

FRANK PECQUET

An ecology of auditory attention: from Ecosound to Soundstainability

Uma ecologia da atenção auditiva: do Ecosom à Somsustentabilidade

Una ecología de la atención auditiva: del Ecosonido a la Somsostenibilidad

Frank Pecquet

Frank Pecquet é compositor, musicólogo e pesquisador especializado em música acústica e eletrônica e arte sonora. Ele reside em Paris e possui nacionalidade francesa. Pecquet obteve dois doutorados: um em Musicologia pela Universidade de Paris e outro em Composição Musical e Computação pela Universidade da Califórnia, San Diego, Estados Unidos (UCSD). Atualmente é professor e pesquisador em artes da computação na Universidade de Paris 1, Panthéon-Sorbonne, na Sorbonne Art School e é membro ativo do Instituto ACTE (Art Creation Theory and Esthetics), dirigindo o polo de pesquisa Sound Art and Design. Sua pesquisa atual e atividades criativas se concentram em design de som, ecologia acústica e composição musical interativa.

Frank Pecquet is a composer, musicologist, and researcher specializing in both acoustic and electronic music and sound art. He resides in Paris and holds French nationality. Pecquet has earned two PhDs: one in Musicology from Paris University and another in Music Composition and computer from the University of California, San Diego, USA (UCSD). He is currently a professor and researcher in computer arts at the University of Paris 1, Panthéon-Sorbonne, at the Sorbonne Art School and is an active member of the ACTE Institute (Art Creation Theory and Esthetics), directing the Sound Art and Design pole of research. His current research and creative pursuits focus on sound design, acoustical ecology, and interactive music composition.

Frank Pecquet es compositor, musicólogo e investigador especializado en música acústica y electrónica y arte sonoro. Reside en París y tiene nacionalidad francesa. Pecquet obtuvo dos doctorados: uno en Musicología de la Universidad de París y el otro en Composición e Informática Musical de la Universidad de California, San Diego, Estados Unidos (UCSD). Actualmente es profesor e investigador en artes informáticas en la Universidad de París 1, Panthéon-Sorbonne, en la Escuela de Arte de la Sorbona y es miembro activo del Instituto ACTE (Art Creation Theory and Esthetics), dirigiendo el centro de investigación Sound Art and Design. Sus actividades creativas y de investigación actuales se centran en el diseño de sonido, la ecología acústica y la composición musical interactiva.

fpecquet@univ-paris1.fr

Resumo

Este artigo propõe uma conceituação interdisciplinar da ecologia da atenção auditiva, baseada em duas noções complementares: ecosom, definido como um marco metodológico integrado para medir a qualidade atencional de ambientes sonoros, e stainabilidade sonora, entendida como um horizonte crítico e normativo com o objetivo de incorporar a sustentabilidade auditiva no centro das políticas de saúde pública, planejamento urbano e justiça social. A análise depende de uma articulação entre a ontologia e a epistemologia do som, a psicologia da atenção, a medicina ambiental e a antropologia crítica da escuta. Ao combinar dados experimentais, perspectivas filosóficas e estruturas políticas, o artigo mostra qu'a atenção auditiva constitui o ponto de convergência no qual as questões fisiológicas, cognitivas, sociais e culturais se encontram. Ele defende o reconhecimento da atenção auditiva como um bem comum e a inscrição em uma ecologia política do sensível.

Palavras-chave: Ecosom. Manchabilidade sonora. Ecologia da atenção. Ambiossomos. Justiça sonora.

Abstract

This article proposes an interdisciplinary conceptualization of the ecology of auditory attention, based on two complementary notions: ecosound, defined as an integrated methodological framework for measuring the attentional quality of sound environments, and soundstainability, understood as a critical and normative horizon aiming to embed auditory sustainability at the heart of public health, urban planning, and social justice policies. The analysis hinges on an articulation between the ontology and epistemology of sound, the psychology of attention, environmental medicine, and the critical anthropology of listening. By combining experimental data, philosophical perspectives, and policy frameworks, the article shows that auditory attention constitutes the convergence point at which physiological, cognitive, social, and cultural issues meet. It argues for recognizing auditory attention as a common good and for inscribing it within a political ecology of the sensible.

Keywords: Ecosound. Soundstainability. Ecology of attention. Ambiosomes. Sound justice.

Resumen

Este artículo propone una conceptualización interdisciplinaria de la ecología de la atención auditiva, basada en dos nociones complementarias: el ecosonido, definido como un marco metodológico integrado para medir la calidad atencional de los entornos sonoros, y la sonsostenibilidad, entendida como un horizonte crítico y normativo que apunta a integrar la sostenibilidad auditiva en el centro de las políticas de salud pública, planificación urbana y justicia social. El análisis gira en torno a una articulación entre la ontología y la epistemología del sonido, la psicología de la atención, la medicina ambiental y la antropología crítica de la escucha. Al combinar datos experimentales, perspectivas filosóficas y marcos de políticas, el artículo muestra que la atención auditiva constituye el punto de convergencia en el que se encuentran los problemas fisiológicos, cognitivos, sociales y culturales. Aboga por reconocer la atención auditiva como un bien común e inscribirla dentro de una ecología política de lo sensible.

Palabras clave: Ecosonido. Mantenibilidad sonora. Ecología de la atención. Ambiosomas. Justicia sonora.

Introduction

In a world saturated with sonic stimuli, auditory attention appears as a fragile and contested resource. Traditional approaches to noise, centered on energetic measurement in decibels, provide necessary benchmarks for public health, yet they struggle to account for the complexity of sound ambiances and their effects on cognition, emotion, and social life. The ecology of auditory attention seeks to move beyond this reductive frame by considering listening as a relational, situated activity traversed by physiological, cultural, and political stakes. Two concepts structure this proposal. The first, *ecoson*, designates a methodological tool that integrates acoustic, psychoacoustic, perceptual, and physiological measures to qualify how compatible ambiances are with attention. The second, *soundstainability*, formulates a normative and critical horizon: conceiving auditory sustainability as a condition for health, equity, and sensory diversity. Their articulation leads us to recognize auditory attention as the point of convergence where the ontology of sound, environmental medicine, psychoacoustics, and the anthropology of listening meet.

The article unfolds in five steps: first, an ontological and epistemological discussion of sound and ambiosomes (Section 1); then an analysis of the cognitive, physiological, and social mechanisms of auditory attention (Section 2); the presentation of *ecoson* as a methodological framework (Section 3); an exploration of *soundstainability* as a critical horizon (Section 4); and finally, a critical anthropology of listening attentive to cultural and political issues (Section 5). The objective is to demonstrate that auditory perception and auditory attention, although often conflated, must be analytically distinguished. Perception refers to the neurophysiological and biological processes through which the auditory system encodes acoustic energy into meaningful neural representations: cochlear frequency decomposition, tonotopic mapping in the auditory cortex, and the segregation of sound sources as described by auditory scene analysis. Attention, by contrast, refers to the dynamic mechanisms that select, prioritize, and sustain specific elements of this perceptual flux, mobilizing higher-order cortical and social processes. For instance, the mismatch negativity paradigm in neurophysiology reveals automatic pre-attentive detection of irregular sounds, whereas studies in environmental medicine show that chronic nocturnal noise elevates cortisol levels even during sleep, highlighting the involuntary capture of attention by disruptive stimuli. At the same time, anthropological analyses of urban soundscapes demonstrate how cultural codes and listening regimes determine whether a sound is ignored, valued, or contested.

By aligning these perspectives, the article argues for a whole-sciences framework: auditory perception grounds the biology of hearing, while auditory attention provides the bridge to cognitive, social, and cultural inquiry. This shift moves away from language as the exclusive model of communication and repositions auditory attention as a common good at the intersection of acoustics, health, and the human sciences.

Ontology and Epistemology of Sound

The study of sound environments first requires clarifying what we mean by “sound.” In the acoustic tradition, sound is defined as a mechanical wave characterized by its intensity, frequency, and duration. This objectivist approach, necessary for the physical sciences and international standardization, nonetheless remains incomplete when it comes to understanding the impact of sound environments on perception,

attention, and health. Recent work in philosophy, anthropology, and cognitive science invites us to move beyond this reductive conception and to consider sound not as an object, but as a relational event.

Jean-Luc Nancy (2002) reminds us that sound exists only through its resonance: it occurs within the relational space between a source, a medium of propagation, and an ear. Christopher O'Callaghan (2007) likewise insists on the intrinsically situated character of the sonic, inseparable from its conditions of emission and reception. From this perspective, listening is not simply receiving a vibration, but participating in a resonant world—entering a dynamic in which listener and environment mutually influence one another. Don Ihde (1976) showed that this relation is multistable: the same sound can be heard as a technical signal, an aesthetic event, or a social sign, depending on the attentional frames brought to bear. This relational conception leads us to think of ambience not as the sum of acoustic signals present in a place, but as an emergent configuration resulting from the interaction among physical characteristics (spectrum, reverberation, density), social uses (activity, mobility, exchange), and perceptual frames (culture, memory, affective state). Augoyard and Torgue (2005) remind us that ambiances cannot be reduced to sonometric data: they shape our mood, behaviors, and relation to the world. In this frame, the notion of the *ambiosome* takes on full meaning: an *ambiosome* designates the set of sonic, spatial, and social components that coexist in a milieu and, through their interaction, produce a singular auditory experience.

Thus, an open-air market is not defined solely by its measured decibels, but by its *ambiosome*: vendor voices, tableware and traffic sounds, architectural reverberations, human density, users' expectations. This coherent or dissonant ensemble shapes the attentional quality of the place. Likewise, a classroom is characterized not only by its average sound level but by the superposition of voices, wall reverberation, intrusive exterior sounds, and the way collective attention is distributed. The *ambiosome* concept accounts for this complexity by underscoring that auditory environments are always situated, plural, and lived. At the epistemological level, a fundamental question arises: how can objective measurement be articulated with subjective experience? Approaches in acoustic ecology (Schafer, 1977; Truax, 2001) marked a turning point by asserting that listening must be placed at the center of analysis. Steven Feld (1996) proposed the notion of "acoustemology" to designate sound as a mode of knowing the world, tying sensory perception to memory and culture. Tim Ingold (2007) criticizes overly visual uses of the term "soundscape," which tends to treat the sonic as an image; he insists on conceiving listening as a process of immersion and movement. These perspectives converge with ecological psychoacoustics (Bregman, 1990; Neuhoff, 2004), which shows that audition is an active, selective activity: the ear segments, prioritizes, and groups sounds according to invariants linked to action and context. In this sense, auditory attention is constitutive of sonic experience, not a secondary cognitive faculty.

This ontological and epistemological redefinition of sound exposes the limits of reductive approaches that still dominate public policy and some research. The first risk is energetic reductionism. Decibel thresholds, as defined by the World Health Organization (2018), provide a needed framework for sanitary regulation, yet multiple studies in environmental medicine show that exposures below these thresholds nonetheless produce measurable disturbances: sleep fragmentation, altered heart rate variability, and chronic cortisol elevation (Basner et al., 2014; Münzel et al., 2018). These phenomena reveal the insidious, cumulative nature of attentional load imposed by saturated ambiances—often invisible in statistics yet consequential over the long term. A second risk is the naturalization of socio-spatial inequalities. Numerous epidemiological and anthropological surveys—including those by Clark

& Paunovic (2018) and Pecquet (2018)—show that sound exposure is not randomly distributed: disadvantaged populations more often live near road, industrial, or airport infrastructures and have less access to quiet zones or diversified environments. An evaluation based exclusively on energetic thresholds tends to render these asymmetries invisible and, in effect, legitimates a form of acoustic injustice, whereby the capacity to concentrate, rest, and regenerate attentional resources becomes a socially differentiated privilege.

To these inequalities we must add the erosion of acoustic diversity, an ecological and attentional risk of major importance. Bernie Krause (2012) has shown that the dwindling of biophonic soundscapes—observable in the decrease of birdsong, insect sounds, or water noise—now indicates ecosystem degradation. This loss concerns not only biodiversity; it directly affects cognitive and psychological health. Attention Restoration Theory (Kaplan & Kaplan, 1989) demonstrates that natural environments enable recovery of attentional resources; controlled experiments (Berman, Jonides & Kaplan, 2008; Alvarsson et al., 2010; Medvedev et al., 2015) confirm that exposure to natural sounds reduces stress, improves working memory, and regulates heart rate more effectively than urban environments. Put differently, biophonic sounds are vital attentional resources. Their scarcity impoverishes ambiosomes and deprives individuals of opportunities to restore cognitive capacities, favoring chronic attentional fatigue—especially concerning in dense urban settings.

A final risk concerns the industrial capture of auditory attention. Digital and media environments exploit sonic salience to attract and divert vigilance: notifications, alarms, advertising signals. These sounds leverage pre-attentive detection mechanisms (Näätänen & Winkler, 1999), instituting a regime of permanent solicitation. Georg Franck (1998) has proposed conceiving attention as a form of capital, and Citton (2014) has shown how this capital is now exploited within an economy that industrializes the sensible. In this context, the sonic is no longer merely an environmental dimension but a vector of cognitive governance that weakens attentional autonomy and reshapes our modes of presence in the world. Taken together, these observations show that acoustic experience cannot be reduced to a single metric. It engages physiological, social, cultural, and political dimensions that structure ambiosomes and condition our health, well-being, and collective capacity to inhabit the world. Recognizing these risks amounts to laying the foundations for a genuine ecology of auditory attention, articulating acoustic knowledge, environmental medicine, psychoacoustics, and the human sciences, thereby opening a field of research and action commensurate with contemporary sonic complexity.

The Ecology of Auditory Attention

Yves Citton's (2014) concept of an ecology of attention provides a critical framework for understanding contemporary sound environments. Far from reducing attention to an individual faculty, Citton conceives it as a limited, collective, and vulnerable resource subject to dynamics of capture and competition. Transposed to the auditory domain, this frame allows us to construe listening not only as a physiological process but as an ecological activity depending on a balance among stimuli, cognitive resources, and social regimes of exposure.

Findings in cognitive psychology and neuroscience support this perspective. Since William James (1890), attention has been understood as the capacity to select some contents of consciousness from among the multiplicity of available signals. Studies by Näätänen and Winkler (1999) on event-related potentials show that audition

performs pre-attentive selection: the ear automatically detects changes in pitch, rhythm, or regularity in the environment, mobilizing a baseline vigilance independent of conscious will. This sensitivity explains why unexpected sounds—sirens, alarms, notifications—so readily interrupt ongoing activity. Auditory vigilance, conceived as a common good, is thus subject to a regime of constant solicitations. These basic mechanisms yield measurable effects on cognition and health. Bregman's (1990) work on auditory scene analysis shows that audition organizes sound flux into distinct objects, a process that demands significant attentional resources. When environments are saturated, this segmentation becomes costly and generates cognitive fatigue. Experiments by Hygge, Evans, and Bullinger (2002) revealed that chronic exposure to aircraft noise produces measurable decreases in children's reading and memory performance. These results confirm that auditory attention constitutes a critical mediator between sound exposure and cognitive performance.

Physiologically, the attentional load induced by sonic ambiances can be evaluated via various biomarkers. Environmental medicine studies show that nocturnal noise exposure, even at levels below regulatory thresholds, raises salivary cortisol and disrupts heart rate variability (Basner et al., 2014; Münzel et al., 2018). These alterations are directly linked to prolonged mobilization of attentional resources that keeps the organism in a state of alert. Electroencephalographic measures reinforce this picture: exposure to noisy environments reduces alpha rhythms (associated with relaxed attention) and increases beta activity (a marker of forced vigilance) (Krahé et al., 2017). These data confirm that sound environments act both on cognitive performance and on the neurophysiological regulation of attention. In parallel, environmental psychology has emphasized the restorative dimension of natural environments. Kaplan and Kaplan (1989) proposed Attention Restoration Theory, according to which environments rich in biophonic elements—birdsong, leaf rustle, flowing water—reconstitute attentional resources depleted by sustained tasks. Berman, Jonides, and Kaplan (2008) experimentally confirmed that exposure to these natural sounds improves working memory and reduces stress compared with artificial urban sounds. These results underscore that auditory attention is not merely a cognitive function; it is an ecosystem of resources whose quality depends directly on the sonic diversity of ambiosomes.

The social dimension of this ecology cannot be ignored. As Clark and Paunovic (2018) show, inequalities in sound exposure translate into inequalities of attention: the most disadvantaged populations, often located near infrastructures, are more exposed to nuisances and have less access to restorative spaces. Pecquet (2018) has emphasized how sonic issues reveal a social and cultural fracture, distinguishing those who can protect and organize their auditory environment from those who endure chronic saturation. In this sense, the ecology of auditory attention is not merely a medical diagnostic but also a matter of environmental justice and governance of the sensible. Altogether, the evidence confirms that auditory attention is a point of convergence among physiology, cognition, and social organization. It is at once a measurable neurocognitive mechanism, a public health resource, and a common good subject to power relations. The ecology of auditory attention thus presents itself as an integrative perspective where evidence from neuroscience, psychoacoustics, and environmental medicine intersects with critical analyses of the attention economy and socio-spatial inequalities. This interdisciplinary articulation enables us to identify risks and open pathways toward tools for regulation and design, such as ecosound, and toward normative horizons, such as soundstainability, developed in the following sections.

Ecosound: Toward an Integrated Methodological Framework

As an interdisciplinary undertaking at the intersection of cognitive science, environmental medicine, and the social sciences, the ecology of auditory attention requires tools that can articulate physical measurement with perceptual experience. Traditional acoustic metrics centered on intensity levels (Leq, Lden, Lnight) do not capture the attentional dimension of ambiances. To cross this methodological threshold, we propose ecosound as an integrative framework for qualifying ambiances in terms of their capacity to support or hinder attention. Ecosound rests on a multidimensional approach combining four measurement registers. The first is physical acoustics, which remains indispensable: A-weighted sound levels, third-octave band spectra, and temporal variability indicators (L10, L90) provide a basic descriptive foundation. This dimension must be complemented by a second, namely psychoacoustic indicators (Zwicker & Fastl, 2007): loudness, sharpness, roughness, and fluctuation strength describe sensory qualities of sounds that correlate better with human experience than decibels alone.

A third register concerns in-situ perception, following ISO 12913 (2014–2020) protocols for soundscape evaluation. Soundwalks, semantic scales (pleasant/stressful; calm/lively), and listening journals incorporate listeners' lived experience into ambiance characterization. These data are essential for objectifying ambiosomes as complex ensembles of sounds, contexts, and social practices. Finally, a fourth dimension involves physiological and attentional biomarkers: salivary cortisol, heart rate variability (HRV), electroencephalography (EEG), and cognitive performance tests (SART, ANT, auditory n-back). These measures link sound exposure directly to attentional load and individuals' physiological state. Combining these four dimensions makes it possible to construct an Ecosound Index (EI)—an integrated measure of an environment's attentional quality. Rather than imposing a strict hierarchy among parameters, the EI relies on context-sensitive weighting: hospitals, schools, and urban public spaces entail distinct priorities. The index's value lies in moving beyond the binary “noise vs. silence” logic to introduce a continuous gradation evaluating the compatibility of an ambiance with attentional and health needs.

Three examples illustrate this approach. In hospital intensive care units, multiple acoustic interventions—absorbent panels, retuned alarms, “quiet time” protocols—have reduced overall sound levels and, crucially, limited vigilance interruptions among staff (Hagerman et al., 2005; Xie, Kang & Mills, 2009). The EI computed from acoustic, perceptual, and physiological measures shows a significant rise, reflecting improvement in attentional quality as well as stress reduction. In schools, the RANCH study (Stansfeld et al., 2005) demonstrated that aircraft noise exposure decreases children's reading and memory performance. Interventions on acoustic insulation and organization of rest periods yielded measurable improvements in attentional performance, confirming the value of an integrative index that links physical measures to cognitive effects. Here too, the EI proves useful for objectifying the relationship between exposure and learning. In urban contexts, Barcelona's super-blocks—where traffic reduction and vegetated spaces transformed sound ambiances—show how ecosound can help evaluate the success of a planning project. Perceptual indicators (pleasantness, sense of calm) improved alongside measured noise reductions. In this case, the EI objectifies the benefits of urban intervention by articulating public health, quality of life, and environmental equity (Aletta & Kang, 2015).

Validity and Governance of the Ecosound Index

The scientific robustness of EI must be tested against legal standards, administrative feasibility, and evolving social norms of tolerance. Environmental law continues to rely on energetic descriptors such as dB(A), Lden, and Lnight, which are enforceable but blind to perceptual and attentional burdens. Medical evidence shows that deleterious effects—sleep fragmentation, cardiovascular stress, cortisol dysregulation—occur below these thresholds (Basner et al., 2014; Münzel et al., 2018). EI provides a complementary tool, rendering visible sub-threshold impacts that are currently invisible to law. Yet administrative agencies demand clarity and enforceability. A multidimensional index that integrates subjective perception and biomarkers raises issues of operationalization: which data are compulsory, how often should they be collected, and who is responsible for interpretation? Pilot projects suggest that simplified versions of EI can serve as decision-support instruments, guiding urban design and hospital or school interventions without replacing the legal benchmarks.

Finally, tolerance to sound is a socially variable and historically shifting category. Festive ambiances or religious calls may be tolerated above legal thresholds, while continuous hums or low-frequency drones can generate disproportionate annoyance despite compliance. By integrating perception and physiology, EI offers a more nuanced, context-sensitive criterion, bridging the gap between law and lived experience. In this perspective, the EI emerges not only as a methodological innovation but as a potential juridical and political instrument, capable of supporting claims of acoustic justice (Clark & Paunovic, 2018; Pecquet, 2021). Its governance requires interdisciplinary dialogue, ensuring that technical validity aligns with administrative enforceability and with society's evolving norms of tolerance.

Soundstainability: A Critical and Normative Horizon

Whereas ecosound offers a methodological framework for evaluating the attentional compatibility of sound ambiances, soundstainability names a broader normative horizon. It is a conceptual and political orientation for thinking sound environments in their durable dimension, integrating health, ecological diversity, and social justice. If ecosound supplies a regulatory instrument, soundstainability designates a telos: ensuring auditory conditions conducive to care, equity, and the continuity of life. This perspective aligns with an expanded ecology of attention (Citton, 2014), not limited to protecting an individual resource but seeking to preserve the shared conditions of collective attention. Applied to the sonic, it requires recognizing that acoustic environments are not neutral: they orient behaviors, condition our capacity to concentrate, and shape social relations. Auditory attention is not merely a cognitive function; it is an infrastructure of social life, whose sustainability depends on the political and cultural organization of ambiances.

In this sense, soundstainability resonates with the ethics of care (Tronto, 1993), understood as a constellation of practices of concern and solicitude. Designing sustainable sound environments means caring for listening as an essential dimension of existence. In hospitals, this implies rethinking alarms, technical devices, and rest areas to reduce stress for patients and caregivers. In schools, it means ensuring acoustically adapted classrooms to protect children's attention. In urban space, it

means creating quiet zones and preserving biophonic diversity to offer everyone the possibility of regenerating attentional resources. In each context, soundstainability provides a framework for orienting architectural, technical, and policy choices according to the care afforded to listening. Durability, however, is not only about health or comfort; it also concerns acoustic justice. As Clark & Paunovic (2018) show, vulnerable populations are systematically overexposed to sonic nuisances and underexposed to restorative environments. Pecquet (2018) stresses that this unequal distribution constitutes a cultural and social fracture, distinguishing those who can organize their auditory environment—via residential choice or insulation technologies—from those who endure chronic saturation. In this context, soundstainability becomes a principle of governance, requiring public policy to guarantee equitable access to ambiances compatible with health and attention.

The critical dimension of this notion also appears when faced with the industrialization of the sensible. As Franck (1998) argued, attention has become a capital; Citton (2014) shows how it is exploited in contemporary media regimes. Brandon LaBelle (2018) proposes conceiving sonic agency, whereby listening and sound become vectors of power and resistance. Inscribing soundstainability in this perspective amounts to affirming that managing sound ambiances cannot be left solely to economic imperatives: it must be debated as a matter of rights, equity, and a sensory democracy. The stakes here are not merely technical, but ontological and political. Guaranteeing auditory durability means preserving the plurality of ambiosomes and preventing their homogenization by purely productive logics. The disappearance of biophonic sounds, the encroachment of industrial or digital signals, and the saturation of public spaces by traffic all threaten acoustic diversity and, consequently, cognitive and social health. Soundstainability requires conceiving the regeneration of sound environments as a precondition for an attentive, equitable, and durable coexistence. In this sense, it extends ecosound's ambition by shifting it onto a normative plane: no longer merely measuring and regulating but defining the conditions of acoustic justice that recognize attention as a common good. Through soundstainability, the ecology of auditory attention asserts itself not as a purely technical discipline but as a political ecology of the sensible, where listening becomes one of the decisive sites of contemporary sustainability.

An Anthropology of Auditory Attention

If ecosound provides methodological tools and soundstainability a normative horizon, we must still understand how listening practices are embedded within specific cultural and social contexts. The anthropology of sound reminds us that auditory experience is never universal: it depends on cultures, uses, and forms of life. In this sense, the ecology of auditory attention must also be conceived as a critical anthropology attentive to how societies organize, hierarchize, and govern listening. Steven Feld (1996) coined acoustemology to describe how certain communities relate to the world through sound. Among the Kaluli in Papua's forests, birdsong is not a mere biological signal: it embodies memory, cosmology, and a way of inhabiting space. This example shows that auditory attention is not a universal cognitive datum but a cultural practice, shaped by symbolic codes and narratives. Tim Ingold (2007) pushes this critique by contesting the overly static notion of "soundscape": listening, for him, is an active immersion in the flux of events, where perception is constructed in movement and temporality. These anthropological approaches remind us that ambiosomes are situated realities, co-constructed by practices and imaginaries.

In industrial and urban societies, this cultural dimension takes a political turn. Listening becomes the locus of a governance of the sensible. Pecquet (2018) shows that sonic regimes are not only endured: they result from collective and institutional decisions that determine which sounds are authorized, tolerated, or banned. The economy of auditory attention is thus doubled by a political economy in which choices in planning, regulation, and tolerance set the conditions for sonic coexistence. A music festival, a nocturnal logistics zone, or a pedestrian street do not merely produce sounds: they institute listening regimes that include some publics and exclude others. A critical anthropology of auditory attention also interrogates forms of domination and resistance traversing sound environments. Brandon LaBelle (2018) proposes sonic agency—the capacity of sound to act socially and redefine power relations. Listening is not a passive activity but a political practice: remaining silent, protesting through noise, imposing silence, or occupying space by voice are strategies of acoustic agency. These practices show that auditory durability cannot be reduced to technical optimization; it entails questions of democracy and justice.

Inequitable distribution of attentional environments exemplifies this dimension. As Clark & Paunovic (2018) emphasize, disadvantaged populations are more exposed to nuisances and less protected by quiet spaces. This asymmetric exposure concerns not only physical health but also the capacity to sustain attention, to concentrate, or to enjoy moments of rest. Acoustic justice thus exceeds a right to health to include a right to attention. Here, the ecology of auditory attention intersects with social critique by highlighting inequalities in access to the minimal conditions for a balanced cognitive and sensory life. Finally, a critical anthropology must confront cultural standardization of the sonic. Globalization tends to homogenize auditory environments: background music in retail, standardized ringtones, uniform electronic signals. This uniformity impoverishes ambiosome diversity and reduces opportunities for attentional regeneration. It reflects a rationalization process in which sound is treated as an instrument of economic throughput rather than as a shared resource. In response, artistic and civic movements experiment with alternative forms of listening: soundwalks, participatory mappings, immersive installations. These initiatives remind us that auditory attention can be cultivated as a collective practice of resistance to saturation and homogenization.

A critical anthropology of auditory attention thus reveals a double stake. On the one hand, it enables us to understand the plurality of listening regimes and ambiosomes in the contemporary world, emphasizing their situated and culturally shaped character. On the other hand, it opens a political perspective by underscoring that auditory durability involves not only technical regulations but also an equitable redistribution of attention and a valorization of diverse auditory experiences. Listening then appears as a field where the possibility of a common world is at play—an area where perception, memory, and justice meet.

Conclusion

The analysis developed throughout this article shows how the ecology of auditory attention has become an indispensable interdisciplinary field of research. By mobilizing perspectives from philosophy, anthropology, cognitive science, and environmental medicine, we have sought to move beyond the limits of a strictly energetic approach to the sonic that, by reducing auditory experience to decibels, tends to ignore the perceptual, social, and political dimensions of ambiances. Introducing the notion of ecosound responds to the need to equip research and public policy with an integrated methodological tool. By combining acoustic measures, psychoacoustic indicators,

perceptual surveys, and physiological biomarkers, the Ecosound Index makes it possible to qualify how compatible ambiances are with human attentional resources. Its value lies in its capacity to articulate heterogeneous knowledges by linking the objectivity of physical measures to the subjectivity of experience and to measurable health effects. As such, it provides a pragmatic extension of the ecology of attention, translating theoretical concepts into operational instruments for regulation and design.

Yet ecosound only takes on its full meaning when inscribed within a normative and critical horizon that we have designated as soundstainability. This notion goes beyond indicators to posit auditory durability as an ethical and political requirement. It invites us to consider attention as a common good exposed to cognitive saturation, unequal exposures, and industrial logics of capture. By linking health, acoustic justice, and ecological diversity, soundstainability traces the contours of a genuine political ecology of the sensible in which listening becomes a privileged locus of contemporary sustainability. Articulating these two dimensions—ecosound as instrument and soundstainability as horizon—allows us to pose auditory attention as the point of convergence and culmination. It is neither solely an object of measurement nor merely a critical category: it is the place where physiological, cognitive, social, and cultural registers intersect. Auditory attention thus becomes the prism through which we read the state of ambiosomes, the quality of living environments, and the distribution of conditions of sensory equity. Addressing it is not a secondary concern but a precondition for thinking public health, education, urban planning, and culture in a world marked by sonic saturation and dwindling acoustic diversities.

What emerges from this dual methodological and critical approach is a new interdisciplinary space of inquiry. The ecology of auditory attention simultaneously mobilizes the exact and medical sciences—capable of documenting physiological and cognitive effects of sound environments—and the human and social sciences—capable of analyzing the cultural, political, and economic regimes that organize those environments. This articulation opens the way to a truly integrative epistemology attentive to ambiosomes in all their complexity. In this sense, the article stands at the intersection of two complementary undertakings: on the one hand, ecosound, which proposes an instrument for measurement and regulation; on the other, soundstainability, which defines a normative and critical horizon. Their tension and complementarity culminate in an expanded conception of auditory attention, understood simultaneously as a physiological resource, a social common, and a political object. The task now is to embed this approach within research-creation and interdisciplinary governance so that future sound environments are not only measured and controlled but also designed, shared, and lived as essential conditions for a durable and equitable life.

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