1984

A radical form of listening took shape in Britain in 1984. This sonic avant-garde was not attached to any nameable cultural shift or trend, but in fact owed its origin to the passing of the Police and Criminal Evidence Act (PACE). The legislation marked a crucial shift in the conventions of testimony and what the law recognized as "truth," stretching the juridical ear beyond speech acts into speech itself—not simply hearing words spoken aloud, but actively listening to the process of speaking itself.

Code E of PACE required police interview rooms to be equipped with audio recording machines, so that all interrogations could be recorded. This legislation was seen as a solution to claims that the police were falsifying confessions and altering statements made during interviews, as prior to this point all statements were simply written down "verbatim" by the police officers and then signed off on by the suspect.

Were it not for a handful of linguists practicing a rare strand of forensic phonetic analysis, PACE would have remained a simple and transparent article of legal reform. Instead, the act exponentially increased the use of speaker profiling, voice identification, and voice prints, in order to, among other things, determine regional and ethnic identity as well as to facilitate so-called voice lineups. Emerging out of this legislation, this scientific field marked the voice as a new medium through which to conduct legal investigations.

Prior to PACE, if it was suspected that someone's voice was on an incriminating recording—for example, a bugged 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, and all such recordings were added to a growing sonic archive that was permanently accessible to forensic phoneticians and audiologists.

By rapidly increasing the application of forensic listening in legal investigations, PACE widened the attention of the law to include not only

the voice but also many of the other sounds that constitute our sonic environment. Soon, the forensic listener was required not only to identify the voice on a recording but also the sounds in the background so as to ascertain where, by what brand of machine, and at what time of day a recording was made. PACE was the catalyst that enabled a complete spectrum of sonic frequencies to take the witness stand and testify.

1990

While Dr. French was wading through his flood of cassettes in the wake of the PACE storm, a team of forensic listeners in Nevada was busy selling out the profession. The 1990 trial of the heavy metal band Judas Priest was to be forensic audiology's fifteen minutes of fame and the beginning of its unshakable reputation as a pseudoscience. The civil trial examined whether the band was responsible for an incident in 1985 in which twenty-year-old James Vance and eighteen-year-old Raymond Belknap shot themselves in Sparks, Nevada, with a gun that belonged to Vance's stepfather. In their suit, the families of the two young men alleged that subliminal messages hidden throughout the band's 1978 *Stained Class* album contributed to the suicide of Belknap and the severe injuries sustained by Vance, who died before the trial commenced.

Prior to his death, Vance had convened with lawyers, singing for them parts of his favorite Judas Priest songs. This led to the song "Better by You Better than Me" becoming the focus of analysis for the court's designated forensic listening expert, William Nickloff, who used the most up-to-date digital sonic waveform analysis technology to wow the judge with a performance of microscopically precise sonic attention. Nickloff's testimony resulted in Judas Priest's lead singer Rob Halford taking to the dock to give an a cappella rendition of the song in its entirety. Afterwards, Halford faced a grueling cross-examination in which he was asked a series of questions about when, where, and why he chose to inhale and exhale during his singing. The court also devoted particular attention to Halford's "meeeee'ya," his way of singing "me." In response to the intense scrutiny of his vocal chords and enunciative patterns, Halford simply said, "It's just the way I've always sung it really."

Never before was Halford's singing process subjected to such specialist attention. However, the outcome of all Nickloff's "high-tech" listening was the rather ambiguous identification of seven instances when the album played backwards yielded the subliminal message: "Do it!" "Do what?" we may ask. The case was thrown out of court when Halford decided that forensic audiology was not altogether that difficult, and after a quick listen to his album backwards, he took it upon himself to present the more meaningful fragments he had found to the court with a boom box pointed directly at the judge. When the band's song "Exciter," for example, was played backwards, the lyrics "stand by for exciter salvation is his task" could be heard as "I asked for a peppermint, I asked for her to get one."

1998

American forensic audiologists were still blushing with embarrassment over the subliminal listening craze of the early 1990s (which also witnessed the trials, for example, of the band AC/DC and the Mountain Valley Television Corporation) when a Romanian practitioner, Catalin Grigoras, began to reinstitute the radicality of his field, proving once again that "noise speaks" by relentlessly listening to the hum of Romania's national electrical grid.

Grigoras theorized that the humming of electrical mains could be used as evidence to authenticate recordings, to determine their time and date and whether they have been edited or otherwise altered. Based on Grigoras's results, forensic audio labs across the world realized that the hum of the mains operates like sonar, as a sonic mapping device. The sound source emitted by the state (through the national grid) can be retrieved via a recording and analyzed to provide information and evidence on unlawful activity. Peter French describes the current juridical application of Grigoras's experiments:

If you give us a digital recording made anywhere in an urban environment in the UK, we can in principle tell you exactly when it was made. The way we do that is by recording mains electricity hum 24/7. In this country we have an alternating mains current and ours alternates at a nominal value of 50Hz per second.

However, that's only a nominal value; in fact, at any moment in time it might be 49.6, or it might be 50.3. So there are microfluctuations in the rate of alternation that alter unpredictably minute by minute. So by recording the mains hum all around the clock all through the year, if someone gives us a digital recording—which always invariably has mains hum on it, either because the device was plugged in or because it inducts it off nearby cables or the lights in a room—we look at the fingerprint of the mains hum and correlate that with the database of our recordings, match the fingerprint, and tell you exactly when the recorded event occurred.

The legal application of Grigoras's experiment shows us that mains electricity no longer simply hums but now testifies; that forensic listening has the power to discern what of the vast and heterogeneous frequencies of the sonic world can be legally meaningful. As forensic listening advances, we will see even more radical practices of listening emerge, each one working to amplify more and more of our sonic environment into the range of legal audibility and legal affectivity.

2003

By 2003, the US and the UK were entrenched on two fronts in the war on terror. These wars forced mass migrations that became the catalyst for immigration authorities around the world to turn to forensic speech analysis to determine which individuals had been displaced as a result of the catastrophic invasions and which were simply migrants posing as refugees. On a scale similar to the 1984 PACE act, this produced a huge proliferation of forensic listening, this time employed to help determine the validity of asylum claims made by thousands of people without identity documents, particularly in Australia, Belgium, Germany, the Netherlands, New Zealand, Sweden, Switzerland, and the United Kingdom.

In these circumstances, the interview process between the immigration authorities and the asylum seeker is recorded, and the claimant's voice is then analyzed by phoneticians, often in independent laboratories in Sweden; these, in turn, contract regional

phoneticians to assess whether the voice and accent correlate with the claim of national origin. The confidence in, and the rapidly increasing predominance of, this kind of investigation within immigration law is troubling, given that its accuracy has been called into question by many forensic linguists, phoneticians, and other practitioners around the world. These skeptics are demanding substantial reforms to the techniques employed, a group of them even writing a set of "Guidelines for the Use of language analysis in Relation to Questions of national origin in Refugee Cases." One of the main concerns of this group of linguists is to advocate for the idea that citizenship is a bureaucratic distinction that cannot be registered in the voice of a citizen.

Phonetician Diana Eades, one of the authors of the guidelines, notes elsewhere one particularly troubling instance in which immigration authorities in New Zealand were trying to determine whether a Hazara claimant was from Afghanistan, as he asserted, or was in fact an "economic refugee" from Pakistan, where the Hazara do not face persecution as they do in Afghanistan. The claim of asylum was rejected in this case on the grounds of a single pattern of enunciation—"a hard pronunciation of the consonant T" in the word *patata*, a word spoken once during his fifteen-minute interview. Here we see the juridical ear setting aside the words spoken by the claimant, preferring to find in his speech another type of testimony, and further, how the phonetic evidence provided by our speech can potentially testify against the original testimony.