurately evaluate that the most destructive of all of the sounds they were exposed to in the prison, as it signified that mass executions were taking place, was this fifteen minutes of silence between the truck leaving and coming back. Despite the audibility of the beatings, the most extreme violence they heard was this silence, and they could only hear it because of the very silent conditions they were forced to inhabit. The sound of disappearance was audible in the disappearance of sound, much like the frogs in the jungle. Moreover like Pijanowski, the work for these witnesses was to refuse that silence is inaudible, and rather to realise that its negative space is measurable; for Pijanowski this was a question of amplitude and for the witnesses of the executions at Saydnaya it was the gap in time.

It follows that whether it be the 19db drop in the audibility of whispers, the fifteen-minute timeframe of the trucks disappearing, or the work of Pijanowski, silence or negative sound can be an essential investigative strategy, not only in identifying an absence, but as a source of knowledge upon which we can begin to build our claims as acoustic investigators. Further, for the investigation specific to Saydnaya, the silence was simultaneously a form of torture, a register to the scale of violence perpetrated, and a means by which earwitnesses came to develop heightened capacities for listening and therefore testifying to what they heard. Silence was used to accentuate oppression and

violence and to restrict inmates' abilities to speak and circulate knowledge. Yet paradoxically, silence produced heightened modes of listening, which led to the discovery of important information about life in Saydnaya, including but not limited to the silent conditions themselves.

To give further context to the role silence played in preserving the memories of the survivors of Saydnaya, in the earwitness studies conducted by the University of Gothenburg, researchers found that memories of voices, not only what they said but the quality of the voice itself, were of much greater detail and accuracy when their test subjects were in a darkened room, without any background noise. By limiting visual stimulus and depriving the senses, memories were stronger when "background noise that might otherwise interfere with witnesses ability to clearly hear and attend to the voices was not present"[147] In Frances Yates's *The Art of Memory*, a historiography of mnemonic strategies from Greek civilisation up until the seventeenth century, there is a quotation from Philostratus the Sophist teacher, describing the memory training of a sage called Apollonius of Tyana. The passage demonstrates silence and remaining mute as an ancient practice of memory training:

> Euxemus having asked Apollonius why he had written nothing yet, though full of noble thoughts, and expressing himself so clearly and readily, he replied: 'Because so far I have not practised silence.' From that time on he resolved to be mute, and did not speak at all, though his eyes and his mind took in everything and stored it away in his memory. Even after he had become a centenarian he remembered better than Simonides.[148]

Simonides was the poet whose strategy of memory training was ocular-centric and depended on visual images, here outdone by Apollonius's strategy of silence. These contemporary and historical references both support the role silence played in crystallising and distilling the memories of the earwitnesses of Saydnaya, where silence allowed Samer and Jamal to memorise the names of those called, who Amnesty International and Forensic Architecture now indeed believe to have been executed. The attempted silencing of those who were detained in Saydnaya, by not allowing them

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[147] Öhman, "All Ears…", 60.

[148] Frances A. Yates, *The Art of Memory* (New York: Routledge 1966), 42.

to either see or speak while inside, has I believe in this case decreased the believability of Bashar al-Assad's negation of the crimes taking place there. Silence and darkness were used as weapons of negation and degradation, yet in spite of this, through unknowingly providing conditions for memory training, they have also in small ways been reclaimed against silence and ignorance. The insights derived from the earwitness accounts of this investigation are paradoxically indebted to the silent conditions of Saydnaya, for details such as how many cell-door hatches were heard sliding open at mealtimes might have been precluded by the presence of background sound, and subsequently enabled us to estimate the amount of detainees held in each wing. These details may not have been gleaned if drowned out by human voices. We meet once again the necessity to listen to the signifiers of silence.

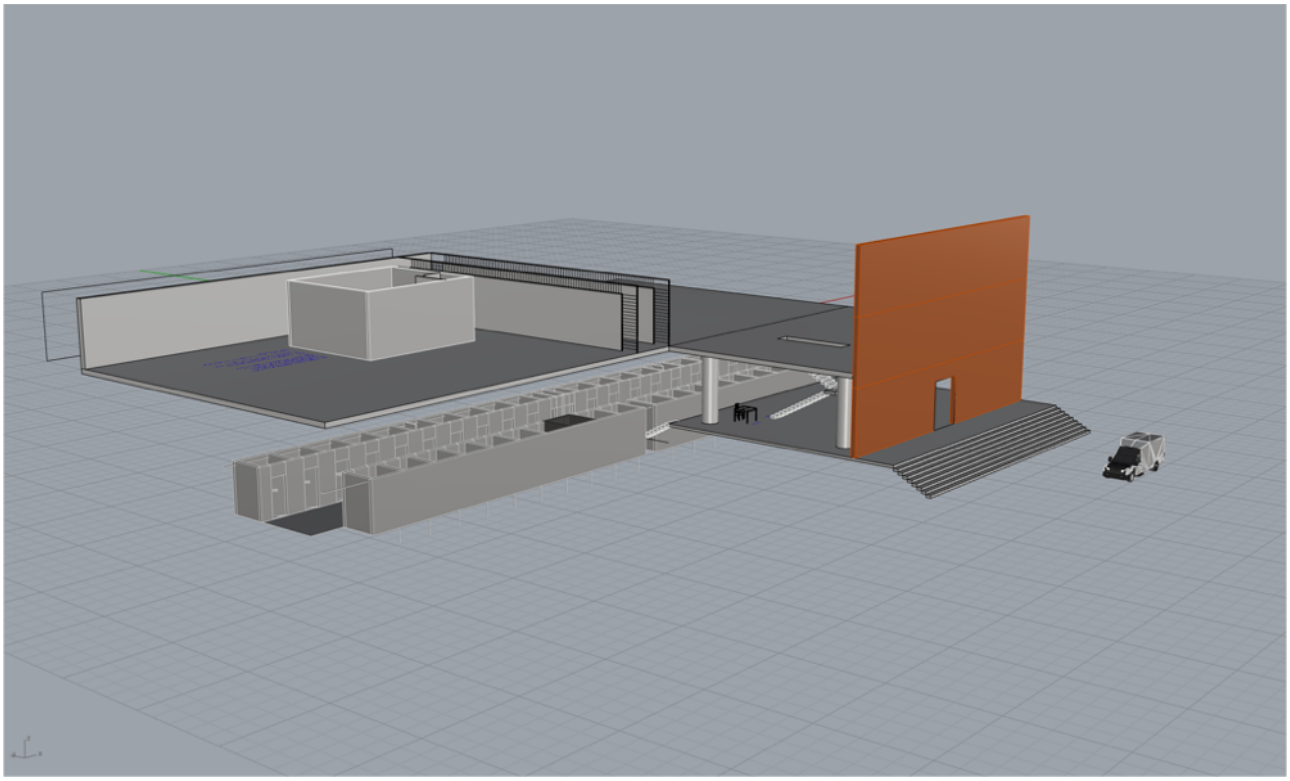

Figure 22: A 3D rendering of the prison made during the interview with Samer. This is the incomplete map of the prison in his mind's eye, which was built up from a combination of small glimpses, sounds, echoes, and sonic impulses, and by counting his steps as he moved through the corridors and stairwells.

Bleed Between the Senses

Saydnaya existed for these survivors at the bleed between the senses. Spaces, as I've discussed, were sensed predominantly through sound and not sight, so what is usually a visual relation to architecture became a sonic relation. Entire images and scenes of the prison were built from the perceived sounds and audible events happening in its corridors, stairwells, and adjacent cells. Yet at the same time, as audible speech was forbidden, communication between the inmates, despite the darkness, became a visual experience, as they relied on silent and visually legible aspects of speech such as lip reading and hand gestures. Sound became sight and sight became sound, though this transferal of the senses was complex, with communication and perception forced to the thresholds of both sensory fields.

Above (Figure 22) is an image that was the process of a digital 3D architectural model of Saydnaya constructed by architect Hania Jamal and one of the former detainees Samer. Hania Jamal and I worked side by side throughout the interview and prison reconstruction process. Our methodology was to work across and between the senses, with me focusing on earwitness testimony and Hania drawing out the few visual details that the prisoners could see. The spaces we generated were a convolution of sight, sound, smell and touch. The image above is a good example of the ways in which the senses became inseparable, constructed with Samer, as he walked us through every detail with a degree of certainty that would make one think it was a space he had seen in full. Puzzled by the precision of his placing of the four columns in the main atrium or the height he dictated the ceiling and size of the room to be, I asked "but did you see this space?" His answer after a short pause was "No," that he was wearing a blindfold. Some of the details could clearly be attributed to what the various survivors had heard; for example, the number of cells in the wing was identified to us by the number of cell-door hatches they had heard locking and unlocking everyday. Some of the details could also be directly attributed to visual experience, such as the size and shape of the cells in

which they were held, or the design of the inside of the door. However, the position of the table in the main atrium, the size of the stairwell and number of stairs, and the colour of the outside wall were details that had been perceived across and between the senses, and the product of the sensory deprivation itself. Perhaps the stairwell was identified through the combination of its reverb and the steepness felt through Samer's body's inertia as he walked down it. Perhaps the size of the stairwell also depended on the light levels that he noticed through the blindfold, which would block out the majority of his visual field but still let in some light. Moreover, though the ex-prisoners were certain they had not seen certain things because they were blindfolded, they perhaps glimpsed in the cracks and corners of its black frame the table legs of the guard's table or the base of the columns (both in the main atrium). What they had glimpsed, heard, and brushed up against formed an experience of generalised sensing. For example, it was a combination of light, sound, wind flow, and air circulation, that collectively built Salam's highly detailed spatial descriptions of the prison outside his cell.

As this generalised form of sensing was only clear to Hania and I in hindsight, at the moment of questioning, it prompted Hania to ask if Salam had walked in and seen these spaces personally. His response was a chilling negative: "I didn't leave the cell for three years"—the entirety of his sentence. The cross-sensory ways in which the ex-detainees' memories were encoded meant that in order to access them, we also had to work across the senses; discussing details that they heard by using images rather than sounds could be, counter-intuitively, more effective. This was particularly true of the weapons of torture used in Saydnaya which could be easily identified in images though they were rarely seen by the eye, but rather perceived profoundly and regularly as extreme haptic and sonic experiences. The interference between sight, sound and touch were not obstacles to the retrieval of a memory, as defined by the University of Gothenburg, but ways in which their memories carried with them not just what they had witnessed but the conditions of the witnessing.

The interferences between the senses were evidence about the forms of sensory deprivation they had endured.

Even when something was firmly in the acoustic realm of experience, the prison reconstruction process was further complicated by the fact that, as every sound designer for film knows, objects rarely look the way they sound and sound the way they look. Often this meant that discussion about the ways things sounded inside Saydnaya had to be extended both to visually identifying the objects under scrutiny and to how these sounds should or could be reproduced. For example, recreating the beatings as they echoed in the prisoners' minds meant following specific instructions that pertained to the kinds of material that I should strike, "woollen mattresses", "plastic bags filled with cotton", and "old leather handbags". An exchange between myself and Jamal regarding the sound of the *al akhdar brahimi*, the green plastic pipe used to beat detainees, was revealing in this regard:

> It sounds as if you take a stick [the pipe] and hit this table very strongly. So it's not that you hear the sound of something hitting a body, it's the sound of something colliding with a wall. […] We would say to ourselves, can that really be the sound of something landing on a hu man?"[149]

As an acoustic investigator of the prison, one had to be sensitive to the ways in which there is a bleed between the senses and also to how sounds themselves exceed their limits. Sounds are not only sonic but haptic, visual, and psychological, in the sense that even if the discussion focuses only on the sound, the sound may exceed its physical and material presence. In Jamal's description, the sound of something hitting a human body exceeds the conception of what a human body could sound like. This striking of a human body is beyond what we conceive to be possible for a human body to bear, both in terms of its violence and in terms of its capacities for acoustic absorption and reflection. This was continuous throughout Jamal's testimony, as we see in another example below, where he describes the sounds of the beatings not as violence perpetrated against humans or even bodies, but rather perpetrated against the architecture:

[149] LAH interview with Jamal, 2016.

> We used to distinguish between the tools of the torture. Some of them sound like a big hammer breaking down a wall, others sound like a whip, like a belt or something, some like a really big tool tearing up a wall or something. So yes, every torture tool has a different sound. The loudest was the *dulab*, and the worst one, which shook the walls, this stick. You could hear that on the third floor, because the walls were shaking from the echo.[150]

Jamal perception is as if the walls of the prison were the victims of the torture "breaking down a wall", "tearing up a wall", and "the worst one, which shook the walls". The torture at Saydnaya exceeds even its victims and extends its reach through the acoustically porous walls of the building, so that here the building is depicted not only as a weapon of torture, as we saw previously, but also as its subject. The walls of the cell are depicted here as both the subjects of torture and the objects that carried its dissemination. In this way, the leakage of sound through the walls created a seepage between witness and victim (in the sense of being forced to hear the sounds of torture as a torture in itself), and between the incarcerated and the space of their incarceration.

Descriptions of the prison that describe the leakage between sight and sound, architecture and inhabitant, stone and skin, witness and victim, perception and reality, are descriptions that allow us to understand Saydnaya as place where thresholds of various kinds are breached, and one's existence is itself rendered liminal. In Saydnaya one is held in darkness, silence, hunger and thirst, under the constant threat of fatal violence. These factors condition the experience of the prison to the extent that it becomes experienced at the threshold of the senses and the limits of one's capacities to bear witness. Such testimonies then, that conflate the walls with human bodies, or visual details with sounds, are evidence of what is happening inside Saydnaya in terms of the violence being executed upon the senses.

Sounds of Thresholds at the Thresholds of Sound

Throughout this thesis, I have sought to define the expand the relationship between the physical or material qualities of sound and the social and political aspects of how we hear and are being heard.

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[150] Ibid.

For the acoustic investigation of Saydnaya Prison, the idea of the threshold became both a conceptual and material tool: as a way to consider the porous boundaries between the senses, which indicate how they are pushed in such conditions to the edge of existence and experience, and to scrutinise the literal sounds of architectural thresholds—doors, walls, locks and gates. The sounds of these built thresholds acted as loud indicators for the prisoners of the imminent arrival of torture and beatings, and so having become a signal for violence, continued to be painful to hear, leaving as lasting an impression as the sounds of the actual beatings. Jamal explains how the sound of the main gate of Saydnaya persisted in his memory:

> I was looking for a house here in Istanbul, I went to an apartment on the top floor of a building, but there was a gate, and I heard the same gate exact sound [as the main gate in Saydnaya]. I felt a lot of fear, I said no, I can't rent this house, I felt so afraid of this gate sound. The sound had the same echo.[151]

Another of the witnesses I interviewed, Salam, told me that the sound of the lock rang so loud and fearfully in his ears: "the sound of the lock of the door no one can forget […] it is a sound that would wake the dead."[152]

In Elaine Scarry's book on torture *The Body in Pain*, the author observes several historical cases of the sounds of architectural thresholds being an embedded part of the torture process: "Basques tortured by the Spanish describe 'el cerrojo,' the rapid and repeated bolting and unbolting of the door in order to keep them at all times in immediate anticipation of further torture, as one of the most terrifying and damaging acts."[153] Aleksandr Solzhenitsyn's account of the Soviet Gulag also describes how "in Russia guards were trained to slam the door in as jarring a way as possible or to close it in equally unnerving silence."[154] The sounds of thresholds—doors, locks and gates—are therefore part of a broader, almost universal (sonic) language of torture. The sound of a threshold

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[151] LAH interview with Jamal, 2016.

[152] LAH interview with Salam, 2016.

[153] Elaine Scarry, *The Body in Pain* (Oxford University Press, 1985), 40.

[154] Aleksandr Solzhenitsyn, *The First Circle,* trans. Thomas P. Whitney (New York: Bantam, 1969), 614–15.

being opened clearly signifies the violation to come, the very literal opening of the door of violence, the sign of a forthcoming violation of personal space and the body. Furthermore, in Saydnaya, whenever a prisoner knowingly came into contact with guards, they would have to adopt a specific position, kneeling on the ground facing the wall and covering their eyes with their hands. At the first sign of the door opening, detainees would have to quickly adopt this position or face the infliction of potentially fatal violence. So, the sound of the door opening very literally triggered a flight reaction amongst the detainees. The guards would often try to catch them out of this position by creeping in very slowly or trying to open the door inaudibly. This meant that in order to avoid being beaten one had to be constantly alert to the sound of the threshold even at its lowest amplitude.

On the other hand, if they heard the sound of a door closing and locking, they would know that at least for the next few hours they would be spared from beatings. As Samer explains, "Usually human nature dictates that a closed door is something negative, oppressive, whereas in Saydnaya Prison it was the contrary, a closed door was safety and peace."[155] The sounds of the thresholds were the on-off button for torture, and the ability to identify them and respond accordingly was necessary to survive. It was therefore important during the reconstruction process to dedicate time not only to conceptual thresholds and limits, but also to identifying the precise sounds of the actual thresholds. Yet as my next example demonstrates, the conceptual and the material were interlinked, and searching for the physical sound of the threshold would at times lead us to the thresholds of sound itself.

While we were attempting to reconstruct the sound of the main door in Saydnaya, I began playing Samer the foley sounds (sound effects made for film) of metal doors in order of ascending intensity. None of the door sounds I played satisfied Samer's acoustic memory, and he kept telling me to raise the amplitude of the sound. I kept doing this in 4db increments, just over the threshold of a

[155] LAH interview with Samer, 2016.

perceptual change in loudness to the human ear. As another measure by which to increase the magnitude of sound at each interval, I also raised the reverberation time by 0.5 of a second, to simulate the sound resonating through a larger space. The sounds were getting louder and louder and the virtual space larger, until finally I played back the sound of a huge slamming metal door 24db (between 5 or 6 times louder) louder than the original sound.[156] At this point the sound also had a 3.5-second reverberation time, which is equivalent to the reverberation of Notre-Dame Cathedral, that is to say, a vast cavernous reverb produced in part by the 35m height of the ceiling of the nave.[157] The height of the corridor through which the door's sound would reverberate into his cell was estimated at 4m, so such a magnitude of reverberation was unlikely to be present there. As this sound was played, Samer was taken aback. He stopped me and told me, "this sound was present in Saydnaya, this was the exact sound, not of the door, but of the sound of the box of food being dropped on the ground at the end of our corridor. From that sound I could tell how many loaves of bread were inside."[158] The laws of physics would tell us that it is impossible for a box landing on the ground to make such a vast sound, but it wasn't the laws of physics that were at work here. Samer's complete conviction that this was the exact sound of the arrival of food made me understand that we were not talking about the intensity of sound, but inadvertently about the intensity of hunger. This was the sound of a threshold at the threshold of the medium of sound itself, both the sound of hunger and hunger's effects on auditory perception, to the extent that the state of hunger made a box of food landing on the ground sound equivalent to the amplitude of a reverberant metallic impact resonating through a space equivalent to the Notre-Dame. Samer's listening here operated between material reality and subjective perception, distorted by his extreme hunger. The sound of the weight of the box of food arriving was a key signifier for how many loafs

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[156] Decibels in relation to human perception are measured logarithmically, where a non-linear scale is used to measure the perceptible increase (rather than the physical increase). The sound on this scale increased by a factor of between five or six times louder than the original sound.

[157] B. N. J. Postma & B. F. G. Katz, "Acoustics of Notre-Dame Cathedral de Paris", 22nd International Congress on Acoustics, Buenos Aires (September 2016): http://www.ica2016.org.ar/ica2016proceedings/ica2016/ICA2016-0269.pdf.

[158] LAH interview with Samer, 2016.

of bread it contained, so the exaggeration of amplitude and scale of its sound hitting the floor communicates how hunger came to condition his perception of the acoustic environment of Saydnaya. This sound became the conduit for something that although technically was sayable —"We didn't eat for seven days at a time"[159]—was made somehow more measurable in the scale of its impression on the human sensorium; in the sense that we are made to understand the ways in which hunger transforms the functioning of ones fundamental senses.

This sound may have been heard with such exaggerated amplitude also because with the arrival of food came some of the worst beatings in Saydnaya. Another of the witnesses, Anas, described the distribution of food: "When they start opening the door, it sounds like a battle upstairs […] That's how we know the food is coming."[160] This gives further insight into how the sound of the box landing on the ground could be associated with the sound of a huge slamming door—both are sounds that inaugurate torture. What Samer was hearing was the sound of a threshold; not the sound of a door itself, but a sound that both signified potential torture, and depending on the weight of the impact it made on the ground, represented the opening or closing of the door to extreme hunger. We arrive at the paradox of this moment in the interview, where precision and inaccuracy exist within the same utterance. On the one hand, this could be read as a sign of the distortions of memory, as a box of food landing on the ground does not sound materially, spatially or acoustically like the sound of a huge metal door slamming shut; on the other hand, in this excessive comparison, we understand the gravity of how from that amplitude he would know, from the amount of bread in the box, if he was going to eat that day. The precise sound of the arrival of the box of food was heard to a deafening amplitude because it was of vital importance to survival in Saydnaya. The exaggeration of the sound is testament to the state of hyper-attentivity that Samer was forced to occupy. In this distorted sense of amplitude, we are able to hear what it means to listen as if your life

[159] Ibid.

[160] Anas, interview with Lawrence Abu Hamdan, Amnesty International Headquarters, Istanbul, April 15, 2016.

or the lives of your friends depended upon the sensing of a sound. More then than the measurement of the sound of the door or the sound of the box landing on the ground, what became important was the difference in amplitude between the two sounds, the physical and the remembered. Only by understanding this gap can we begin to measure the violent forces that cause the transformation of the sound of a box landing on the ground to a sound of large metal doors crashing together, reverberating for 3.5 seconds. The forces that cause this transformation of sound are simultaneously hunger, the signification of the arrival of torture, and a state of blindness where one depends on one's ears for survival or more precisely to know if one will eat that day or not. Thus hearing the door as a box of food makes audible and convolves three of the main violations taking place in Saydnaya: starvation, beatings, and blindness. A material trace exists in the distance between these two sounds, which forms a direct link to the states of experience that the extreme conditions at Saydnaya provoke in those who have survived and those who are still there.

Exceeding Evidence

As we have seen, the key elements to understanding life in Saydnaya and the violations taking place there were often captured most viscerally paradoxically at a moment of sensory confluence but factual inaccuracy. These memories, which are in excess of the acoustic realities of the prison, can be understood to speak more comprehensively about the violence endured at Saydnaya than the impression that would emerge from a precise acoustic reconstruction of the prison's sounds. These recalled sounds, like the door slamming in Notre-Dame, are the daily sounds of the prison convolved with the experience of the lives inside it, together producing, from within their distortion, a material trace of violence endured. Violence impacts physically upon the bodies that endure it and psychologically on the memories of those who witness or experience it. Just as destruction can materially render an object unrecognisable, indistinguishable, so too it can confuse and distort memories, making the process of retrieval difficult to compartmentalise and separate. In this chapter, I have sought to demonstrate why conventional techniques of separating and

compartmentalising between the senses, and between memories and facts, can be less than efficient when documenting the conditions of torture and violence that include the deprivation of the senses. I have tried to advocate for strategies of listening to such testimony that can use specific moments of cross-sensory leakages as evidence rather than treat them only as obstacles; notably, the porosity of the walls, how far a whisper could be heard, and the processing space between the ear and the brain. For these reasons, such sensory and spatial leakages, despite their potential juridical fragility, are knowingly employed. Although distortions in memory, sensory deprivation, and the negative space of silence are defined juridically as "evidence of absence", which is famously argued in legal contexts to be "absence of evidence", and conventionally considered to be a weak source of legal evidence and argumentation, I argue that in the case of a torture prison whose very methods of torture are designed to cause cognitive disintegration, their presence as material evidence must be taken into account. A comprehensive study and reconstruction of Saydnaya cannot seek to define limits and draw solid boundaries, as this would not be a true representation of the violence its witnesses and victims endured. Rather, evidence of sensory deprivation exists at the borders of what constitutes both experience and its evidence; where silence can be physically and materially manifest and where hunger becomes a sound.

As I discussed in the opening of this chapter, earwitness testimony is defined by sound seepage, by soliciting from the subject's memories descriptions of the sounds that bleed into their acoustic space. Moreover, the University of Gothenburg study concludes that the processes of storing and retrieving encoded acoustic memories "should not be viewed as separate stages".[161] Earwitness testimony therefore cannot be collected and studied in the same way as eyewitness testimony, as it does not refer to the more direct visual experience of an event. Earwitness testimony must be solicited in a way that is continuous with the omnidirectional and uncontainable way that sound propagates both throughout the space of a building and within the architecture of memory itself. This methodology

[161] Öhman, "All Ears…", 7.

has allowed us to not only listen to the sounds that bleed between the walls of the cells in Saydnaya, but also to hear the significations of the space between speech and silence, between sight and sound, to hear the oscillations between subject and object (skin and stone), victim and witness, building and weapon. The use of sound in this investigation is therefore two-fold: to use omnidirectional propagation and the kinds of testimony this leads to as a pathway to determining what is happening inside the otherwise inaccessible prison of Saydnaya; and to consider how the leaky properties of sound produce verbal accounts of life in a torture prison that themselves bleed between the boundaries of perception and reality, testimony and evidence. In listening to the specific ways in which sound in Saydnaya has been experienced—encoded into memory and felt as weapon—we are compelled to expand the ways in which, more widely, we listen to and are able to hear war crimes.

Bibliography

Acevedo, M. A. & Villanueva-Rivera, L.J. "Using automated digital recording systems as effective tools for the monitoring of birds and amphibians." *Wildlife Society Bulletin,* 34 (2006): 211–14.

Adorno, T. & Eisler, H. "The Politics of Hearing" (1947). In: Cox, C. & Warner, D. (eds), *Audio Culture: Readings in Modern Music London.* London: Continuum, 2005: 73–5.

Agamben, Giorgio, trans. Daniel Heller-Roazen. *Homo Sacer: Sovereign Power and Bare Life.* California: Stanford University Press, 1998.

Althusser, Louis, trans. Ben Brewster. "Ideology and Ideological State Apparatuses. (Notes towards an Investigation)." (1970): https://www.marxists.org/reference/archive/althusser/1970/ideology.htm [last accessed September 22, 2017].

Al-Tahhan, Zena. "Why does Israel keep the bodies of Palestinians?" *Al Jazeera* (August 10, 2017): http://www.aljazeera.com/indepth/features/2017/08/israel-bodies-palestinians-170810075805418.html [last accessed September 13, 2017].

Amnesty International, "Human Slaughterhouse". London: Amnesty, 2016: https://www.amnestyusa.org/files/human_slaughterhouse.pdf [last accessed September 21, 2017].

Amnesty International & Forensic Architecture, "Saydnaya. Inside a Syrian Torture Prison", (Year): http://saydnaya.amnesty.org/ [last accessed September 21, 2017].

Antonioni, Michelangelo. *Blow-Up* (1966). DVD: Warner Home Video, 2004.

Arendt, Hannah. "Lying in Politics: Reflections on the Pentagon Papers". *The New York Review of Books* (November 18, 1971)

Apter, Emily. "Shibboleth: Policing by Ear and Forensic Listening in Projects by Lawrence Abu Hamdan." *October* (Spring 2016): 100–115.

Aristotle. *The Basic Writings of Aristotle.* New York: Modern Library, 2001.

Attali, Jacques. *Noise: The Political Economy of Music*. Manchester: Manchester University Press, 1985.

Austin, John L. *How to Do Things with Words.* Oxford: Oxford University Press, 1962.

Australian Broadcast Company. "Oscar Pistorius: Blade Runner tells murder trial he did not hear Reeva Steenkamp scream" (April 12, 2014): http://www.abc.net.au/news/2014-04-12/pistorius-tells-court-reeva-steenkamp-did-not-scream/5385714 [last accessed September 22, 2017].

Barack, Obama. "Obama on AIG Rage, Recession, Challenges". CBS 60 Minutes (March 22, 2009): https://www.youtube.com/watch?v=5GRbya1xgcw [last accessed September 22, 2017].

BBC. "Pistorius witness 'heard shots, screams, more shots'" (February 20, 2013): http://www.bbc.com/news/world-africa-21514428 [last accessed September 22, 2017].

Beckett, Samuel. *Not I.* London: Faber & Faber, 1973.

Bently, L. & Flynn, L. *Law and the Senses.* London: Pluto Press, 1996.

Berk-Seligson, Susan. *The Bilingual Courtroom.* Chicago: University of Chicago Press, 1990.

Bickford, Susan. *The Dissonance of Democracy: Listening, Conflict and Citizenship.* New York: Cornell University Press, 1996.

Butler, Judith. *Excitable Speech: A Politics of the Performative.* New York: Routledge, 1997.

Butler, Shane. *The Ancient Phonograph.* Cambridge: MIT Press, 2015.

Cage, John. *4'33": For any instrument or combination of instruments* (1952). New York: Henmar Press, 1960.

Caudill, Edward. *The Scopes Trial: A Photographic History.* Knoxville: The University of Tennessee Press, 2004.

Carlyle, A. & Lane, C., *On Listening*. London: Uniformbooks, 2013.

Cavarero, Adriana. *For More Than One Voice.* California: Stanford University Press, 2005.

Chude-Sokei, Louis Onuorah. *The Sound of Culture: Diaspora and Black Technopoetics.* Connecticut: Wesleyan University Press, 2015.

Constable, Marianne. *Just Silences: The Limits and of Possibilities of Modern Law.* New Jersey: Princeton University Press, 2005.

Corradi Fiumara, Gemma, trans. Charles Lambert. *The Other Side of Language: A Philosophy of Listening.* New York: Routledge, 1990.

Cotterhill, J. *Language in the Legal Process.* London: Palgrave Macmillan, 2004.

Cox, C. & Warner, D. (eds). *Audio Culture: Readings In Modern Music.* London: Continuum, 2005.

Cox, C., Jaskey, J., Malik, S. (eds). *Realism Materialism Art.* Berlin: Sternberg, 2015.

Cusick, Suzanne G. "Musicology, Torture, Repair". *Radical Musicology,* 3 (2008): http://www.radical-musicology.org.uk [last accessed September 23, 2017].

Daughtry, J. Martin. *Listening to War: Sound, Music, Trauma, and Survival in Wartime Iraq.* Oxford: Oxford University Press, 2015.

De Antonio, Emile, dir. *Point of Order!* Point Films, 1963.

Defense for Children International Palestine. No More Forgotten Lives Campaign (Year): http://www.nomoreforgottenlives.com/ [last accessed September 22, 2017].

De Palma, Brian. *Blow Out* (1981). DVD: Criterion Collection, 2011.

Derrida, Jacques, trans. Peggy Kamuf. *Without Alibi.* California: Stamford University Press, 2002.

De Saussure, Ferdinand, trans. Roy Harris. *Course in General Linguistics.* Illinois: Open Court, 1986.

Dolar, Mladen. *A Voice and Nothing More.* Cambridge: MIT Press, 2006.

Dyson, Frances. *Sounding New Media.* Berkeley: University of California Press, 2009.

Eades, D., French, P., Jessen, M., Rock, F. *The International Journal of Speech, Language and the Law.* Sheffield: Equinox Publishing, 2011.

Eades, Diana. "Applied Linguistics and Language Analyses in Asylum Seeker Cases". *Applied Linguistics*, 26/4 (2005): 503–26.

Eades, Diana, et al. "Guidelines for the use of language analysis in relation to questions of national origin in refugee cases". *International Journal of Speech Language and the Law*, 11/2 (2004): 261-266

Eassie, Lord. [2013] CSIH 68. Opinion in the Appeals against The Advocate General for Scotland Representing the Secretary of State for the Home Department. Extra Division, Inner House, Court of Session, United Kingdom. Court transcript, 25.

Eriksson, Anders & Lacerda, Francisco. "Charlatanry in Forensic Speech Science". *International Journal of Speech, Language and the Law*, 14/2 (2007): 169–93.

Felman, Shoshana. *The Scandal of the Speaking Body.* New York: Cornell University Press, 1983.

Felman, Shoshana & Dori Laub. *Testimony: Crises of Witnessing in Literature, Psychoanalysis, and History.* Oxford: Taylor & Francis, 1992.

Fiore, Quentin & Jerome Agel. *The Medium is the Massage.* LP: Columbia, 1968.

Forensic Architecture. "Nakba Day Killings" Report (2015): http://beitunia.forensic-architecture.org/ [last accessed September 22, 2017].

Foucault, Michel, trans. Alan Sheridan. *Discipline & Punish* (1975). New York: Random House, 1995.

Fraser, Helen. "The Role of Linguists and Native Speakers in Language Analysis for the Determination of Origin: A Response to Tina Cambier-Langeveld". *International Journal of Speech, Language, and the Law,* 18/1 (2011): 121–30

Al-Ghamidi, Said Saad. Twitter profile: lhttps://twitter.com/sadalghamdi?lang=en.

Ginzburg, Carlo, trans. Anne C. Tedeschi & John Tedeschi. *Threads and Traces: True False Fictive.* Berkeley: University of California Press, 2012.

Goodman, Steve. *Sonic Warfare.* Cambridge: MIT Press, 2009.

Goodrich, Peter. *Languages of Law.* London: Wiedenfeld and Nicholson, 1990.

Graham, D. "Sound Is Material". *Grey Room,* 17 (2004): 108–117.

Granados, S., Murphy, Z., Schaul K., Faiola A. "Raising Barriers". *The Washington Post* (October 12, 2016): https://www.washingtonpost.com/graphics/world/border-barriers/global-illegal-immigration-prevention/.

Grigoras, Caitlin. "Digital Audio Recording Analysis: the Electric Network Frequency (ENF) Criterion". *International Journal of Speech, Language and the Law*, 12/1 (2005): 63–76.

Hajjar, Lisa. *Courting Conflict: The Israeli Military Court System in the West Bank and Gaza.* Berkeley: University of California Press, 2003.

Hanna, Jason. "Audio captured at time of Michael Brown shooting, company says", CNN (August 28, 2014): http://edition.cnn.com/2014/08/28/justice/michael-brown-ferguson-shooting-audio/index.html [last accessed September 22, 2017].

Heller-Roazen, Daniel. *Echolalias: On the Forgetting of Language.* New York: Zone Books, 2008.

Heller-Roazen, Daniel. *Dark Tongues: The Art of Rogues and Riddlers.* New York: Zone Books, 2013.

Hitti, Philip K. *The Origins of the Druze People.* London: Saqi Books, 2007.

Home Office. Police and Criminal Evidence Act (PACE) 67(7B). Code E, "Revised Code of Practice on Audio Recording Interviews with Suspects": https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/495716/52344_00_Pace_Code_E_Accessible_v0.3.pdf [last accessed September 22, 2017].

Hunt, Nancy Rose. "An Acoustic Register, Tenacious Images, and Congolese Scenes of Rape and Repetition". *Cultural Anthropology*, 23/2 (2008): 220–53.

Ihde, Don. *Listening and Voice: Phenomenologies of Sound*. USA: New York: Suny Press, 1976.

ITN. "Using Nemesysco LVA technology in the Department for Work and Pensions", news clip (February 2, 2010): http://youtu.be/QwJadf V0c00 [last accessed 2011].

Kafka, Franz, trans. Ian Johnston. "Before the Law". Available at: http://www.kafka-online.info/before-the-law.html [last accessed September 21, 2017].

Kaste, Martin. "All Things Considered". NPR (February 28, 2014): http://www.npr.org/sections/alltechconsidered/2014/02/28/284131881/as-police-monitor-social-media-legal-lines-become-blurred [last accessed September 22., 2017].

Keenan, T. & Weizman, E. "Mengele's Skull". *Cabinet*, 43 (Fall 2011).

Khuri, Fuad I. *Being a Druze.* London: Druze Heritage Foundation, 2004.

Kittler, Friedrich, trans. Geoffrey Winthrop & Micheal Wutz. *Gramophone, Film Typewriter.* California: Stanford University Press, 1986.

LaBelle, Brandon. *Lexicon of the Mouth: The Politics and Poetics of Voice and the Oral Imaginary.* London: Bloomsbury, 2014.

Laennec, René, trans. John Forbes. *A Treatise on the Diseases of the Chest, and on Mediate Auscultation.* New York: Samuel S. & William Wood, 1838.

Larson, Edward J. *Summer for the Gods: The Scopes Trial and America's Continuing Debate Over Science and Religion*. New York: Basic Books, 1997.

Makarem, Sami, *al-Taqiyya fi al-Islam*: *Dissimulation in Islam,* London: Druze Heritage Foundation (2004).

Makarem, Sami Nassib. "Remarks on Anis Obeid's: The Druze and their Faith in Tawhid" (2008): http://samimakarem.com/pdf_files/Remarks_on_Dr_Obeid's_book25082008.pdf [last accessed February 11, 2014].

McLuhan, Marshall. *Understanding Media.* New York: McGraw-Hill, 1964.

Minneapolis Government. "Shots Fired Maps" (2012–17): http://www.ci.minneapolis.mn.us/police/statistics/crime-statistics_codefor_shotsfired [last accessed September 22, 2017].

Morelle, Rebecca. "The hum that helps to fight crime", BBC (December 12, 2012): http://www.bbc.com/news/science-environment-20629671 [last accessed August 30, 2017].

Morris, Rosalind C. "The Miner's Ear". *Transition*, 98 (2008): 96–115.

Moten, Fred. *In the Break: The Aesthetics of the Black Radical Tradition.* Minneapolis: University of Minnesota Press, 2003.

Muysken, P., Verrips, M. & Zwaan, K. *Language and Origin: The Role of Language in European Asylum Procedures.* The Netherlands: Wolf Legal Publishers, 2010.

Nancy, Jean-Luc, trans. Charlotte Mandell. *Listening.* New York: Fordham University Press, 2007.

National Geographic. "Nemesysco's Investigation Focus Tool Video," (August 28, 2012): http://www.youtube.com/watch?v=6nvXHQuUoOQ&list =PL8C31084C75D27F3C [last accessed 2011].

Nemesysco. Layered Voice Analysis 6.50. Nemesyso Ltd., Israel: www.LVA650.com [last accessed September 22, 2017].

Novak D. & Sakakeeny M. (eds). *Keywords in Sound.* Durham: Duke University Press, 2015.

Öhman, Lisa. "All Ears: Adults' and Children's Earwitness Testimony". PhD, Department of Psychology, University of Gothenburg, Sweden (2013): https://gupea.ub.gu.se/handle/2077/32014 [last accessed: September 21, 2017].

Orwell, George. *1984* (1949). London: Penguin, 2008.

Paasche, M. & Radul, J. *A Thousand Eyes: Media, Technology and Aesthetics.* Berlin: Sternberg Press, 2011.

Park, Jong Jin et al. "Giant Acoustic Concentration by Extraordinary Transmission in Zero-Mass Metamaterials", *Physics Review Letters*, 110 (June 14, 2013), 244–302.

Pijanowski, B., et al. “Soundscape Ecology: The Science of Sound in the Landscape”. *BioScience*, 61/3 (March 2011): 203–16.

Pinter, Harold. *Mountain Language.* London: Samuel French Ltd, 1988.

Postma, B. N. J. & Katz, B. F. G. “Acoustics of Notre-Dame Cathedral de Paris”. 22nd International Congress on Acoustics, Buenos Aires (September 2016): http://www.ica2016.org.ar/ica2016proceedings/ica2016/ICA2016-0269.pdf [last accessed September 21, 2017].

Rice, Tom. “Beautiful Murmurs: Stethoscopic Listening and Acoustic Objectification”. *Senses & Society*, 3/3 (2008): 293–306.

Rice, Tom. “Learning to Listen: Auscultation and the Transmission of Auditory Knowledge”. *Journal of the Royal Anthropological Institute*, Special Issue: Making Knowledge, 16 (May 2010): 41–61.

Ross, Alex. “Searching for Silence”. *The New Yorker* (October 4, 2010): http://www.newyorker.com/magazine/2010/10/04/searching-for-silence [last accessed August 31, 2017].

Said, Edward. *Reflections on Exile and Other Essays*. Cambridge: Harvard University Press, 2002.

Scarry, Elaine. *The Body in Pain.* Oxford: Oxford University Press, 1985.

Serres, Michel, trans. Mark Sankey & Peter Cowley. *The Five Senses: A Philosophy of Mingled Bodies.* London: Bloomsbury, 1985.

ShotSpotter, “ShotSpotter Privacy Policy” (April 2017): http://www.shotspotter.com/privacy-policy [last accessed September 22, 2017].

Showen, Robert. “The Intelligence which Scientific Analysis Can Derive from Gunshot Audio”. ShotSpotter Blog (August 27, 2014): http://www.shotspotter.com/blog/the-intelligence-which-scientific-analysis-can-derive-from-gunshot-audio [last accessed August 31, 2017].

Sivan, Eyal & Brauman, Rony, dirs. *The Specialist: A Portrait of a Modern Criminal*. DVD: Momento!, 1999.

Solzhenitsyn, Aleksandr, trans. Thomas P. Whitney. *The First Circle.* New York: Bantam, 1969.

Staff, Toi. “Plea deal for border policemen who killed Palestinian protester”. *The Times of Israel* (December 6, 2016): https://www.timesofisrael.com/plea-deal-for-border-policemen-who-killed-palestinian-protester/ [last accessed September 13, 2017].

Spivak, Gayatri Chakravorty. “Can the Subaltern Speak?” (1985). In Patrick Williams & Laura Chrisman (eds), *Colonial Discourse and Postcolonial Theory.* New York: Columbia University Press, 2003. 66–111.

Sterne, Jonathan. *The Audible Past: Cultural Origins of Sound Reproduction.* Durham: Duke University Press, 2003.

Sutter, John D. “Listening for the amphibian apocalypse”. CNN (January 9, 2017): http://edition.cnn.com/2016/12/11/world/vanishing-sutter-amphibian-extinction/index.html [last

accessed September 22, 2017].

Szendy, P. *Listen: A History of Our Ears.* New York: Fordham University Press, 2008.

Ultra-Red. *10 Preliminary Theses on Militant Sound Investigation.* New York: Printed Matter, 2008.

Universal Declaration of Human Rights, Article 19. Archives of the International Council of Human Rights Policy: http://www.ichrp.org/en/article_19_udhr [last accessed September 22, 2017].

Unknown author. "Essex Police Introduce Taping of Interviews." *The Law,* 180 (April 1986).

Van Taylor, David, dir. *Dream Deceivers: The Story of James Vance vs. Judas Priest.* KNPB, Channel 5, public broadcasting (August 6, 1992).

Vismann, Cornelia. "Language Breaks at the Nuremberg Trials". In Stephan Braese (ed), *Rechenschaften: Juristicher und literarischer Diskurs in der Auseinandersetzung mit den NS-Massenverbrechen.* Göttingen: Wallstein, 2004.

Vismann, Cornelia. "Tele-Tribunals: Anatomy of a Medium". *Grey Room,* 10 (2003): 5–21.

Weizman, Eyal. *Forensic Architecture.* New York: Zone Books, 2017.

Wiggers , P. *Voice Stress Analysis.* The Netherlands: Delft University Press, 2007.

Wood, Michael. *Children of Silence.* New York: Columbia University Press, 1998.

Yazbeck, Samar, trans. Max Weiss. *A Women in the Cross-Fire. Diaries of the Syrian Revolution.* London: Haus, 2012.

Yates, Frances A. *The Art of Memory.* New York: Routledge, 1966.

Original interviews and legal testimonies:

Abdirahman. Interview with Lawrence Abu Hamdan. Utrecht, September 29, 2012.

Abdirahman. Expert accent report, conducted by the Immigratie-en Naturalisatiedienst. Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, the Netherlands, 2008.

Anonymised asylum applicant monologues (1 & 2). Recording sent to the author by email by Roderick Martin, October 1, 2013. Trans. Masha Refka.

Barakat, Mohammed. Interview with Lawrence Abu Hamdan. London, December 9, 2011.

Barakat, Mohammed. Appeal Hearing. Lawrence Abu Hamdan-transcribed testimony. Her Royal Majesty's Asylum and Immigration Tribunal, London Borough of Islington, May 25, 2013.

Dargham, Wissam Abu. Interview with Lawrence Abu Hamdan. Beirut, April 8, 2014.

Eades, Diana. Interview with Lawrence Abu Hamdan. By telephone, August 30, 2011.

French, Peter. Interview with Lawrence Abu Hamdan. York, United Kingdom, January 28, 2010.

Grigoras, Catalin. Interview with Lawrence Abu Hamdan. By telephone, February 2014.

Lefter, Iulia & Wiggers, Pascal. Interview with Lawrence Abu Hamdan. Delft University, May 2012.

Lövgren, Petter. Interview with Lawrence Abu Hamdan. Stockholm, August 16, 2013.

Martin, Roderick. Interview with Lawrence Abu Hamdan. Stockholm, September 23, 2013.

Patrick, Peter. Interview with Lawrence Abu Hamdan. Colchester, August 16, 2011.

Rice, Tom. Interview with Lawrence Abu Hamdan. Brighton, July 6, 2012.

Robbins, Lynn. Interview with Lawrence Abu Hamdan. London, June 2012.

Showen, Robert. Interview with Lawrence Abu Hamdan. By telephone, October 1, 2015.

Takenan, Andreas. Interview with Lawrence Abu Hamdan. University of Stockholm, August 2012.

Saydnaya earwitness interviews:

Anas. Interview with Lawrence Abu Hamdan. Amnesty International Headquarters, Istanbul, April 15, 2016.

Diab. Interview with Lawrence Abu Hamdan. Amnesty International Headquarters, Istanbul, April 12, 2016.

Jamal. Interview with Lawrence Abu Hamdan. Amnesty International Headquarters, Istanbul, April 13, 2016.

Salam. Interview with Lawrence Abu Hamdan. Amnesty International Headquarters, Istanbul, April 14, 2016.

Samer. Interview with Lawrence Abu Hamdan. Amnesty International Headquarters, Istanbul, April 11, 2016.