



JENNIFER C. HSIEH
University of Michigan

Making noise in urban Taiwan:

Decibels, the state, and sono-sociality

ABSTRACT

During Taiwan's transition from authoritarian rule to liberal governance in the 1970s–80s, the government introduced a noise-control system that uses technological instruments to manage citizens' everyday noise problems. Rather than reducing noise problems, however, the system has amplified the disparity between a sound that is heard and one that is measured, calling into question the efficacy of noise control to attend to citizens' needs. For residents and state actors in Taipei, the contradiction underlying noise control forms a lived condition of urban life, one that has initiated sono-sociality, or social relations that emerge through efforts to communicate and interact with sound. [*sound, noise, acoustemology, environment, governance, urban, Taipei, Taiwan*]

1970-80年代，當台灣從戒嚴轉型到自由治理時，政府為了管理民眾的日常噪音問題採用了科技儀器，應運而生的是噪音管制制度。但是，噪音管制制度非但沒有減少噪音問題，反而擴大了聽覺和量測聲音的差異，令人質疑噪音管制的功效是否滿足人民需求。對台北市民與官方來說，噪音管制的矛盾存在於都市生活中的一部分；聲音社會性，或說社會關係，則自這些聲音的交流或感應產生。[聲音、噪音、音聲意義學、環境、治理、都市、台北、台灣]

One evening, I accompanied a trio of environmental inspectors to one of Taipei's hot pot restaurants, where customers cook their own soup-based meal at the table. Stepping out of their silver minivan, we immediately heard a loud buzzing sound coming from an air-conditioner mounted to the restaurant's exterior wall. The inspectors, all in their mid-20s, picked up their pace. "This one will likely go over [the noise standard]," one of them said. In a darkened alleyway near the air-conditioner, they set up a decibel meter and measured the buzzing sound for two minutes. Not only did the measurement go over Taiwan's noise-level standard for commercial establishments, but it also surpassed the next tier of standards, suggesting a steeper fine.

When the inspectors went inside the restaurant to issue the citation, the restaurant owner threw his hands in the air and exclaimed, "If you're going to fine me for this, I might as well shut down my business." Two of the inspectors were prepared to cite the owner and move on to the next inspection, but the third inspector, Kevin, was moved by the owner's plea.¹ During an exchange in which both parties returned to the alley to examine the noise problem, the owner suggested that the inspectors move the decibel meter to a different position, around the corner from the air-conditioner. Kevin consulted his colleagues, who at this point were hardly hiding their frustration that the inspection was taking so long. After calling an off-duty colleague for guidance, Kevin reasoned that it was within his legal capacity to reposition the decibel meter and take a new measurement. Forty minutes into the inspection, a second measurement determined that the sound did not violate noise-control standards. With a few slams of the car door, the inspectors took off. While the others sat in perturbed silence, Kevin worried over whether he had made the right decision.

By repositioning the decibel meter and taking a new measurement, Kevin and the restaurant owner had partitioned the inspectors' legal authority from its material and discursive underpinnings and transformed the measurement apparatus into a site of negotiation. This interaction, however, does not so much expose a shortcoming of the noise-management system as it exemplifies Taiwan's participatory approach to noise control. In

1983, Taiwan adopted the Noise Control Act (*Zaoyin guanzhi fa*), aimed at improving citizens' quality of life. Signaling a departure from past authoritarian rule, government officials lauded the effort for providing a seemingly objective and transparent method to adjudicate noise problems. Using a complaints hotline, residents can call and report industrial, commercial, or other sounds permeating Taiwan's mixed-use urban locales. In the capital city, Taipei, where I conducted the majority of my fieldwork, environmental inspectors would arrive at a noise-producing site to measure the loudness of a sound 24 hours a day, seven days a week, with a guaranteed response time of three hours after the complaint was received. Whether the sound surpassed the noise-level standard, measured in decibels, determined whether it qualified as a noise violation.²

Despite the government's enthusiasm, the noise-control system has not been immune to the challenges faced by noise-control engineering around the world. For example, noise-measurement tools do not reliably match the human perception of noise, as argued by scholars working in western Europe, the United States, and Brazil (Bijsterveld 2008; Cardoso 2018; Peterson 2017). These measurement devices' technical parameters subordinate human perception to the biopolitical features of modern governance, and they impose a disciplinary regime over the listening body, "thereby objectifying the subjective" (Peterson 2017, 76). These analyses are supported by government data from Taiwan. Although official records since 2006 show a decrease in the rate of noise violations, nearing 0 percent, the number of noise complaints continues to rise to record levels.

The continued enactment of Taiwan's noise-measurement system suggests that noise problems, like the one at the hot pot restaurant, are not merely subject to measurement and control; they constitute a new form of civic engagement. Both Kevin and the restaurant owner mediated the process of defining noise and grappled with the specificities of the decibel meter, the physics of acoustics, official regulations, and for the restaurant owner facing an impending fine—the offending party's financial circumstances. Similarly, Taipei noise hearers react to noise inspections by using and reworking the technoscientific terms of noise measurement. In response to the inspection process, residents have taken to making audiovisual recordings of noise that challenge, copy, and riff on the formal measurement protocols. In the style of an official inspector, residents point recording instruments at an alleged noise source to procure evidence of a noise problem. These recordings are dismissed by government officials as unverifiable, and those who make the recordings explain that, even with evidence in hand, they have a hard time convincing others that the recorded sound is noise. Nevertheless, a growing number of residents are turning to documentary practices in response

to Taiwan's noise-inspection process, and this offers an example of what I call *sono-sociality*—the discursive and material relations through which sound becomes an object of inquiry.

Sono-sociality expands ethnographers' capacity to examine sound in social contexts, particularly ethnographers who are interested in the anthropology of sound, science and technology studies, and the anthropology of the state. Building on Steven Feld's (2012) "acoustemology" ("acoustics" and "epistemology"), or the study of cross-cultural modes of knowing and relating through sound, I use sono-sociality to examine how social actors negotiate sonic experience within an existing sociopolitical system. A sono-social study considers the social relationships that emerge through mediating technologies, and it attends to transductive processes in apprehending how others listen, "making audible the conditions that produce what many people have come to think of as self-evident" (Helmreich 2007, 623; see also Helmreich 2015) as they relate to others.³

For 16 months in Taipei, from 2014–15, I examined the day-to-day experiences of noise hearers and government officials as they navigated the technical, perceptual, cultural, and legal dimensions of noise. I shadowed noise inspectors and acoustic consultants, specialists hired by the noise-control office to investigate complex noise problems (see Figure 1). And I reviewed noise-complaint cases, attended policy meetings with government bureaucrats, and interviewed noise complainants. Initially, I did not intend to spend much time researching Taiwan's noise-control system, but I soon learned that the noise-control office, based in the Taiwan Environmental Protection Administration, was central to documenting and characterizing the variety of ways that citizens, government officials, regulations, and technologies came together to realize sound as a social phenomenon. Compared to other objects of environmental regulation, such as air, water, and waste, noise was notable as both a product of human perception and a measurable object. In fact, noise stood out as the number one environmental complaint in all of Taiwan, even though less than 10 percent of noise complaints resulted in a citation (Taiwan EPA 2012, 4). It was clear that noise traversed the logics of environmental engineering into those of the social, and that both Taipei residents and government officials had a stake in turning noise into an object of shared discourse.

Taiwan's postauthoritarian context reframes the noise-control system, including the authorities' procedural adherence to scientific objectivity. This reframing takes place through a historicity of the senses, one that is "subject to moral regulation" (Howes 2019, 22). The noise-control office's continuing work to attend to citizens' complaints, as well as citizens' ongoing engagement with the state in problems of noise, suggests that there is in Taiwan a mode of postauthoritarian governance in the making, one that unfolds in step with the intransigent challenges of



Figure 1. Acoustic consultants investigate overpass noise in the outskirts of Taipei, January 2015. The overpass runs along a city block lined with apartment buildings. (Jennifer C. Hsieh) [This figure appears in color in the online issue]

scientific measurement; this approach contrasts with that of science and technology studies that analyze the “invisible modes of power” (Merry and Coutin 2014, 1) behind acts of measurement. In the case considered here, Taiwan’s noise-measurement apparatus represents a mode of “sono-power,” that is, a mode of subjecting individual listening to the generalizing processes of a technological device. This is the case even as noise inspectors engage in sono-sociality with Taipei residents, and each other, as they mediate Taiwan’s authoritarian past with its liberal-democratic present. Taipei residents’ improvised response to the inspection process further suggests that citizens are working to reclaim human experience as an authority on noise and, in turn, assert their ongoing demands in a liberalizing state. By hearing and measuring sound, citizens and the state negotiate the discursive, material, and ontological status of noise.

Sono-sociality

Sono-sociality refers to sound and sounding practices that crystallize through relations between humans, technologies, and institutions, and it is partly based on the concept of biosociality, introduced by Paul Rabinow (2005). As a modification of Michel Foucault’s concept of biopower, biosociality accounts for the social impact of genetic sequencing: disciplinary tactics of population control make way for socialities premised on shared genetic data. As a result, social groups emerge around shared characteristics in the genetic code, such as the presence of a rare chromosome, and this leads to the creation of new biomedical and political claims. In a similar, though not identical manner, sono-power refers to the state’s disciplinary

methods, including surveillance (Cardoso 2019), sonic weapons (Goodman 2012), and technocratic measurement. Sono-sociality, on the other hand, examines how sonic experience regroups social and political life around the material qualities of sound and hearing. As with Rabinow’s biosociality, sono-sociality might describe how people coalesce into distinct social groups, in this case people with shared auditory sensibilities—such as perfect pitch, tinnitus, or sensitive hearing.

While some sensory ethnographers and cultural geographers bring scholarly attention to “ephemeral and fleeting senses” (Cox, Irving, and Wright 2016, 5), emergent actions (Thrift 2008), and a “lifeworld ... that speak[s] for itself” (Castaing-Taylor 2016, 151), sono-sociality serves as an analytic to identify relational processes in everyday deliberations of sound. Not limited to the physiology of hearing, a sono-social analysis examines how the sonic domain is incorporated into social interactions that convey multiple ways of listening, various attempts to communicate sound to others, and actual relations created by sound. While my ethnography features noise disputes in Taipei, sono-sociality is not limited to studies of noise. For example, Eitan Wilf (2014) describes an exchange with his interlocutor, a jazz student, involving a car horn, which they do not interpret as noise. After hearing the car horn, Wilf and the student instinctively whistle the sound of the horn out loud, but they do so at different pitches. The dissonance in their whistling prompts them to walk up to the car, knock on the driver’s window, and ask the driver to sound the horn again so that they can double-check their pitch. Drawing on Foucault, Wilf (2014, 192) analyzes this moment in terms of “technologies of the listening self,” wherein musicians in

training develop their listening skills through spontaneous activities, such as discerning pitch on a noisy street corner. But where Wilf examines the act of listening as a skill to be honed in the cultivation of the self, a sono-social analysis might examine the communicative practices that result from divergent ways of listening. In this case, the car horn brings Wilf and the musician outside their own listening experiences as they enlist the driver in a sonic negotiation. Sound emerges as an object of debate, one that exists in the physical world yet is differently perceived.

Sono-sociality can occur in everyday interactions or on a scale that links institutions, countries, and experts. Since 2017, for example, experts have tried to discover the origin of a high-pitched, screeching sound afflicting US diplomats in Cuba and elsewhere. In their investigations, researchers, medical doctors, and state officials have relied on audio recordings, MRI scans, and witness testimony. Psychologists found evidence of brain damage that points to a sonic weapon. Others used spectrographic analysis to argue that the sound originated from crickets, while reports in 2020 point to microwave energy. The response of various entities to the high-pitched sound, as well as the vast array of tools used to analyze the problem, speaks to the formation of sono-sociality on a transnational scale. The power attached to the mysterious sound prompted a sono-sociality involving various actors.

Sono-sociality differs from the phenomenology of hearing and listening. While philosophers have written about individual listeners' experience of the sonic environment (Ihde 1976; Nancy 2007), a sono-social analysis describes how social relationships form out of the mediation of the sonic environment.⁴ Like listening to a foreign language for the first time, the act of hearing does not presuppose meaning making. People learn to hear certain sounds over others, such as the phonemes of a specific linguistic system, while the sounds that lie outside one's phonemic inventory are imperceptible (Boas 1889). One may hear the timbre or rhythm of a sound before knowing what the sound is or what it means. Sono-sociality is thus based on the premise that one's hearing is not obvious to another, and it accounts for people's communicative practices when they negotiate their multiple sonic experiences.

The concept of acoustemology, a "study of sound as a way of knowing," resonates with sono-sociality (Feld 2015, 12). Whereas a sono-social analysis examines interactions and sounding practices within the same cultural context, acoustemology refers to human relationality through sounding and listening in cross-cultural situations. For example, acoustemology allows Feld (2015, 16) to understand Bosavi songs as "vocalized mappings of the rainforest ... sung from a bird's point of view," rather than simply as an "acoustic adaptation to the rainforest environment." Engaging with sound enhances the epistemological basis for understanding how people come to think, move, and

exist in the world. Moreover, understanding how others understand sound speaks to a relational ontology between researcher and research subject, one that is "emergent and contingent, unfolding through interplay between humans but also a wider ecology of environments, materialities, technologies, and nonhuman forms of life" (Rice 2018, 4).

As a corrective to soundscape studies and acoustic ecology (Schafer 1977), acoustemology understands noise not as fixed but as situated in a given time and place. The concept has allowed ethnographers and historians to analyze noise by relating noisiness to otherness in the context of religion (Khan 2011; Lynch 2019), race (Hansen 2006; Sakakeeny 2010), youth (Lippman 2019; Oosterbaan 2009), politics (Radovac 2011; Sewald 2011), and class (Abe 2019; Picker 2003). These studies examine how the perception of noise is implicated in existing power relations in cultural and historical contexts, and they contribute rich social analyses to the adage that one person's noise is another's music.

Sono-sociality provides a basis for analyzing how Taipei residents contend with multiple acoustemologies that enter and affect social life. It is common that only one family member in a household hears and reports noise, while the others do not hear anything at all. Depending on the listener, the sound of piano practice is music, an annoyance, or an unbearable affront (Hsieh 2019). Moreover, Taiwan's noise-control system articulates differences in hearing in the public domain that transform the personal act of hearing into a socially negotiated phenomenon. By attending to the material and discursive encounters that put different sonic experiences in contact with one another, sono-sociality concerns not cultural understandings of sound, noise, and music, but how people's lives may be shaped and created through contrasting ways of perceiving sound.

Using sono-sociality, the ethnographer can investigate noise at the crux of communicative practices. For example, it can refer to how Taiwanese noise inspectors and residents practice a version of dialogic editing (Feld and Brenneis 2004), in which sound researchers and interlocutors listen together to recorded sound and speak about different ways of relating through sound. They do so by taking part in a process of "making noise," whether it is by measuring sound to see if it goes over the decibel standard or by hearing something and submitting a complaint, thereby attesting that a sound is noise. But while dialogic editing may "unfix and reposition [the] author's authority" (Feld 1987, 190) by attending to localized practices of listening, noise inspectors and residents negotiate and assert different claims between benign sound and unwanted noise as an ongoing expression of everyday, lived experience. In this case, noise does not contrast with signal (Shannon 1948), nor does it necessarily negate meaning (Hainge 2013). Continuing with David Novak's assertion that "noise is an essentially relational concept" (Novak 2015, 126), noise is a type of sound that gets made in relation to people.

A sono-social analysis of Taiwan's noise-control system is one way to investigate noise socialities, or how the object of noise gets triangulated between Taiwanese residents, the state, and technological instruments. By investigating interactions that emerge through sound and sounding practices in Taiwan's noise-control system, it is possible to examine noise as a phenomenon that makes and remakes social relations.

Sono-sociality offers a way to investigate the noise-control system in the historical context of Taiwan's democratic transition. In Taiwan's present-day noise-control system, hearing and reporting noise are linked to the democratic reforms of the 1980s, and their use in this context contrasts with how they were used under authoritarian rule, which mobilized citizens to surveil and eavesdrop on their neighbors. As a result, noise control reconfigures hearing, changing it from a disciplinary act (listening for wrongdoing) to a communicative one (premised on government transparency and scientific objectivity); noise control is thus a system in which residents assert their hearing to a liberalizing state that purports to listen. While Taiwan once operated exclusively within the disciplinary terms of sono-power, the democratic transition ushered in a sonic sociality through which citizens and the state have reconsidered their relationship to each other. State actors exhibit their commitment to upholding liberal values, while Taipei residents find ways to live with and counteract the state's involvement in their everyday lives.

Mediating the past through environmental noise control

Officials at the noise-control office would explain to me that noise is a subjective phenomenon: what counts as noise varies from person to person (*yin ren er yi*). Indeed, songs playing from musical garbage trucks in Taiwan were undoubtedly noise to me, as an outsider from the United States, but they were music to some locals. And just as the sounds of drumming at temple festivals might be noisy to some, to others they were *renao* (lit. "hot-noisy," or pleasing; Hatfield 2010; Sutton 1990).⁵ This is not to say that the discourse of noise did not exist. As early as the 1930s, Japanese colonial officials measured the sounds of traffic in Taipei, targeting car honking and engines. After World War II, the Beijing-born journalist He Fan derided Taipei locals' noisiness as a sign of backwardness and used his platform as a regular contributor to *Lianhebao* (United Daily News), a government-backed newspaper in Taiwan, to campaign for what he considered a quieter, more civilized environment. When I was doing fieldwork, public discussions about which sounds counted as noise in Taipei remained an area of lively debate. Televised news would intermittently report on contentious sounds, including Buddhist chanting, the screeching of garage doors, modified scooters, and home

karaoke machines. Suggesting an antisociality premised on noise, or noise antisociality, these were typical sounds of urban life to some, insufferable noise to others.

State officials have reflected on the challenges related to noise control. Discussions at the noise-control office diverged, at times, into side conversations about the state's ongoing role in managing noise. Some wondered whether environmental officials should be in charge of citizens' noise problems. Compared to their colleagues in air-quality control, the six-member noise-control team, responsible for drafting policy recommendations for noise in Taiwan, was the only group that routinely fielded phone calls from noise-burdened citizens. As I came to understand it, noise control was a moral obligation of the state, one that stemmed from a decades-old commitment to modern liberal governance.

Starting in the 1970s, noise control was introduced to improve environmental conditions in Taiwan, and it was part of a larger government project to affirm the legitimacy of the Kuomintang (KMT) regime. This was in the context of several geopolitical events during the 1970s that diminished Taiwan's international profile and threatened the KMT's continued rule. Officially known as the Republic of China (ROC), Taiwan lost its membership in the United Nations to the People's Republic of China in 1971. The subsequent severing of formal diplomatic ties with Western states meant that the KMT's claim on China became fraught. The émigré regime, with its dimmed hopes of reclaiming China, needed a way to avoid political instability and to justify its continued rule over Taiwan. Chiang Ching-kuo, the former head of secret police and son of ROC President and KMT Director-General Chiang Kai-shek, started a campaign to remake the state with what was heralded as global trends in liberal governance. In an effort to distinguish himself from his authoritarian father, and in the face of an increasingly vocal opposition movement (*tangwai*), the younger Chiang transformed the role of president in the 1980s, advocating welfare reforms, permitting the public's criticism of the state, and taking steps toward liberalization (Gold 1996; Taylor 2000; Tien 1989).

Environmental protection was a way to showcase liberal values and assess the public's satisfaction with the regime. After laws were established to regulate air, water, and waste, noise was the last category of pollutants to be regulated in Taiwan, and it was purportedly implemented on account of public demand.⁶ Official reports explain that noise regulations were created in response to a 1975 public opinion poll in which Taiwanese residents ranked noise as the number one urban problem (APO 1975). A researcher from the 1970s, who was still consulting for the noise-control office when I interviewed him, explained, "The government conducted a poll on citizens' views of public health. No one expected noise to be an issue, but it turned out to be the number one problem! After that, the

government realized that they had to do something about noise." Noise regulations were designed with the citizen in mind, and they were implemented as evidence that authorities cared about the people.

The regime's interest in noise control stood in contrast to its previous position, in which it asserted government power in part through the auditory domain. Under the authoritarian regime, schoolchildren were instructed to report their peers whom they heard speaking a language other than the state-mandated Mandarin (Dreyer 2003; Weller 1999). Moreover, Taiwanese subjects were regularly surveilled under suspicion of being political dissidents, and they could be reported on by family members, friends, and neighbors—any one of whom could have been police informants. Norma Diamond (1975, 28–29), who conducted fieldwork in Taiwan during martial law, writes,

The government encourages an atmosphere of distrust and betrayal in its sporadic attempts to uncover political deviants. . . . If your best friend is arrested, you will at least be interrogated by the military police about why you did not report your friend five years ago. The lesson to be drawn from that is that it's best not to know too much of other people's social views.

Listening during martial law was a form of surveillance that sowed division among the public. It became an act of survival to avoid listening too carefully to the views and thoughts of others, hindering political expression at the moment of hearing.

The legacy of martial law, also known as the White Terror, has had a strained, residual effect on the social and political climate in Taiwan. When I shadowed inspectors, they would say they helped residents with noise problems because Taiwanese fear conflict (*hen pa shi*). Residents who heard noise were reluctant to confront their neighbors about it because their neighbors might retaliate, as happened in the authoritarian period. There was an irony to this claim, since it was state officials who once perpetuated the culture of fear; now, however, people looked to them to intervene in neighborly disputes. Owing to the uneasy relationship between citizens and the state, those who reported noise to the authorities might be shamed by family members, who to an extent refused sono-sociality. This occurred whenever family members interpreted noise complainants' perceived inability to tolerate noise—and their insistence on involving the authorities—as a sign of physical and mental weakness, particularly if others around them had learned not to hear. Thus, in the context of Taiwan's postauthoritarian transition, an acoustemological analysis accounts for how the noise-control system mediates political transformation. Noise hearers, family members, and the state take part in negotiating the distinction between sono-power and sono-sociality, setting the boundaries,

limitations, and preoccupations for engaging with one another through the sonic.

Noise inspection as sono-sociality

It was 11 o'clock at night when the inspectors and I responded to a call on a second-floor apartment. "You've come at just the right time!" said the resident. "It's happening right now." As we walked in, I heard a high-pitched buzzing sound, but it was not the sound that the resident was referring to. "It's this low rumbling sound," she said, "and it's loudest in my bedroom." The sound was coming from a commercial refrigerator inside a restaurant on the ground floor, right beneath her apartment. It was loudest at night, she said.

The three inspectors got to work, first by explaining the noise-inspection process to the resident, a young professional in a pastel-colored coat. They proceeded to set up the decibel meter on a tripod inside the bedroom, a process with multiple steps. First, the decibel meter had to be placed two meters away from the bedroom walls to prevent the machine from picking up sonic reflections—soundwaves that bounce off walls and amplify sound in a room. They encountered a problem because the small bedroom could barely accommodate the decibel meter to meet this specification. Because the resident insisted that the noise measurement be taken from the location where the sound was the loudest, the inspectors picked up the bed and leaned it against the wall, creating space for the decibel meter at the center of the room.

Next, because the sound in question was a humming in the lower range of the audible frequency spectrum, the inspectors told the resident to turn off all nearby electronics and appliances. Doing so was necessary to prevent the decibel meter from registering interfering signals. Surprised by the request, the resident turned off her computer, switched off the ceiling fan, powered off her cellphone, turned off room lights, and—with a hint of annoyance—unplugged her refrigerator. Gone was the high-pitched buzzing sound that I heard when we entered. With only the ambient street-light shining through the window, the inspectors started the two-minute-long measurement. All five of us stood in the cramped, darkened hallway for what felt like a long time. We stared at the floor and waited in silence so that the machine would not register our voices.

After two minutes, the inspectors turned on the lights, checked the decibel meter, and told the resident that the sound did not exceed the noise-level standard. Noticeably disappointed, the resident accepted the results and exclaimed, "Well, I guess that settles it!" For now at least. As the inspectors gathered their equipment and returned the bed to its original position, the resident asked incredulously, "Do you really do this all the time? You just go to people's houses and measure noise?" She found it hard to

believe that a government body was responsible for noise and seemed amused that her complaint spurred a chain of events that led to our standing in her apartment late at night. Before the inspectors politely made their exit, she asked what other sounds she could report, signaling that she would likely make another noise complaint. Although the inspectors determined that the refrigerator noise was benign, there remained the possibility that the same sound, or other sounds like it, could exceed the noise-level standard in the future. Humidity, time of day, and the placement of the decibel meter are all variables that can alter a measurement result, and noise hearers can report the same sound source at different times to get a new measurement.

Taipei's three-hour, guaranteed response time for noise complaints leaves open the possibility for a continued sociality between residents and inspectors. Whereas sono-power refers to official measurement methods in noise-control engineering, sono-sociality occurs when the noise-measurement system enters social relations. As a result, government officials embody more than the sono-power of the state apparatus. They educate the public on the parameters for demarcating noise and invite them to participate in the measurement process.⁷ By taking part, residents agree to a system that either verifies or negates their perception of noise at a given moment. Moreover, they learn that what was obviously noise to them is not so easily verified by others. Rather than being a definitive process, noise inspection in Taipei mediates a momentary difference between the perception of noise among residents and the hearing capacity of the state, thereby making sound and listening an area of continued public engagement.

"So that it's scientific"

Trained to enact a historically situated, sono-social process, inspectors measure noise using the principles of scientific objectivity. In a classroom on a warm Saturday afternoon, William, a noise-control official, reviewed the requirements for becoming a certified noise inspector. "When you measure a sound," he said, "you have to produce the same results as your peers. You should be able to hand your documentation to others, and they should arrive at the same measurement as you." During training, William emphasized that inspectors must follow the same procedures. They were trained to transduce sound into a "qualculation" (Callon and Law 2005), and they learned to become interchangeable, performing each task just as their peers did.⁸ As William would say, inspectors were required to act this way "so that it's scientific."

When I first met William, he proudly introduced himself as a former paratrooper. Donning a black utility vest decorated with an environmental protection logo, William's affinity for military culture was apparent in his lecture to the trainees. "As inspectors," he told them, "you're on the front

lines. Only those on the front lines know what the actual situation is." Compared to office bureaucrats who sit at their desks all day, William explained, inspectors have the advantage of seeing and hearing for themselves the specifics of a noise problem.

The inspectors' embodied authority, and the risks associated with that authority, were the centerpiece of William's lesson. Sitting in the non-air-conditioned classroom, the trainees and I listened as William explained that government inspectors were beholden to citizens in a way that they had not been in the past. "Because we are a democratic country," he said, "we need evidence to act on a report. Your decibel meter is material, scientific evidence." Though inspectors traveled to the front lines during a noise inspection, they were not in fact authorized to use their perceptual faculties in any official capacity; they could act only through the formal mechanisms of measurement. To further his point, William commented on the government's efforts to practice transparency and accountability: "We tell our inspectors that it's different from before. You cannot mess up on the reports. The public can now ask to see the reports for themselves. If there's been a mistake, then you've got trouble. Do you understand?" William contrasted the previous era of governance to that of the present, explaining that environmental inspectors' diminished powers meant that government data was now subject to public review. Inspectors could be held accountable for their actions, and this was perhaps why the noise inspection at the hot pot restaurant became fraught. Breaking away from the other inspectors who were prepared to cite the restaurant owner for noise, Kevin had opened a channel for scrutiny.

Based on his statements, William would likely argue that deviations from standard protocol, such as redoing a noise measurement, ought to be exercised with utmost caution, not only because they complicate matters but also because inspectors are integral to preserving liberal values. William was not yet finished with his history lesson when he referenced the Noise Policing Act of 1959, a set of expansive prohibitions on noise during martial law. He explained,

Back then, the National Police Agency managed noise under the Criminal Investigation Unit. Noise control was part of Social Order Maintenance Laws, which gave broad authority to officers. If you were found to be making noise, you could be arrested and beaten. No one dared to make noise. And even if you were not making any noise, someone just had to report you, and you might disappear. Do you understand what I mean?

William's unorthodox comments suggested that this was not merely a training on the mechanics of measuring noise. By describing how noise prohibitions had been exploited in the past as an arbitrary instrument of power,

William was giving a lesson on the moral responsibility of present-day inspectors to the public.

As scholars of science and bureaucracy have noted, scientific rationality occupies a contradictory position in the service of modern liberal governance. While quantitative measurements appear to produce an unbiased account of a problem, relying on these measurements exposes the precariousness of government authority (Herzfeld 1992; Porter 1996). Anthropologists question the extent to which science and technology can be “an answer to political problems” (Morris 2017, S134), explaining that “if you put your trust in the measures themselves, it is because you cannot put your trust in other outcomes of performance” (Strathern 2000, 314). By invoking past injustices as a cautionary tale for inspectors, William was acknowledging the fragility of modern liberal governance and noting the ease with which authority can go unchecked. For William, the reformed state depended on superficial measures of accountability to enact liberal values.⁹ Banal and time-consuming tasks such as taking a measurement and accurately filling out an inspection report were necessary assurances, as precarious as they were, that corrupt practices of the past—coercion, bribery, lack of due process—would not sneak into the present. By emphasizing the importance of following correct procedures, William implored noise inspectors to maintain the boundary between the past and the present.

Although William insisted that inspectors fulfill their task as technocrats, noise inspections do not erase an inspector’s embodied capacity to sense noise. For example, inspectors consult their colleagues to reach consensus on noise problems. As a result, inspectors are charged with maintaining liberal governance while mediating the discrepancy between human perceptions and scientific measurements of noise. As shown in the case of the hot pot restaurant, inspectors talk to one another and typically know, by listening, whether a sound will go over noise-level standards. This initial survey determines how carefully they reproduce the measurement apparatus for the official report. And although the noise-control apparatus aims to detach human listening from noise, the sensory apparatus remains ever present. No better example of this is the positioning of the decibel meter’s microphone, which must be set at a height of one and a half meters, approximating the position of the human ear. Inspectors also maintain authority over where to position the machine. They are required to keep a minimum of two meters from the source of sound, but beyond that, they can place the machine further away depending on what, to them, represents a typical listening position. More than measuring a sound at a specific time and place, inspectors use their perceptual faculties to implement the measurement process.

Negotiations endure between a sound that is measured and one that is heard, even in a noise-control system that claims to account for this discrepancy, and these

negotiations produce the conditions for sono-sociality. Inspectors measure sound and promote it as a politically and socially just way to mediate noise problems. Rather than establishing a definitive claim to noise, however, noise control produces contradictions in its very enactment, and it has enabled citizens to respond using their own methods for making noise. Sono-sociality thus does not conclude when inspectors inform residents how to distinguish acceptable sound from unwanted noise. Rather, it initiates a process of negotiating sensory difference across institutions, technologies, and people.

When no one else will listen

At the beginning of an hour-long audio clip, multiple sounds emerge. The ambient roar of traffic, the sound of tapping, and a series of swooshing sounds. Is this the noise problem? It sounds too close to be coming from an upstairs neighbor. The rest of the clip continues: the roaring of a vehicle engine, the shuffling of footsteps. After a minute, there is silence save for the static white noise of the recording device. It is possible that I am confusing it with the hiss coming from my loudspeakers.

Author’s field notes

In my field notes, I describe the sounds that I hear in an audio recording given to me by Gina, a multimedia instructor. She explained, “I’m not sure what they’re doing upstairs. I hear knocking at all hours of the night. Other times, it’s like they’re flinging a wet towel. You know, that swoosh sound?” As soon as she moved into her new condominium, Gina began to hear mysterious sounds coming from her upstairs neighbor. At first, she reported the sounds to the homeowners’ association, but they referred her to the noise-control office. When she filed a noise complaint, inspectors visited the address and determined that there was no sound. When she talked to the upstairs neighbors, they insisted that they were not the ones making noise, and so the sounds continued. Having exhausted the resources to address the situation, Gina made audio recordings of apartment noise that she planned to give to neighborhood police, “so that they know that there is noise.” When we met, Gina had 30 audio recordings on her smartphone, ranging from three minutes to 12 hours long.

Gina was hearing something, but no one was listening. Even when I played her recordings, I had difficulty distinguishing the alleged noise from the other sounds, such as the outdoor traffic, the sounds in my own environment, and the ambient sounds from Gina’s household. Unlike the resident with the refrigerator noise who had her noise problem measured by inspectors, Gina struggled to get others to examine her noise. Hearing and recording noise thus became a way of life. “Every time I am woken up by the sound from

upstairs,” she said, “I grab my phone that’s next to my bed and hit Record.”

Among noise hearers in Taipei, Gina’s actions are not unique. Out of dissatisfaction over the limitations of official measurements, noise hearers have turned to their own practices of making noise by producing surveillance-style recordings that counter the state’s sono-power practices. A Taiwan-based, anti-noise social media group with over 1,500 members has accumulated hundreds of homemade recordings since 2013. These recordings—sometimes audio, sometimes video—are not recognized by the state as a legitimate form of evidence.¹⁰ The only ones qualified to measure a sound for noise are the licensed inspectors who show up to the site when the sound occurs. Still, the recordings are in dialogue with the noise-inspection process and present an alternative way of extricating a noise signal from the sonic environment.

As in a noise inspection, noise hearers document sound in real time and derive their authority through the mediating technology of a recording instrument. With the recording equipment pointed at a wall or ceiling inside one’s apartment, a noise hearer captures sound that is acoustically located on the other side of the partition. The source of the sound is not seen but inferred. By focusing on the direction of a disembodied sound, noise hearers try to produce an object out of noise that is both divorced from the sensing body and irreducibly connected to a specific time and place.

As when the three inspectors, the resident with the refrigerator noise, and I stood in silence as the decibel meter did its work, those making audiovisual recordings remain silent. Noise hearers do not appear on camera to film their reactions to noise, nor do they narrate what they are hearing. Instead, residents like Gina produce an artifact, “a materialization of durable indexicality” (Inoue 2018, 223), or the “chimera of objectivity” (Bender, Corpis, and Walkowitz 2015, 3). Like the noise inspectors who are supposed to manage noise only through decibel measurements, noise hearers attempt to “bypass the human” by using audiovisual recordings “to let nature speak” (Lempert 2019, 25). Moreover, recordings are “immutable mobiles” (Latour 1987, 237) that can be mechanically reproduced and shared with others, just as a decibel measurement can be written down and recorded on an inspection report. By responding to the formal mechanisms of a noise inspection, noise hearers try to breach the limitations of their sensory apparatus, thus making noise an object of sociopolitical engagement.

The recordings are intended to reproduce sound so that others may hear it for themselves. Yet noise hearers with whom I spoke expressed frustration that their recordings did not communicate sound in the way they experienced it. One woman, an electrical engineer, described how she crouched in a ready stance in the middle of her living room with a recorder in hand, waiting to document

her downstairs neighbor’s nightly drum session. She concluded, like many others, that “recordings are useless.” She added, “Even if I can record the sound, whenever I show it to my friends and family, they just tell me that it’s not a big deal.” Documented evidence of one’s noise does not guarantee that others hear the sound as noise.

The technicalities of capturing noise were a challenge for Gina. When she shared her recorded files with me, she asked if there was a way to reduce her smartphone’s internal noise, which was drowning out her recordings. The mechanical limitations of a recording instrument are one reminder that reproduced sound is never the same as the original sound. Audio recordings do not store “sound from the environment, but arrangements of charged particles” (Gallagher 2015, 569). In addition, microphones amplify certain frequencies while attenuating others, a design feature that has consequences for how people interpret recorded sound (Batcho 2012). The transductive processes that convert a sound into a digital file, and then back into sound waves that emanate through loudspeakers, mean that recorded sound emerges in an entirely different environment and temporality from the sound itself. By engaging in the contradictions of the noise-inspection process with their own paradox of reproducibility, noise hearers implicate the state and themselves in an ongoing sono-sociality.

Multimediated sound

Michael agreed to meet me at a coffee shop in Taipei to share his experiences with the noise-control system. A carpenter by training, Michael was often hired to work on home-renovation projects that made him a frequent subject of noise complaints. He explained that whenever he received a complaint about construction noise, he would dampen the sound by using sound-absorption pads or switch to a different task temporarily. Given that he was surrounded by construction noise at work, I was surprised when he called himself a victim of noise (*zaoyin shouhaije*)—a phrase that enlists people like Michael into a discourse of environmental rights. He had no problem with noise at work. The problems he faced happened at home, where Michael lived with his mother, who had gone deaf as a child. In a poignant way, he was his mother’s ears—listening for the doorbell, the telephone, and noise.

Michael’s noise problem concerned a car wash on the ground floor across the street from his second-floor apartment. Open year-round from 7 a.m. to 11 p.m., the car wash used a pressurized water gun that produced a loud, high-pitched sound. Michael explained why the sound counted as noise: “If a sound gradually gets louder, then I can deal with it,” he said. “But this sound happens so suddenly. It turns on in an instant and takes me by surprise.” Michael explained that the noise would make him

irritable. He would lose his temper and lose focus on whatever he was working on. He explained that he worked with loud construction sounds at work. When he returned home, he wanted to rest.

The problem had been ongoing since the car wash business moved in six years earlier. Since then, Michael had reported the problem to the noise-control office over 100 times. He explained that he called the office because “that is what you do when you hear noise.” Reporting noise for Michael was a civic duty, just as responding to noise complaints was the inspectors’ responsibility. Every time the inspectors showed up, however, they determined that the decibel levels were within the permissible range, so they did not fault the car wash. During our conversation, Michael voiced his frustration that even after he had followed the proper procedures and reported the problem to authorities, the noise continued. He asked rhetorically, “Why, after all these years, with all the regulations that are in place, can’t the problem be fixed?” To Michael, the sounds were obviously noise, but his noise was lost in the transductive processes of the decibel meter, which found that the sound was benign.

Like Gina, Michael made recordings of the offending noise. Within a three-month period, he uploaded 375 videos onto an online video-sharing platform. With the camera positioned outward, facing the car wash, the videos show a banal, mostly uneventful street scene in which the car wash is out of sight, save for a small glimpse of the driveway. These videos document the high-pitched sound of a pressurized water gun that is interrupted, at times, by the sounds of cars passing, birds chirping, and the evening circuit of the musical garbage truck. Michael’s videos document the many times that his noise went undetected by the state.

Three months after our conversation, Michael’s videos started to change. Whereas before the videos contained a static frame directed at the car wash, later videos move from frame to frame, documenting the recording process in addition to the sound itself. In one video, Michael begins by filming the date and time on his computer monitor. Holding the video camera in his hand, Michael walks over to a balcony to film a second digital camera that is attached to a tripod, recording the car wash. The digital camera shines red to show that it is recording, and the car wash is visible through the display. Michael then moves the camera that he is holding to focus in on the car wash. Switching the view of his camera from the car wash on the street to the display of the car wash through the second camera, Michael shows that the car wash that exists in the physical world is the same as the one that appears on camera. Then he walks back into the living room, which is dark, creating a semblance of privacy. There, he films the illuminated screens on two smartphones. One screen is running a decibel-measurement program while the other is running a spectrographic analyzer, recording the frequency of the sounds that are being

captured. For the next hour, Michael films the decibel meter and spectrographic analyzer as they run on the smartphones. He measures and captures the sounds in real time, and likewise he documents the measurement and capture of sounds.

Michael’s videos reveal a self-reflexive awareness of the mediating process behind capturing noise, as well as of documenting the process of capturing noise. If noise hearers like Gina use a recording instrument to remove their own perceptual bias, Michael creates an additional degree of separation between his own sensory apparatus and the process of documenting noise. For Michael, noise was not just something that he could hear, and not just something that could be captured through technological devices. Noise was something that could be iteratively apprehended by capturing the very process of documenting it. The iterative process between inspections and recordings suggests a *sono-sociality* through which Taiwanese subjects communicate through sound and hearing. That Michael could capture and measure noise—and do it with not just one machine but with an assemblage of corroborating devices—suggests a way of processing sound that resembles the work of a “submarine cyborg” (Helmreich 2007), one that is tuned in to the technological mechanics involved in detecting sound. By reproducing the noise-inspection process using his own tools, Michael demonstrates his knowledge of the legal and technical mediations of a noise inspection and rebukes the noise-control system. If *he* could capture noise and measure it on his own, why couldn’t they?

In video-recording his own method of recording noise, Michael speaks back to the state’s *sono-power*. And in an effort to communicate his hearing to others, he transforms the act of hearing from a physiological and individualized act to one that is technologically distributed across a network of devices. Like other noise hearers, Michael modulates the “calculation grammar” (Ballesterio 2015, 266) that undergirds the noise-inspection process into a different form of media representation, that of the home recorder. In his own repeated efforts to communicate noise to others, Michael demonstrates a proficiency with the discursive and material techniques of sharing sonic experience, as well as an awareness of how such techniques are differentially mobilized by separate parties. As a result, he created a *sono-social* space for documenting noise. He has maintained an enduring commitment to share his noise problem with others and to get them to recognize it, showing how noise hearers strive to identify a problem that exists on its own, not as one’s personal problem. There is an uncanniness to noise hearers’ compulsions to record, but I challenge the idea that these are unique, isolated incidents.¹¹ Michael acts because the noise-control system acts. As with the state’s ostensible commitment to listen to the needs of the people, noise hearers demonstrate a

political and human desire to let others hear what they hear.

The ethics of hearing how others hear

Taiwan's noise-control system, and the citizens who hear and report noise, exemplify what it is like to contend with the discrepancy between hearing noise for one's self and having machines capture noise for them. While one method is supported by the state as the legitimate, scientific method for measuring noise, the other negotiates the gap between sound that is heard and sound that is measured in an effort to reinscribe the state's hegemony over noise. The supposed irreconcilability between the two does not consist of epistemological end points but rather shared characteristics that underline the ongoing challenges and limitations of communicating sonic experience. Residents and noise inspectors are shown to be working in sono-sociality. Both use technologies and procedures to account for the difficulty of communicating sonic experience, and both create ways to connect with one other. Moreover, noise hearers' refusals to submit to the sono-power of the state, as well as their efforts to engage inspectors, indicated that hearing and sound are sites where people enact postauthoritarian citizenship.

Sono-sociality emphasizes how people with differences nevertheless attempt to communicate the incommunicable to one another, and how people, institutions, and technologies do work to keep channels of communication open to contestation. Taipei residents' attempts to communicate the problem of noise, and the response of noise inspectors to citizens' complaints, speak to an ethical lesson on how to relate to others. This is particularly salient given the ambiguity of who and what has more authority to make claims about sound and hearing. Sono-sociality can still be examined in other contexts. For example, in various communities around the world, residents have become attuned to mysterious humming sounds that have eluded identification by scientists and state actors (Ganchrow 2015; Jasen 2016). How institutions, government officials, and community members examine the mysterious humming speaks to a process of collaboration and technological problem-solving that is, moreover, tied to the human sensory apparatus. By attending to sound as an object of social analysis, as well as the negotiations through which people mediate differences in perception, one can examine how people, political systems, and technologies interact with and are transformed by the sonic environment.

Notes

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1. The names of all interlocutors are pseudonyms. Institutional names have been withheld. All translations of spoken Mandarin and Hokkien are mine.

2. A decibel is a unit of measurement for levels of sound pressure. While originally used to measure loudness in telephones and microphones, the decibel has become the reference unit for noise-control engineering (Beranek 2014; Mills 2018).

3. In my usage, *the sonic* refers broadly to the physical quality of sound as "material vibrations" (Henriques 2008, 225) and as "the act of sounding" (Daughtry 2015, 182). The sonic is not limited to audible sounds; rather, it "crosses sensory thresholds" (Trower 2012, 5) into the tactile and the visible and exists beyond a "phonocentric approach" to sound (Friedner and Helmreich 2012, 80).

4. Anthropologists and ethnomusicologists have examined sound and social life through radio (Fisher 2016; Kunreuther 2006), music (Erlmann 1996; Fox 2004; Novak 2013), voice (Eisenlohr 2018; Weidman 2006), and space (Hirschkind 2006; Larkin 2014; Lu and Yang 2010). The listening practices around noise in Taiwan point to citizens' efforts to produce a channel for communicating sound amid the ambient cacophony of urban sound.

5. In Taiwanese folk religion, the louder the sound, the better. *Renao* also exists in secular spaces, including traditional markets, high-end shopping districts, and sports games.

6. The democratic transition in Taiwan was made possible, in part, by the environmental movement of the 1970s–80s, which created collaboration between citizens' groups and the government (Hsiao 1990; Ho 2006). While government interest in creating noise regulations was influenced by the momentum surrounding environmental rights discourse, citizens did not organize around noise as they did with other environmental issues (Hsieh 2020).

7. Scholars have written about diagnostic listening among doctors (Rice 2013; Wellmann 2017) and auto mechanics (Bull 2001; Krebs 2012). Because these listening practices attend to sound as an instructional tool, they differ from sono-sociality.

8. Scientific objectivity here refers to a late 19th-century scientific regime that has been incorporated into the epistemic framing of modern liberal governance (Daston and Galison 2007). Scientific objectivity is how inspectors justify noise measurements to Taiwanese noise hearers. Through audiovisual recordings, it is a value that noise hearers attempt to make their own.

9. Jeffrey Martin's (2019) ethnography of policing in Taiwan offers an important examination of state authority after the

democratic transition. Whereas local police officers have turned to cultivating social networks with locals, noise inspectors base their interactions with citizens on technological mediation. Both entities' authority has weakened under the democratic state, while noise inspectors have significantly less authority than police to issue citations.

10. A comparison can be made between citizen science and audiovisual recordings of noise (Fan and Chen 2019; Polleri 2019; Wylie, Shapiro, and Liboiron 2017). While citizen scientists collect data—often in collaboration with NGOs—to counter official data, noise hearers make recordings of noise to produce data in a different modality from that of official measurements. The disagreements between noise hearers and government officials do not hinge solely on the veracity of numerical data but on the method for verifying noise.

11. Eitan Wilf's (2019) writing on the ethnomethodological uncanny is useful to think with. Those following in the legacy of Cold War cybernetics have assumed that, in the context of machine breakdowns, humans tend toward repair and homeostasis. Wilf, however, writes about instances in which people entertain such mishaps. He describes machine problems in terms of the uncanny, or moments when bugs, breakdowns, and the unexpected produce new socialities in a way that relates to the sono-sociality that I describe.

References

- Abe, Marié. 2019. *Resonances of Chindon-ya: Sounding Space and Sociality in Contemporary Japan*. Middletown, CT: Wesleyan University Press.
- APO (Association of Public Opinion). 1975. "Ruhe fangzhi gonghai wenti minyi ceyan" [A survey on how to prevent public diseases]. *Minyi zhazhi jikan* [Public opinion poll quarterly] (Taipei) 9 (February): 18–19.
- Ballestero, Andrea. 2015. "The Ethics of a Formula: Calculating a Financial-Humanitarian Price for Water." *American Ethnologist* 42, no. 2 (May): 262–78.
- Batcho, James D. 2012. "Revisiting the Howard Dean Scream: Sound Exclusivity in Broadcast News." *Media, Culture and Society* 34, no. 8 (November): 999–1012.
- Bender, Daniel, Duane J. Corpis, and Daniel J. Walkowitz. 2015. "Editors' Introduction—Sound Politics: Critically Listening to the Past." *Radical History Review* 121, no. 121 (January): 1–8.
- Beranek, Leo L. 2014. "Basic Acoustical Quantities: Levels and Decibels." In *Noise and Vibration Control Engineering: Principles and Applications*, edited by Istvan L. Ver and Leo L. Beranek, 1–24. Hoboken, NJ: Wiley.
- Bijsterveld, Karin. 2008. *Mechanical Sound: Technology, Culture, and Public Problems of Noise in the Twentieth Century*. Cambridge, MA: MIT Press.
- Boas, Franz. 1889. "On Alternating Sounds." *American Anthropologist* 2, no. 1 (January): 47–54.
- Bull, Michael. 2001. "Soundscapes of the Car: A Critical Study of Automobile Habitation." In *Car Cultures*, edited by Daniel Miller, 185–202. Oxford: Berg.
- Callon, Michel, and John Law. 2005. "On Qualculation, Agency, and Otherness." *Environment and Planning D* 23, no. 5 (October): 717–33.
- Cardoso, Leonardo. 2018. "Sound-Politics in São Paulo: Noise Control and Administrative Flows." *Current Anthropology* 59, no. 2 (April): 192–208.
- . 2019. "Translations and Translation Gaps: The Gunshot Acoustic Surveillance Experiment in Brazil." *Sound Studies* 5, no. 1 (February): 52–71.
- Castaing-Taylor, Lucien. 2016. "Sweetgrass: 'Baaaaaaah. Bleeeeeet.'" In *Beyond Text? Critical Practices and Sensory Anthropology*, edited by Rupert Cox, Andrew Irving, and Christopher Wright, 148–55. Manchester: Manchester University Press.
- Cox, Rupert, Andrew Irving, and Christopher Wright. 2016. "Introduction: The Sense of the Senses." In *Beyond Text? Critical Practices and Sensory Anthropology*, edited by Rupert Cox, Andrew Irving, and Christopher Wright, 1–18. Manchester: Manchester University Press.
- Daston, Lorraine, and Peter Galison. 2007. *Objectivity*. New York: Zone Books.
- Daughtry, J. Martin. 2015. *Listening to War: Sound, Music, Trauma, and Survival in Wartime Iraq*. Oxford: Oxford University Press.
- Diamond, Norma. 1975. "Women under Kuomintang Rule: Variations on the Feminine Mystique." *Modern China* 1, no. 1 (January): 3–45.
- Dreyer, June Teufel. 2003. "The Evolution of Language Policies and National Identity in Taiwan." In *Fighting Words: Language Policy and Ethnic Relations in Asia*, edited by Michael E. Brown and Sumit Ganguly, 385–410. Cambridge, MA: MIT Press.
- Eisenlohr, Patrick. 2018. *Sounding Islam: Voice, Media, and Sonic Atmospheres in an Indian Ocean World*. Berkeley: University of California Press.
- Erlmann, Veit. 1996. *Nightsong: Performance, Power, and Practice in South Africa*. Chicago: University of Chicago Press.
- Fan, Fa-ti, and Shun-Ling Chen. 2019. "Citizen, Science, and Citizen Science." *East Asian Science, Technology and Society* 13, no. 2 (June): 181–93.
- Feld, Steven. 1987. "Dialogic Editing: Interpreting How Kaluli Read Sound and Sentiment." *Cultural Anthropology* 2, no. 2 (May): 190–210.
- . 2012. *Sound and Sentiment: Birds, Weeping, Poetics, and Song in Kaluli Expression*. 3rd ed. Durham, NC: Duke University Press.
- . 2015. "Acoustemology." In *Keywords in Sound*, edited by David Novak and Matt Sakakeeny, 12–21. Durham, NC: Duke University Press.
- Feld, Steven, and Donald Brenneis. 2004. "Doing Anthropology in Sound." *American Ethnologist* 31, no. 4 (November): 461–74.
- Fisher, Daniel. 2016. *The Voice and Its Doubles: Media and Music in Northern Australia*. Durham, NC: Duke University Press.
- Fox, Aaron A. 2004. *Real Country: Music and Language in Working-Class Culture*. Durham, NC: Duke University Press.
- Friedner, Michele, and Stefan Helmreich. 2012. "Sound Studies Meets Deaf Studies." *Senses and Society* 7, no. 1 (March): 72–86.
- Gallagher, Michael. 2015. "Field Recording and the Sounding of Spaces." *Environment and Planning D* 33, no. 3 (June): 560–76.
- Ganchrow, Raviv. 2015. "On Long-Wave Synthesis." In *The Geologic Imagination*, edited by Lucas van der Velden, Mirna Belina, and Arie Altena, 179–98. Amsterdam: Sonic Acts Press.
- Gold, Thomas B. 1996. "Taiwan Society at the Fin de Siècle." *China Quarterly* 148 (December): 1091–1114.
- Goodman, Steve. 2012. *Sonic Warfare: Sound, Affect, and the Ecology of Fear*. Cambridge, MA: MIT Press.
- Hainge, Greg. 2013. *Noise Matters: Towards an Ontology of Noise*. London: Bloomsbury Academic.
- Hansen, Thomas Blom. 2006. "Sounds of Freedom: Music, Taxis, and Racial Imagination in Urban South Africa." *Public Culture* 18, no. 1 (Winter): 185–208.
- Hatfield, DJ W. 2010. *Taiwanese Pilgrimage to China: Ritual, Complicity, Community*. New York: Palgrave Macmillan.

- Helmreich, Stefan. 2007. "An Anthropologist Underwater: Immersive Soundscapes, Submarine Cyborgs, and Transductive Ethnography." *American Ethnologist* 34, no. 4 (November): 621–41.
- . 2015. "Transduction." In *Keywords in Sound*, edited by David Novak and Matt Sakakeeny, 223–29. Durham, NC: Duke University Press.
- Henriques, Julian. 2008. "Sonic Diaspora, Vibrations, and Rhythm: Thinking through the Sounding of the Jamaican Dancehall Session." *African and Black Diaspora* 1, no. 2 (July): 215–36.
- Herzfeld, Michael. 1992. *The Social Production of Indifference: Exploring the Symbolic Roots of Western Bureaucracy*. New York: Berg.
- Hirschkind, Charles. 2006. *The Ethical Soundscape: Cassette Sermons and Islamic Counterpublics*. New York: Columbia University Press.
- Ho, Ming-sho. 2006. *Luse minzhu: Taiwan huanjing yundong de yanjiu* [Green democracy: A study on Taiwan's environmental movement]. Taipei: Socio.
- Howes, David. 2019. "Multisensory Anthropology." *Annual Review of Anthropology* 48:17–28.
- Hsiao, Hsin-Huang Michael. 1990. "Emerging Social Movements and the Rise of a Demanding Civil Society in Taiwan." *Australian Journal of Chinese Affairs*, no. 24 (July): 163–80. <https://www.jstor.org/stable/2158893?seq=1>
- Hsieh, Jennifer C. 2019. "Piano Transductions: Music, Sound and Noise in Urban Taiwan." *Sound Studies* 5, no. 1 (February): 4–21.
- . 2020. "To Hear as I Do: The Concessions of Hearing in Taiwan's Noise Management System." In *Testing Hearing: The Making of Modern Aurality*, edited by Victoria Tkaczyk, Mara Mills, and Alexandra Hui, 189–212. Oxford: Oxford University Press.
- Ihde, Don. 1976. *Listening and Voice: A Phenomenology of Sound*. Athens: Ohio University Press.
- Inoue, Miyako. 2018. "Word for Word: Verbatim as Political Technologies." *Annual Review of Anthropology* 47:217–32.
- Jasen, Paul C. 2016. *Low End Theory: Bass, Bodies, and the Materiality of Sonic Experience*. New York: Bloomsbury Academic.
- Khan, Naveeda. 2011. "The Acoustics of Muslim Striving: Loudspeaker Use in Ritual Practice in Pakistan." *Comparative Studies in Society and History* 53, no. 3 (July): 571–94.
- Krebs, Stefan. 2012. "'Sobbing, Whining, Rumbling': Listening to Automobiles as Social Practice." In *The Oxford Handbook of Sound Studies*, edited by Trevor Pinch and Karin Bijsterveld, 79–101. Oxford: Oxford University Press.
- Kunreuther, Laura. 2006. "Technologies of the Voice: FM Radio, Telephone, and the Nepali Diaspora in Kathmandu." *Cultural Anthropology* 21, no. 3 (August): 323–53.
- Larkin, Brian. 2014. "Techniques of Inattention: The Mediality of Loudspeakers in Nigeria." *Anthropological Quarterly* 87, no. 4 (Fall): 989–1015.
- Latour, Bruno. 1987. *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, MA: Harvard University Press.
- Lempert, Michael. 2019. "Fine-Grained Analysis: Talk Therapy, Media, and the Microscopic Science of the Face-to-Face." *Isis* 110, no. 1 (March): 24–47.
- Lippman, Alexandra. 2019. "'Law for Whom?' Responding to Sonic Illegality in Brazil's Funk Carioca." *Sound Studies* 5, no. 1 (February): 22–36.
- Lu, Hsin-chun (Tasaw), and Chien-Chang Yang. 2010. "The Study of Sound and Space: Global Trends and Local Responses." *Guandu Music Journal* no. 13 (December): 77–96.
- Lynch, Julian Anthony. 2019. "Festival 'Noise' and Soundscape Politics in Mumbai India." *Sound Studies* 5, no. 1 (February): 37–51.
- Martin, Jeffrey T. 2019. *Sentiment, Reason, and Law: Policing in the Republic of China on Taiwan*. Ithaca, NY: Cornell University Press.
- Merry, Sally Engle, and Susan Bibler Coutin. 2014. "Technologies of Truth in the Anthropology of Conflict: AES/APLA Presidential Address, 2013." *American Ethnologist* 41, no. 1 (February): 1–16.
- Mills, Mara. 2018. "Dezibel." In *Handbuch Sound: Geschichte–Begriffe–Ansätze*, edited by Daniel Morat and Hansjakob Ziemer, 52–56. Stuttgart, Germany: J. B. Metzler.
- Morris, Rosalind C. 2017. "Mediation, the Political Task: Between Language and Violence in Contemporary South Africa." *Current Anthropology* 58, no. S15 (February): S123–34.
- Nancy, Jean-Luc. 2007. *Listening*. New York: Fordham University Press.
- Novak, David. 2013. *Japanoise: Music at the Edge of Circulation*. Durham, NC: Duke University Press.
- . 2015. "Noise." In *Keywords in Sound*, edited by David Novak and Matt Sakakeeny, 125–38. Durham, NC: Duke University Press.
- Oosterbaan, Martijn. 2009. "Sonic Supremacy: Sound, Space and Charisma in a Favela in Rio de Janeiro." *Critique of Anthropology* 29, no. 1 (March): 81–104.
- Peterson, Marina. 2017. "Atmospheric Sensibilities: Noise, Annoyance, and Indefinite Urbanism." *Social Text* 35, no. 2 (June): 69–90.
- Picker, John M. 2003. *Victorian Soundscapes*. Oxford: Oxford University Press.
- Polleri, Maxime. 2019. "Conflictual Collaboration: Citizen Science and the Governance of Radioactive Contamination after the Fukushima Nuclear Disaster." *American Ethnologist* 46, no. 2 (May): 214–26.
- Porter, Theodore M. 1996. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. Princeton, NJ: Princeton University Press.
- Rabinow, Paul. 2005. "Artificiality and Enlightenment: From Sociobiology to Biosociality." In *Anthropologies of Modernity: Foucault, Governmentality, and Life Politics*, edited by Jonathan Xavier Inda, 181–93. Malden, MA: Blackwell.
- Radovac, Lilian. 2011. "The 'War on Noise': Sound and Space in La Guardia's New York." *American Quarterly* 63, no. 3 (September): 733–60.
- Rice, Tom. 2013. "Sounding Bodies: Medical Students and the Acquisition of Stethoscopic Perspectives." In *The Oxford Handbook of Sound Studies*, edited by Karin Bijsterveld and Trevor Pinch, 298–319. Oxford: Oxford University Press.
- . 2018. "The Origins of Acoustemology." In *The International Encyclopedia of Anthropology*, edited by Hilary Callan, 1–7. London: Wiley.
- Sakakeeny, Matt. 2010. "'Under the Bridge': An Orientation to Soundscapes in New Orleans." *Ethnomusicology* 54, no. 1 (Winter): 1–27.
- Schafer, R. Murray. 1977. *The Tuning of the World*. New York: Knopf.
- Sewald, Ronda L. 2011. "Forced Listening: The Contested Use of Loudspeakers for Commercial and Political Messages in the Public Soundscape." *American Quarterly* 63, no. 3 (September): 761–80.
- Shannon, C. E. 1948. "A Mathematical Theory of Communication." *Bell System Technical Journal* 27, no. 3 (July): 379–423.
- Strathern, Marilyn. 2000. "The Tyranny of Transparency." *British Educational Research Journal* 26, no. 3 (June): 309–21.

- Sutton, Donald S. 1990. "Ritual Drama and Moral Order: Interpreting the Gods' Festival Troupes of Southern Taiwan." *Journal of Asian Studies* 49, no. 3 (August): 535–54.
- Taiwan EPA (Environmental Protection Administration). 2012. *Zaoyin guanzhi jishi* [Noise-control chronology]. Taipei: Taiwan EPA.
- Taylor, Jay. 2000. *The Generalissimo's Son: Chiang Ching-kuo and the Revolutions in China and Taiwan*. Cambridge, MA: Harvard University Press.
- Thrift, Nigel. 2008. *Non-representational Theory: Space, Politics, Affect*. London: Routledge.
- Tien, Hung-mao. 1989. *The Great Transition: Political and Social Change in the Republic of China*. Stanford, CA: Hoover Institution Press.
- Trower, Shelley. 2012. *Senses of Vibration: A History of the Pleasure and Pain of Sound*. New York: Continuum.
- Weidman, Amanda J. 2006. *Singing the Classical, Voicing the Modern: Postcolonial Politics of Music in South India*. Durham, NC: Duke University Press.
- Weller, Robert. 1999. *Alternate Civilities: Democracy and Culture in China and Taiwan*. Boulder, CO: Westview.
- Wellmann, Janina. 2017. "Listening to the Body Moving: Auscultation, Sound, and Music in the Early Nineteenth Century." *Journal of Sonic Studies*, January 19, 2017. <https://www.researchcatalogue.net/view/323592/323593/0/0>.
- Wilf, Eitan. 2014. *School for Cool: The Academic Jazz Program and the Paradox of Institutionalized Creativity*. Chicago: University of Chicago Press.
- . 2019. "Separating Noise from Signal: The Ethnomethodological Uncanny as Aesthetic Pleasure in Human-Machine Interaction in the United States." *American Ethnologist* 46, no. 2 (May): 202–13.
- Wylie, Sara, Nick Shapiro, and Max Liboiron. 2017. "Making and Doing Politics through Grassroots Scientific Research on the Energy and Petrochemical Industries." *Engaging Science, Technology, and Society* 3 (September): 393–425.

Jennifer C. Hsieh
Department of Anthropology
University of Michigan
101 West Hall, 1085 S. University Ave.
Ann Arbor, MI 48109-1107
jchsieh@umich.edu