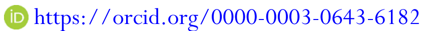
CULTURAL ANTHROPOLOGY

ON CHAINSAWS AND ACOUSTIC VIOLENCE: Sound and Deforestation in Ajusco-Chichinautzin, Mexico



ANDREW J. GREEN
King's College London
https://orcid.org/0000-0003-0643-6182

It's August 2022; I'm speaking to Antonio,[1] *a musician in his sixties from Mexico City, who now lives on the outskirts of the town of Ajusco. We're sitting outside his house, self-built, surrounded by trees that he planted and maintains. There's a songbird—a* zorzal, *or thrush—sitting on the wooden roof, singing; Antonio calls it Woodstock. Partway through our interview, we hear one neighbor walk outside and begin to rev up a chainsaw—likely preparing to cut down trees nearby. Occasionally residents fell trees for personal use; logging is also carried out at a larger scale by organized commercial groups. At any rate, deforestation is a major problem locally: recent reports state that two hundred trees per day are being felled by illegal loggers (*talamontes*) in the Ajusco zone (Sánchez 2023).*

Emergent auralities coalesce around deforestation in the town of Ajusco, where people learn to live alongside illegal logging. During ethnographic research in the surrounding area of Ajusco-Chichinautzin, situated between the expanding metropolis of Mexico City and the threatened forest around it, I have sought to understand the complex entanglements of sound, music, and deforestation. I argue that it is intuitive and useful both to listen to contexts of deforestation and to engage with the different ontologies of sound that deforestation, and

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attempts to stop it, may entail. Adequately attending to such a context requires a social and multisensory listening practice that recognizes deforestation as simultaneously a social, economic, and sensory problem (cf. Peterson 2021, 9–10; Chao 2022). Here, scholarship on sound as a "thick" event (Eidsheim 2015), on adaptive forms of audition (Daughtry 2015), and on the connections between music, sound, and violence (Cusick 2014) helps us identify and support the strategies that people adopt in response to deforestation.

There are three main reasons I wish to explore this specific entanglement. First, *deforestation has a significant aural component*. The sound of chainsaws is typically the first indicator of deforestation taking place, and if nearby, it is an unmissable one; resonating at 110dB, chainsaws create "a visceral sound that seems to drive deeply into our bones" (Gieser 2019, 50). Since cutting down trees is highly restricted in Ajusco-Chichinautzin, especially following a 1947 prohibition on logging, the sound of chainsaws is experienced as illicit. Loggers use mufflers and other technological means to dampen the sound of chainsaws, but these strategies tend not to work, and the workers' inability to suppress this sound entirely has implications for their mode of organization: they work in remote locations, after dark, and deploy lookouts around the area being deforested (González Alvarado 2023). Among residents of local towns such as Santo Tomás Ajusco, the sound of chainsaws is associated with a complex set of affects—ruefulness, shame, anger, powerlessness, and threat—reflecting both opposition to clandestine logging and a reluctance to publicly criticize it. The presence of this sound also affords the possibility that deforestation might be stopped; and it is, further, vital for residents' survival. Residents of Ajusco-Chichinautzin develop "aesthetic knowing as skilled listening" in seeking to discern the aural complexities of chainsaws (Gieser 2019, 51), learning to listen out "virtuosically" (Daughtry 2015, 150–51) for chainsaws to avoid dangerous run-ins with clandestine loggers.

Second, *sound and music feature prominently in the mediatization of deforestation in Mexico*. Media coverage often uses the sound of chainsaws as a synecdoche for the problem of deforestation in general. One feature in the magazine *Proceso* on deforestation in the state of Veracruz, for instance, describes the "orchestra" of chainsaws that presages environmental devastation (Zavaleta 2021). An accompanying video presents images of tree stumps and bare, recently deforested terrain alongside interviews with local residents and information about the government's failure to control illegal logging; it is set to eerie, atonal music by the electroacoustic artist Volcano Radar, interspersed with prominent sound recordings of

chainsaws.[2] In Ajusco-Chichinautzin, sensationalist media coverage follows police raids on groups of *talamontes*. One such video, created by a journalist embedded in police raids against *talamontes* carried out in Santo Tomás Ajusco, tells us about both the increasingly militarized police response to deforestation and the authorities' eagerness to publicize this "crackdown on *talamontes*." It opens with footage from the top of a police car, blue-and-red lights flashing (but sirens not wailing), accompanied by dramatic electronic music indicating danger and movement.[3] Another recent video opens, similarly, with a car journey to deforested areas in Ajusco-Chichinautzin, accompanied by foreboding cello music, and it concludes with footage of community forest guards approaching a group of *talamontes* after dark; the voiceover instructs us to "listen attentively" before we are played a recording of *talamontes* firing at the forest guards, "still with chainsaws active."[4]

The third reason it appears worth engaging with deforestation as an aural phenomenon is that *sound and listening are implicated in technological responses to deforestation*, which detect and locate the sound of chainsaws. Acoustic monitoring is already being used across the Americas in response to other kinds of crimes. For instance, Leonardo Cardoso (2019) critically explores ShotSpotter, an acoustic monitoring system created to detect and facilitate rapid police response to gunshots, in two urban areas in Brazil. In practice, the deployment of ShotSpotter depends on an intricate series of translations between technological and human actors, producing what Cardoso (2019, 65) terms "translation gaps": "the range of human and non-human 'betrayals' (or dissidences) that ended up destabilizing ShotSpotter's performance in Brazil and eventually undermining SST's claim as a macro-translator of violent crime." These are caused by factors including electricity blackouts; high levels of environmental noise, including sounds similar to gunshots such as firecrackers; and budget constraints.

In a similar vein to ShotSpotter, claimed technological solutions to deforestation aim to audiolocate the sound of chainsaws, thus extending the practices of surveillance capitalism into forest space. The most high-profile of these solutions has been developed by the non-governmental organization Rainforest Connection, in conjunction with the company Huawei. Founded by Silicon Valley entrepreneur Topher White, Rainforest Connection installs systems in forests, built from small solar panels and recycled, repurposed smartphones. Placed in the canopies of trees and geolocated, the smartphones continuously record sound, and their recordings are processed in real time through an app also designed by the organization. By processing these sounds using artificial intelligence, the app

is designed to identify and locate the sounds of chainsaws in real time and send alerts to local forest rangers, who may then rush to catch clandestine loggers *in flagrante*. Rainforest Connection claims that it has helped to "stop illegal logging and poaching operations in Sumatra,"[5] although the project appears financially costly and positive outcomes remain to be robustly demonstrated.

A critical response to this project may center both on "translation gaps" in its implementation and the account of sound that it produces.[6] As Thorsten Gieser (2019, 55–56) points out, when heard up close, the chainsaw's sounds are varied and vital to its maintenance (for instance, a metallic rattling sound can indicate that the chain is too loose); since the chainsaw's volume is damaging to the human ear, users must learn to hear these different indications of the machine's health while also wearing ear protection. At a distance, it can be difficult to distinguish the sound of a chainsaw from that produced by other motors, such as those of automobiles, light aircraft, motorcycles, or grass trimmers. These sounds can be differentiated on the basis of pitch—although this requires the ability to judge distance, which is difficult for a mono-sensory app to learn—or by rhythm, since a chainsaw tends to operate for only a few seconds at once, but this again presents technical challenges. Use of the Rainforest Connection app likely requires that forest guards spend more time in an office, performing the requisite "delicate translations . . . between human and non-human actors" (Cardoso 2019, 53). Yet since chainsaws are also used in legitimate forest management, forest guards must make contextually informed judgments about whether chainsaw sounds are illicit or permitted, which depend on their emplaced and embodied sensory knowledge of specific forests. By contrast, the technological production of sound as "instrumentalizable, containable, or objectifiable" (Peterson 2021, 7), by isolating sound from other senses, is likely to remove from forest guards vital sources of sensory information (sight, smell, vibration, sense of time, sense of distance) that prove vital for effective listening, and which must in any case be re-inserted into the process of perception afterward (cf. Rice 2015; Helmreich 2016). Antonio, above, also possessed and used a chainsaw; his intuition about his neighbor's intention resulted from social knowledge and the observation of habit.

All of this points toward my overall argument: that *auralities are reconfigured in contexts of deforestation*; and that this has implications for voice—who is able to speak and how (e.g., Couldry 2010). Acoustic monitoring for deforestation presumes a simplified social context, in which rangers are not corrupt; those carrying out illegal logging are not armed, and are able to subsist by other means;

rangers have the resources and inclination to stop illegal logging; and the forest already has mobile phone signal. It also implicates sound within a restricted disciplinary logic in which "we" (the authorities and forest guards) must use information (sound) to stop crime (deforestation) (see Hsieh 2021, 53–55). The limitations of this disciplinary logic have been evident since its application to the region in the early 2000s, which, as part of a wider turn toward "punitive politics" in Mexico City (Müller 2016), had the unintended consequence of encouraging more loggers to carry firearms. On the other hand, effective responses to deforestation tend to entail open-ended, socially oriented, and embodied practices of listening and audition. I seek, here, to attend to deforestation as a complex problem irreducible to moralistic narratives about "bad people destroying the forest"; to hear the embodied listening strategies developed by loggers, forest guards, and those living and surviving amid environmental loss; and listen to the complex legacies of dispossession that mark places such as Ajusco-Chichinautzin.

ACOUSTIC VIOLENCE AND THE ENVIRONMENT

"It's horrible when you hear it," Gisela, a resident of San Miguel Ajusco in her thirties, told me as she described an encounter with clandestine loggers while on a nighttime walk through the forest. On this occasion, the acoustic preceded the haptic: first it was "all quiet, and then suddenly, you hear the noise"—here she made a *trtrtrtr* sound, to imitate a chainsaw. Then, "you start to feel that the ground is vibrating. And after a while *paaaakhh*!!" she said, making the sound of a tree falling to the forest floor. Gisela used an analogy with the explosion of a firework to capture the sense of tension, expectation, and destruction of these sounds and sensations:

> It's not like [the tree] falls immediately, right? But it's a sound you expect—it's like the rocket when there's a *tssssss* sound. Because you wait just—it's like the rocket that passes by, *tsssss*, and you know that at a certain moment it's going to explode. And [with the tree] you wait for the *paaakhh* to fall. (Interview, Gisela, resident of San Miguel Ajusco, thirties, September 2023)

What iterations of "acoustic violence" emerge through engagement with deforestation in Ajusco-Chichinautzin? Music scholars have paid increasing attention to the entanglement of music and sound with war, torture, and trauma (Cusick 2014; Daughtry 2014, 2015), amid a wider questioning of the notion of music as

a panacea for conflict, violence, and social division (e.g., Johnson and Cloonan 2009). Equally, contexts of environmental loss and damage may also suggest longer-run, less immediate, and less dramatic accounts of acoustic violence, such as Marina Peterson's (2021) exploration of unwanted sound as both "annoyance" and "noise pollution." J. Martin Daughtry (2020) aims to connect the scholarship on acoustic violence to contexts of environmental violence, an endeavor this article looks to extend. Following Rob Nixon (2011), Daughtry suggests that environmental violence ought to be understood as a temporally destabilized "slow violence" detached from specific, dramatic acts. This presents problems for music and sound scholarship, Daughtry (2020, 6, 20) ultimately suggests, given the "human-sized" nature of most music, and the inadequacy of music as an agent of ideological change during an environmental crisis in which "there isn't enough time for slow violence to be undone by slow enlightenment."

Gisela's account above suggests two things about environmental acoustic violence. First, it "[plays] out across a range of temporal scales" (Nixon 2011, 2): the slow, insistent sonorities of environmental damage, which are often both hidden and deliberately avoided; the anticipation of consequences; the sudden, recognizable violence of arboreal, or ecosystem, collapse; the haunting silences of absent ecosystems. Deforestation encounters crisis on multiple scales, reaching from incremental planetary climate change to killings of land defenders. Second, the acoustic component of slow environmental violence is not necessarily subtle, imperceptible, or immaterial. It, too, shakes the ground and makes bodies vibrate. The relative subtlety of the sonorities of environmental devastation depends (literally) on our positionality, and here our choices as researchers—especially whether, how, and where to engage with land defenders and communities bearing the brunt of environmental damage—matter for the ways that climate change comes to sound to us. Ecomusicologists' concern with the ideational, discursive, and critical is often staged at a remove from the experiences and priorities of the people actually living through environmental devastation, who may care less about how we talk about "nature" and "culture" than their ability to breathe clean air, drink clean water, not die in forest fires, and avoid being shot by clandestine loggers.

Two iterations of acoustic violence overlap throughout this article's case studies. First, acoustic violence is exerted against people in Ajusco who live surrounded by the activities of clandestine loggers. This is expressed through affects of danger, fear, and helplessness that accumulate around the sound of chainsaws. Second, deforestation and responses to it have provoked a less explicit form of

acoustic violence in which the inherited cultural richness of forms of acoustically being- and becoming-with forest contexts becomes marginalized, diminished, or lost. This occurs as a result of the loss of habitat itself, lost habitats—and the attendant loss of sonorities; the auralities of disciplinary policing, which can encroach on a diversity of listening practices in what is referred to here as the Ajusco "forestscape"; and the ongoing privatization of land in the zone, which makes it harder for people from the town to physically access forest space. These forms of environmental acoustic violence are linked: for instance, as already indicated, the fact that clandestine loggers now carry firearms at least in part constitutes an unintended consequence of a disciplinary approach to policing.

Of the 55 participants in this study, most are residents of or frequent visitors to the Ajusco-Chichinautzin region. Given that this article is an outcome of a study relating to music, sound, and deforestation, roughly half are either musicians or engaged in some kind of musical activity; a smaller number work or volunteer as forest guards. For reasons of safety, I chose to avoid conducting research directly with *talamontes*. Research took place in two towns: Ajusco (a "town made of two towns," the conjoined Santo Tomás Ajusco and San Miguel Ajusco); and San Nicolás Totolapan, another "originary town" that has chosen to convert its historic territory into a site for ecotourism. Notably, both towns experience a pervasive social division between so-called *originarios*, "originary" people connected to the local area by family and/or birth, and *avecindados*, generally denoting those who have settled there later in life.[7] I also conducted research in the forests around these towns, through hikes and reforestation days. Both during these activities and in a series of semi-structured interviews, I inquired about how my participants had learned to interact with the soundscapes around them. For many respondents, deforestation proved a sensitive topic, which could only be broached after establishing a high degree of rapport and trust. This reflects a dangerous situation for land and forest defenders across Mexico, who are subject to both state repression (Amnesty International 2023) and a pattern of assassinations that has led the country to be dubbed the world's "deadliest place for land defenders" (Associated Press 2022). Equally, within towns such as Ajusco in which a small number of *originarios* make their living from illegal logging, there exists a more banal sense of silence around the practice, rooted in the likelihood that respondents were personally related to at least some *talamontes*.

As I will explore in more detail below, respondents also reacted to questions about the aural worlds of deforestation with despondence and helplessness. Here we may reformulate the anthropocentric thought experiment "does a tree

fall in the forest if nobody is around to hear it?" at varying removes from its original intent. Where Nina Sun Eidsheim (2015, 1) reworks this thought experiment to draw attention to the thick multisensory experience in which sound is embedded—storm clouds drawing over the falling tree; birds flying away; the vibrations and the dust thrown up from the impact of the tree on the ground—the conflictive contexts of environmental breakdown suggest other questions. How can we talk about the sound of a tree being felled, if those who can hear it have no power to stop it? What are the social processes through which this sound becomes unsayable, through which it becomes impossible to name the—human—originators of this sound? I explore these questions in what follows.

IDENTITIES, PLACES, AND ILLICIT ECONOMIES

The research carried out for this article centers on two sites in the zone located roughly six kilometers apart: Parque Ejidal San Nicolás Totolapan and the town of Ajusco. Central to both sites are historic *originario* (originary) towns that have existed since just before to the colonial period. In both cases, these towns' long history is central to their claims on the stretches of land surrounding them. The town of Ajusco, for instance, has preserved a canvas containing a map of the town and the surrounding area, which is dated to 1609 (Reyes 1981, 137; Brito Guadarrama 2006). There are also titles signed by family members whose descendants still live in the town, which claim rights over an expanse of land extending around the town. The population of *originarios* of Ajusco claim ownership of this land.

The town of Ajusco comprises Santo Tomás Ajusco and the neighboring town of San Miguel Ajusco, distinguished by adherence to two different Catholic churches and by two areas of communal land governed by a unified *comisaria* (commissariat). Some jokingly narrate this difference through a purported contrast in ethnicity—the *originario* inhabitants of Santo Tomás Ajusco are said to be the descendants of Tepanecs, and those from San Miguel are said to be descendants of Mexicas. The documents concerning the settlement from the colonial era describe simply a settlement titled "Axochco" or "Axusco," which had been founded by Tepanecs in the fourteenth century (Percheron 2008). In this article, I use the phrase "the town of Ajusco" to refer to this urban settlement; "the Ajusco zone" to denote the broader territory to which the *originarios* of this town lay claim; and "Ajusco-Chichinautzin" to refer to a broader geographical region including the Ajusco mountain range.

In contexts across Mexico, such as the celebrated case of Cherán, Michoacán, autonomous Indigenous governance has been noted to support effective forest management (Wolfesberger 2019); and across Mexico, *originario* and Indigenous identities are strongly associated with the preservation of natural habitats (Calvillo 2023). Yet since the land claimed by the *originario* population of Ajusco is unproductive for agriculture, logging has long been a primary source of economic survival. Notably, Ajusco's colonial-era titles claim for its *originario* population the right to "conduct logging in the mountains which are [its] exclusive property" (Brito Guadarrama 2006, 23).

The local cultural affinity with the forest and its resources is reflected in a series of listening practices and capabilities. There was agreement among my respondents that elder *originarios* tended to have a highly attuned ear for the intricate details of the forest soundscape, often to the astonishment of comparative newcomers. One *avecindado* from Ajusco described to me how, during one mountain walk with an *originario* friend,

> he tells me, "there are some people coming," and he thinks, and says, "there must be like two or three of them." You couldn't see anyone! I said to myself, who knows, this guy. [laughs] A few minutes down the same path we met three people walking the other way. I mean—such a capacity for listening . . . he saw and heard things that I didn't see or hear.

Several related listening traditions in the zone held the song of various (currently or formerly) endemic birds to indicate that it was about to rain. Some listened for the song of the *gallina de monte* (*Dendrortyx macroura*); others, for that of the *golondrina pechigrís* (*Progne chalybea*); some listened for indications that it would rain in the overall vocal activity of birds. One respondent described the belief that the song of the orange-chested *picogordo tigrillo* (*Pheucticus melanocephalus*) summons precipitation during the rainy season: "They call the rain . . . . That's what the ancestors always said, 'It's going to rain, they're calling the rain.' They always knew" (interview, Valentina, *originaria* from San Nicolás Totolapan, sixties, October 2023). Finally, many *originarios* believed that unexplained sights and noises at night were caused by spiritual entities, such as *duendes* (elves) and *brujas* (witches). The activities of these entities disaggregated forest space by leaving what one respondent felt as *malas vibras*—bad vibrations—in certain areas (interview, Arturo, *originario* from San Nicolás Totolapan, fifties, October

2023). At the same time, due to factors such as habitat loss, rare birds avoiding the flow of tourists to the region, and urban expansion, many believed that these listening traditions were being lost.

Equally, some folk beliefs are directly related to the tradition of logging, as in the case of a folk tale called *La leyenda del duende hachero* (The Legend of the Axe-Wielding Elf), told among older generations of loggers across the zone:

> When loggers are in the mountains, they often spend the night in the forest, they sleep there. And at night they make their bonfires. And they fall asleep. And they have to keep a certain awareness, because they say that the *duende hachero* is going to go out into the forest, and then he goes, they are going to hear an axe striking a tree.
>
> If they manage to identify where the sounds came from, which the *duende hachero* gave them, the next day they can locate the trees that are easier to work with. And they see it as a gift from this elf to the loggers. (Interview, Oriol, *avecindado* from Santo Tomás Ajusco, fifties, October 2023)

This legend speaks, then, about the importance of perceptive listening for those seeking to negotiate and benefit from the forestscapes around them.

The Legend of the Axe-Wielding Elf reflects a bygone era, in which logging was considered both less morally outrageous and less dangerous than today. By contrast, in the present, the population of Ajusco is often singled out for criticism for carrying out and facilitating illegal logging. Yet the contemporary problem with deforestation has its roots in changing local livelihoods. For most of the twentieth century, livelihoods in the town were dependent on a nearby paper mill called Loreto y Peña Pobre; when this paper mill closed in 1992, some took to clandestine logging to make ends meet. Deforestation ought also to be understood in the context of a long history of dispossession of the town of Ajusco's communal lands under both colonial and post-independence governments. Starting in the twentieth century, acts of dispossession—including the 1936 establishment of a natural reserve, which in effect expropriated the majority of the land belonging to the town—were carried out on ecological grounds, informed by the belief that *originario* communities were "a constant threat to [natural] equilibrium, [and] practiced excessive and uncontrolled logging" (Percheron 2008, 222–23). The creation of this natural reserve on the town's land also meant to encourage the development of Ajusco-Chichinautzin as a site for tourism and hiking.

Deforestation also stokes tensions within and between communities. *Avecindados* often blame *originarios* for deforestation, and this idea dovetails with broader resentment about both their exclusion from local politics and decision-making. In turn, *originarios* allege that *avecindados*—a group jokingly labeled by one *avecindado* respondent as *caras pálidas* (palefaces) in recognition of the sublimated racial politics of the zone—harbor discriminatory attitudes toward them. Furthermore, neighboring communities such as San Nicolás Totolapan, to the south of Ajusco, occasionally blame residents of Ajusco for deforestation on their territory. The natural park studied here, Parque Ejidal San Nicolás Totolapan, was formed from the *ejido* territory belonging to the originary population of the town in 1998,[8] following the constitutional reforms of 1992, which liberalized the laws around the use and sale of communal *ejido* territory. San Nicolás Totolapan has taken a different economic path to that of Ajusco, successfully converting converted *ejido* land into a sustainable business dependent on tourism and the experience of the park as a site for biodiversity and rich forest. This involved a mass program of tree-planting on this site in the 1990s, and continuous tree-planting until the present day. It has also implied the creation of infrastructure to facilitate tourism, and the implementation of a series of practices to facilitate a particular kind of tourist experience.

In recent years, amid crackdowns, those carrying out illegal logging have consolidated into organized criminal groups, establishing a black-market economy for timber (Ortiz 2022).[9] Loggers can expect, according to one estimate, six to seven thousand pesos (about $380 USD) for a truck haul of three and a half tons of timber (Miranda 2023b). Logging without a permit can lead to significant prison time;[10] long punishable by up to ten years in prison, in 2023 legislation was introduced to raise the maximum sentence for illegal logging in Mexico City to twenty years (Cuenca 2023).[11] Then city mayor Claudia Sheinbaum, now the president of Mexico, claimed in 2022 that due to an increased number of police patrols and raids, deforestation in Ajusco-Chichinautzin had decreased (Escalona 2022). If this claim is correct, it may also reflect changes in strategy: since local police are suspected of corruption, police raids are now carried out by the militarized National Guard and the federal police; and police now focus less on catching loggers in the act, and more on raiding the workshops, generally located in towns, where loggers process the timber. In places where there is an especially entrenched pattern of violence by *talamontes* against community forest defenders, such as San Miguel Topilejo, some local residents have also started to call for the intervention of the army. The progressive intensification of

anti-deforestation policing has accompanied an increasing professionalization of illegal logging on the part of local residents. A police raid on a logging operation in 2022 captured, as well as timber,

> *escuadría* [that is, material to form structures] made of pine (joists, false-work platforms and crossbeams), 3 sawing towers, 3 push carts, 5 electric motors, 20 band saws, 3 circular bench saws, 2 pickup trucks with a 4.473m^3 roll of fir and *escuadría* of the same wood.[12]

It is an important detail that electric motors—costlier but quieter—appear in this inventory. In what follows, I explore two case studies, one focused on the town of Ajusco, the other on San Nicolás Totolapan. Each, I argue, points toward transformations in how those inhabiting the region come to engage with sound.

SOUND AND RAIDS: THE TOWN OF AJUSCO

In recent years Ajusco-Chichinautzin has witnessed repeated clashes between community forest guards and organized criminal groups, which have left several killed and wounded. As in the accounts below, both from journalists embedded with community forest guards in San Miguel Topilejo, a few miles east of the town of Ajusco, press coverage of these clashes often prominently feature the sound of chainsaws:

> We stopped for a moment in the middle of the forest. The silence is overwhelming. An engine [i.e., a chainsaw] is heard among the trill of birds. "They are loggers, they are here," says the youngest of the brigade. The brigade's members all become alert. They clasp their machetes, and look at each other. "We have to move, it's dangerous, because they're armed," replies the head of the brigade. We get out of the trucks. We move forward, stealthily. The chainsaws can still be heard. The risk of finding them is ever-present: nobody is prepared for a confrontation. (Ruiz 2022)

> It was noon, they heard the sound of a chainsaw, so the workers noticed the presence of loggers; at that point they started firing at us, fortunately no one was injured, but we had to run away from there; we asked for the support of the National Guard to be able to leave the area. (Bravo 2023)

Evident from both these accounts is how the balance of power affects the signification of the sound of chainsaws; and more broadly, how each "configuration of

hearing and sounding implies people, power, and placement" (Sterne 2015, 72). Where in other contexts (see below) the sound of chainsaws may prompt meaningful action to stop logging, in a situation such as this one, where forest guards' sole option is to flee, the sound is likely to provoke only fear, helplessness, and possibly trauma.

As seen above, the increasingly proactive response on the part of the authorities has accompanied a disposition to publicize police raids, especially on the town of Ajusco; footage from these raids occasionally tells stories about sound. One image, from a video of a police raid on illegal loggers in the town of Ajusco, shows a large speaker on top of a pile of timber. While it might stand to reason that loud music might be played to drown out the sound of cutting wood—similar to the way that loggers hide timber and equipment under piles of sawdust (Miranda 2023a)—conversations with respondents suggest, instead, that loggers play music to create an enjoyable atmosphere for work. This use of music carries the accompanying message that the work of clandestine logging is no different than any other kind of manual labor. In this case, then, music "renders [environmental] violence public and diffuse" (Daughtry 2014, 44), communicating a sense of impunity to potential informants nearby, on whose information police raids often depend.

Raids also involve new surveillance technologies. Just as loggers are frequently noted to use drones, so too the police have started to use drones to locate loggers' workshops prior to raids. As one feature states, they do this "carefully in the early morning" before loggers can "shoot at them and knock them down" (Cosme 2022). Finally, raids rely on silence as police quietly approach their target to maintain a sense of surprise. Deployed within a wider set of tactics to catch *talamontes*, this silence contrasts with the fearful silence kept by the community forest guards mentioned earlier to evade loggers.

Media coverage of police raids also presents a simplified account of social cohesion around *talamontes*—thus invoking wider links between efforts to regulate sound and the formation of publics (Peterson 2021, 65–68; Hsieh 2021). One video includes an interview with a police officer just after a raid in the town of Ajusco:

> Let's say that the town unites, among them they know that many of these activities are illicit, and when the arrest or arrest of a probable perpetrator is achieved, they usually ring town bells or make calls for people to unite and they can release the detainee.[13]

It is true that arrests against *talamontes* are usually resisted by some people, although in the present these number very few—this video shows a group of four or five—in comparison to larger-scale protests and roadblocks carried out by residents of the town in the early 2000s. The fear that loggers would ring town bells to gather "the townspeople" to resist a police raid is not unfounded: among other sound signals (cf. Carbajal López 2013), church bells are traditionally used to assemble the people of the town in response to emergencies. Indeed, during a 2023 police operation to destroy a construction allegedly built by *originarios* on natural reserve land, some reportedly "threatened to sound the town bells to attract more people and burn the [police] vehicles" (Bolaños Sánchez 2023).

Yet as a number of conversations have indicated, the above police officer misreads the status of this call. One *originario* clarified that church bells would be inappropriate to stop police anti-logging raids, since

> the people of the town are against cutting down the trees, the forest. They wouldn't call [with church bells] for that. They only call to defend the common territory. Limits, boundaries. "The government is coming to expropriate some land," "the government is coming to steal water." (Interview, Moisés, originario from San Miguel Ajusco, fifties, October 2023)

At stake here is the nature of the local, sonically interpellated "public." In portraying an entire community as complicit in environmental crimes, the police officer above hears the ringing of church bells as constitutive of an imagined anti-environmental counterpublic, in turn suggesting ideas about the sonic as subversive of modernist, logocentric orders of governance (e.g., Novak 2015, 129–31). Yet the notion that the entire town is united in favor of logging (especially to the extent that a police raid on a clandestine workshop would be considered a "town emergency") is not accurate. This viewpoint—common in the online discussion about clandestine logging, in which the residents of the town of Ajusco are often scapegoated—jars with the ways that these residents themselves experience the sounds of environmental loss.

Many conversations with both *avecindado* and *originario* residents of the town indicated that the auditory discomfort chainsaws provoke is heightened by the apparent impossibility of stopping their sound. Many studies show that even ambient sounds considered innocuous do psychological harm if we are denied control over whether we hear them (see Daughtry 2015; Windsor 2019). Conversations also indicated that local residents frequently "tuned out" the sound

of chainsaws (Daughtry 2015, 33)—a common response to aural stimuli over which people have little control. Ecologically aware residents tend to describe their reactions to this sound as *coraje* (anger), but also *impotencia* (helplessness). Take this exchange with two originary residents of Ajusco:

> Alicia: In some places where there are clandestine workshops, you can hear how they work the wood. If you listen. And on the hill, then sometimes on some routes, you can hear the chainsaws, and when the trees fall, the trucks, you can hear them.
>
> I: How would you react when you hear that?
>
> Celia: It's horrible. Ugly.
>
> Alicia: Helplessness. Yes. Helplessness . . . they are very organized groups and they are very well protected, they have weapons. It is impossible to get close.

Chainsaws primed my respondents for "survival mode"; most avoid the sound of chainsaws, even to the extent of—while on forest walks—turning around and walking back in the direction from which they came. One *originario* member of Ajusco simplified their reaction to the sound of chainsaws to the word "run," while expressing concern that the sound itself would damage plant and animal life: "I don't know what impact hearing the noise of the chainsaw will have on a bird. And in a plant. . . . the noise of a chainsaw, it's an attack on the environment" (Interview, Moisés, *originario* from San Miguel Ajusco, fifties, June 2022). Another respondent described frequent encounters with *talamontes* on forest walks:

> I: What does the sound of chainsaws provoke in you?
>
> Omar: Chainsaws . . . well, frustration and anger. . . . It is a feeling of insecurity that you feel when you see that. . . . all we do is just [say] "good afternoon," "good afternoon." And then we carry on walking.

A complex kind of public thus emerges in this landscape in response to an unwanted sound. Michael Birenbaum Quintero's (2019) argument that global South

soundings eschew Habermasian, liberal conceptions of the public sphere is of clear relevance in this setting. What Peterson (2021, 65) refers to as a "public ear"—"an average, general mode of hearing and experiencing noise"—can be reiterated here as an "auditory infra-public" in which a shared listening practice is experienced as intimate and secretive. Presumptions of community support for *talamontes*, then, fail to recognize how the acoustic violence of deforestation is exerted against residents of Ajusco, and misreads the complex publics that emerge in response. In the next section, however, I turn to a nearby context in which the sound of chainsaws provokes meaningful action.

FOREST PROTECTION AND ECOTOURISM: Parque Ejidal San Nicolás Totolapan

There's a user-generated video on the Facebook page of Parque Ejidal San Nicolás Totolapan, uploaded by a visitor. It is filmed from a park lookout, from which Mexico City can be seen. Showing us the capital, bathed in smog, the visitor emphasizes the value of visiting the park so as to "clean out our lungs." Then, suddenly interrupted by shouts from below, the visitor tells us not to worry: these are Boy Scouts. "I don't think they're killing anybody," she tells us. It's a throwaway comment, but it nonetheless indicates how this site for ecotourism depends on a perception of safety that intertwines in complex ways with experiences of this Parque Ejidal as "tranquil," free of sonic disturbances. Indeed, groups of scouts from Mexico City have long visited Ajusco-Chichinautzin, but amid rising insecurity, their visits to this zone have been increasingly limited to comparatively enclosed and surveilled spaces such as this park.

Isolating the green space of Parque Ejidal San Nicolás Totolapan from the conflictive realities surrounding it constitutes a challenge. Most of the park's visitors come from urban Mexico City; the value of the park, for these visitors, often mirrors the defects of (noisy, polluted, busy, unsafe) urban life.[14] The park advertises itself to various audiences on social media, implicating music in various ways: video footage of people mountain biking in the park, for instance, is set to upbeat motivational rap and metal; while footage of the landscape is accompanied by a more relaxed pastoral acoustic pop piece featuring a wooden flute, presenting a material resonance between this forestscape and the music used to represent it. Perhaps most important, the park advertises itself as a "site 100 percent free from stress"; and to campers, it foregrounds the fact that the camping zone within the park enjoys twenty-four-hour security.

Originarios from San Nicolás Totolapan who work in the park commonly believe that the forestscape is populated by mystical creatures such as *brujas* and *duendes*. These creatures often make strange or inexplicable noises during the night, and can imitate the calls of birds and other animals. Territory creation within the forest often reflects this modality of listening: some full-time workers in the park described to me how they repelled mystical creatures from their sleeping area by placing crosses at points around it,[15] and some mentioned the possibility that these creatures might be "pacified" by playing calming classical music.[16] The park's self-presentation, however, emphasizes a contrasting modality of listening. We are invited to *listen for well-being*; for the "plenitude most commonly associated with contemplative techniques of quietness as a means to bring about a transformation of the self" (Ochoa Gautier 2015, 183).

This modality is shared by many who work and live in the Parque Ejidal, who typically associate low levels of noise with safety and psychological health. While most park workers live nearby, a minority stay in the forest 24/7, only leaving to go shopping or visit the doctor. Many come from *originario* families, but another subset of workers, who moved from urban Mexico City to work in the Parque Ejidal, have experienced marked sensory change. One, Roberto, grew up in northeast Mexico City but married an *originaria* from San Nicolás Totolapan and accepted work taking care of the onsite camping and cabins areas. He gave me a rich description of the kinds of sounds he had learned to listen out for: the hisses of pythons and the mews of mountain cats, which sounded "as if they were children." Roberto found spiritual peace in the park, escaping the constant noise of the capital:

> You go to the city, you go on public transport or drive or walk, and you look to your right and you see someone in a bad mood. You look to your left and see a couple fighting. You look in front of you and you see someone on public transport with his sad "going-to-work" face. So all that is filled with stress and tension, because it contaminates you. (Interview, Roberto, park worker from Mexico City, thirties, July 2022)

Working and living in the park facilitated healing from such "contamination," since "here in the forest you practically do not hear anything at all, neither the smog nor the cars . . . you're at peace with yourself" (interview, Roberto, July 2022).

Listening for well-being, however, is encroached on by the sound of clandestine loggers, entering the park from neighboring communities. Park workers hear chainsaws in the early hours of the morning and during nighttime, generally at the edges of the park, bordering terrain belonging to other towns. Removing the characteristic whine of chainsaws from the soundscape simultaneously protects the forest and the tourist experience. Scholars have often highlighted the relationality of hearing (e.g., Eidsheim 2015, 179–81); park workers' hearing of chainsaws is dependent on their being embedded in the park and already aware of the significance of this sound. This sound assumes presence within the intellectual architecture through which illegal logging is identified as an environmental concern and a source of danger. Equally, visitors from elsewhere in Mexico or abroad may not hear the sound of chainsaws at all. For example, one visitor from the United States told me not only that they did not register this sound but also that they would not have noticed it if it had been present. The non-presence of the sound of chainsaws for this visitor was related to a lack of awareness of the association between logging and violence.

In turn, sound is implicated in the emergent practices developed by *guardabosques* (forest guards) to stop deforestation. Forest guards are sent around the park's borders to listen out for chainsaws. The more detailed knowledge a forest guard has of the park, the easier it will be for them to locate this sound; but since there are many legitimate uses for chainsaws, prior spatial knowledge about the areas of the park that *talamontes* tend to visit is also indispensable for judging whether a specific chainsaw sound is illicit or legitimate. This form of audition is both embodied and requires the auditor to be invested in a particular set of values and goals (cf. Chao 2022, 61–62). Forest guards then approach this sound—preferably on foot— to verify its source without alerting the loggers. One forest guard and *ejidatario* in the park experienced this as a moment of acute anxiety: "You must go with every caution. And so, yes, the moment feels very tense. . . . The sound of the chainsaw is unmistakable. It makes a whole lot of noise. . . . You sense that sound from a distance" (interview, Arturo, *originario* from San Nicolás Totolapan, fifties, September 2023).

On hearing chainsaws and identifying this sound's source as illegal logging, forest guards relay information about the sound's location to the director of the park, so that they can call the National Guard and the police. Communicating with the park director nonetheless proves complex. If there is mobile phone signal or wireless internet coverage, forest guards inform the director via mobile phone or an encrypted messaging app; if not, they use the walkie-talkie handheld

radio system accessible to all park workers. Since loggers have often managed to access this system, park workers may use a series of periodically changing cryptic messages to indicate that *talamontes* have been detected. This is still far from ideal, given the likelihood that a small number of park workers receive bribes from *talamontes* to inform them of police raids in advance. The director then contacts the police and National Guard, who enter the park quietly to surprise the loggers. On those occasions when the police have successfully caught loggers in flagrante, it is because both forest guards and the police have approached loggers on foot, stealthily (interview, Arturo, *originario* from San Nicolás Totolapan, fifties, September 2023).

Two things may be said about these tactics against illegal logging: first, that while sound gives the most immediate indication of deforestation, detecting and stopping *talamontes* requires park workers to employ diverse "arts of noticing" (Tsing 2015, 17–25); and second, that these tactics are predicated on the expansion of communications infrastructure into the park. Park workers informed me that in the first few years that the park had opened to the public, forest guards had to travel on foot or horseback to report on the activities of *talamontes* (interview, Arturo, September 2023). As well as helping to stop loggers, however, internet connections provide these workers with a greater ability to break up the sonic monotony of day-to-day life in the park, heard at non-peak hours in the form of popular music streamed from online platforms—cumbia, salsa, banda. Park workers often listen to music during the day, both through headphones and portable speakers. They also hold parties on this site, one of which I was invited to attend; it ended suddenly at 10 PM to comply with the park's rules.

This abrupt ending brought attention to the interventions which, intentionally and indirectly, circumscribe visitors' experience of the soundscape. The camping and cabins areas are surrounded by eight-foot-high fencing, and the park maintains a set of rules around noise pollution. Its general rules ask visitors to "allow the sounds of nature to thrive—keep noise levels to a minimum." In the cabins area, specifically, visitors are not permitted after 10 PM to use "music speakers at high volume, or any equipment generating noise that might disturb other visitors." The camping area operates according to similar rules, although here park workers are more likely to show flexibility, since groups that visit to camp often want to drink, party, and make noise. The park's noise regulations are justified as a common sense means to ensure people get along, and as a way to protect wildlife. Another set of rules, in turn, indirectly intervenes in visitors' acoustic experience: visitors are subject to a curfew, in from about 7 PM or

8 PM, justified on safety grounds. This curfew mirrors the times of deforestation: visitors are allowed to wander freely in the park during the day, but later on—at the time that when loggers tend to operate—they are kept in an enclosed space far from the sites in which this tends to occur.

Visitors' experience of Parque Ejidal San Nicolás Totolapan as an island of tranquillity and security, then, is achieved in part through spatial labor.[17] Forest guards' attempts to stop deforestation at the source involve an emergent set of adaptive sound practices; but park workers also engage in acts that circumscribe the tourist experience spatially and acoustically. These practices implicate sound as complex social event, involving sociality among park workers; the image and experience of the park, which form the effective commodity that visitors purchase; the expansion of communication infrastructure within the park; and the ways that this variously complicates and complements workers' experience of this soundscape.

CONCLUSION

Starting with the notion of deforestation as a thick aural event, in this article I have sought to show how contexts of chronic deforestation and activities to stop it can lead to the refiguring of auralities and listening practices. In doing so, I apply the concept of *acoustic violence* to the slow—and multi-temporal—violence of environmental loss. Central to this argument is the whine of chainsaws, experienced by many in the area of study as synonymous with danger; a sign of helplessness. Yet since the sound of chainsaws simultaneously signals the power of loggers and undermines it—especially in relation to the authorities—we may conclude that this sound is radically contingent: the article's case studies show how the "violent" effects of "acoustic violence" depend on broader patterns of violence and domination.

A slower and less perceptible sense of acoustic violence is also at play here, which relates to the modalities through which people hear. Walking with Marind people in South Papua, Sophie Chao (2022, 44, 61) assembles the "sounds of death" associated with deforestation—"gnawing chainsaws, the crackle of illegal burning, [the] rumble of overloaded trucks," and the "most deafening sound of all," silence—together with the relational, interspecies "sounds of life" that "together produced the landscape as a dynamic, multisensory realm." Hearing deforestation in Ajusco-Chichinautzin does require attention to the listening practices of police and forest guards, which form part of wider tactics to combat

deforestation; but it also demands attending to how people in this zone hear the sounds of life, through culturally transmitted listening practices: listening for birdsong to predict the weather, or listening for people approaching from great distances, or listening out for nocturnal spiritual entities. Where Gieser (2019, 56) describes how the use of a chainsaw to fell trees renders the surrounding soundscape "more or less inaudible and irrelevant to the task at hand," I want to suggest that in Ajusco-Chichinautzin this "rendering inaudible" occurs not only in a direct phenomenological sense but also in a wider cultural sense, which is decentered form the act of tree felling, and which implicates not only *talamontes* but a diverse group of local actors. Both deforestation, and disciplinary responses seeking to eradicate it are involved in a wider process through which, in focusing on the violent sound of chainsaws, local acoustemologies and listening practices become simplified, instrumentalized, and marginalized.

Scholarly attention to sound and listening in such a context can reproduce this process, as well as challenge it. In listening to deforestation, environmentally engaged scholars of sound and music must also find ways of hearing for the histories of dispossession, enclosure, and encroachment concealed and justified by deforestation. This involves listening for the processes through which people's experiences become unsayable; attending to the systemic exclusion, from media coverage of logging, of the division of forest ecosystems in Ajusco-Chichinautzin into playgrounds and estates for the wealthier classes. In the end, this requires hearing how environmental acoustic violence exceeds sound; how its resonances and affects spill over into wider crises of voice.

ABSTRACT

This article explores distinct practices of sounding and listening that have emerged in a context of severe deforestation in Ajusco-Chichinautzin, a region south of Mexico City. It applies the concept of acoustic violence to this setting, as part of wider attempts to build constructive responses to climate breakdown through sound and music scholarship. As the first indication of occurring logging, the sound of chainsaws proves vital in attempts by forest guards and police to detect and halt deforestation. Equally, attentiveness to acoustic violence allows us to cut through sensationalist media presentations of the problem of deforestation, to perceive how local populations—often blamed for complicity with loggers—are in fact direct victims of environmental loss. The concept of acoustic violence can also illuminate how, in a context not just of environmental loss but of dispossession, modalities of listening may become simplified, instrumentalized, or lost. [acoustic violence; sound; ecomusicology; Mexico; deforestation]

RESUMEN

Este artículo explora distintas prácticas de sonar y escuchar que han surgido en un contexto de severa deforestación en Ajusco-Chichinautzin, una región al sur de la Ciudad de México. Aplica el concepto de violencia acústica a este contexto, como parte de intentos más amplios de construir respuestas constructivas al colapso climático a través de la investigación sonora y musical. Como primer indicio de la tala en curso, el sonido de las motosierras resulta vital en los intentos de los guardabosques y la policía por detectar y detener la deforestación. De igual modo, prestar atención a la violencia acústica nos permite trascender las presentaciones sensacionalistas de los medios de comunicación sobre el problema de la deforestación y percibir cómo las poblaciones locales, a menudo culpadas de complicidad con los taladores, son de hecho víctimas directas de la pérdida ambiental. El concepto de violencia acústica también puede iluminar cómo, en un contexto no sólo de pérdida ambiental sino de despojo, las modalidades de escucha pueden simplificarse, instrumentalizarse o perderse. [violencia acústica; sonido; ecomusicología; México; deforestación]

NOTES

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1. Some names and details in this article have been changed.
2. See the video feature "Veracruz: Concierto de motosierras" [Veracruz: Chainsaw Concert], uploaded by *Proceso* on October 25, 2021 (https://www.youtube.com/watch?v=-wF-dEFXrqIA), last accessed December 7, 2024.
3. See an UnoTV video, "Detienen a líder de talamontes en Ajusco" [Leader of loggers arrested in Ajusco], uploaded on June 30, 2023 (https://www.youtube.com/watch?v=G-ZQrgF6Op9s), last accessed December 7, 2024.
4. See an UnoTV video, "Tala clandestina, San Miguel Topilejo, Tlalpan: Uno TV ingresó a zona controlada por talamontes CDMX" [Illegal logging, San Miguel Topilejo, Tlalpan: Uno TV entered an area controlled by loggers CDMX], uploaded on June 30, 2023 (https://www.youtube.com/watch?v=OzYhRnoYWwE), last accessed December 7, 2024.
5. See a TED talk given by Topher White in 2015, entitled "What Can Save the Rainforest? Your Used Cell Phone," available online (https://www.ted.com/speakers/topher_white), last accessed August 4, 2023.
6. Also see Hsieh 2021 for an account of noise detection, listening, and people's relationships with the state in Taiwan.
7. *Pueblo originario*, or "originary town," is a term used across Mexico City to describe settlements that predate colonialism or date back to the early colonial period, and which were inhabited by Indigenous people; originary identity may therefore be understood as a kind of para-Indigenous identity. The term *avecindado* began to be used locally in the 1980s to describe the wave of newcomers to the zone. Equally, some of my research participants, who had grown up in the town of Ajusco but had been born elsewhere, were excluded from recognition as *originario*.
8. *Ejidos* are communal landholdings in Mexico, generally ceded to Indigenous communities for farming. Most *ejidos* were created by the postrevolutionary government during 1930s land reform.

9. *Talamontes* in Ajusco are not necessarily connected to drug cartels, as is the case in other states, such as Michoacán. Santo Tomás Ajusco has a negative reputation for violence partly related to cartels using the Picacho-Ajusco road, which runs by the town, and the forests outside it as dumping grounds for corpses.
10. In more urbanized areas of the Ajusco zone, residents often need to fell or prune trees on their property, but applying for the necessary permissions makes for an administratively burdensome process. Due to greater visibility, a larger concentration of people, higher police numbers and—potentially—vengeful neighbors, one is more likely to be caught in these more urbanized areas. Deforestation here is therefore quieter, carried out under cover of dark with a hand axe (interview, Abel, resident of Ajusco Medio, fifties, May 2022).
11. Also see the following anonymously authored report in El Sol de México from August 2022: "Talamontes podrían pasar hasta 15 años de carcel si aprueban ley" [Loggers could spend up to 15 years in prison if law approved], (https://www.elsoldemexico.com.mx/mexico/sociedad/talamontes-podrian-pasar-hasta-15-anos-de-carcel-si-aprueban-ley-8699439.html), last accessed December 7, 2024.
12. See an anonymously authored report from June 2022: https://www.infobae.com/america/mexico/2022/06/28/segob-aseguro-cuatro-aserraderos-clandestinos-en-el-ajusco-hubo-7-detenidos/, last accessed December 5, 2024.
13. See an UnoTV video, "Detienen a líder de talamontes en Ajusco" [Leader of loggers arrested in Ajusco], uploaded on June 30, 2023 (https://www.youtube.com/watch?v=GZQrgF6Op9s), last accessed December 7, 2024.
14. "People's objective coming here to the park to camp or stay in a cabin, many times it's to rest, to get away from the noise, the monotony of the music that is always heard every day in the city" (interview, Roberto, July 2022).
15. "The *brujas* would come down very close to the camping area and what they used to scare them away were little crosses made of *ocote* pine. They put them on the windows and doors and, well, images of the saints" (interview, Rosa, *originaria* from San Nicolás Totolapan, thirties, September 2022).
16. "It's something I heard once, that listening to music like that keeps all mystical beings like that, calms them down . . . . Classical music. Like, Beethoven, Chopin" (interview, Ignacio, *originario* from San Nicolás Totolapan, thirties, September 2022).
17. My use of this term draws on classic theoretical literature relating to the production of space, especially Neil Smith's (2008) Marxian approach to the production of nature and natural space.

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