Introduction

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This special issue of *Sound Stage Screen* is devoted to theories and practices of sound and of listening, with a special emphasis on the conversation each contribution opens between media, between sense modalities, between disciplines, and between critical and poetic inquiries. Indeed, it is my hope that this collection of texts helps to illustrate how sound—as a theme and a subject of inquiry—is uniquely suited for exploring interstitial areas. Many of the contributions here take up issues of sound at exactly the points where they cross between areas of study, medium definitions, and ways of sensing and knowing. These explorations may appear to decenter sound itself, while simultaneously expanding its center to integrate a great deal of the world that might at first appear closed to it or beyond its proper borders. Key to this is a general attraction to the "inter-ness" of sound—including vibration, voicing, hearing, and listening—that takes relation as a primary value and operation. My goal in bringing together these diverse and individually powerful writings is to focus on the inter-subjective powers of sound and listening traced in each contribution, as well as to invite an inter-textual dialogue to emerge from their proximity.

The pieces in this issue run a gamut of interests, from sound art to interspecies listening, from mobile technologies to wind tunnel architectures, coastal geology to film captioning, colonial landscape photography to silence in music composition. Joining them together is an interest in the relational capacities of sounding and listening, and an exploration of the structures of relation that can be composed by, and of, acts of listening. Listening in this context refers to ways of relating between and across subjects to construct spaces or situations. These spaces of relation often suggest possibilities for reconfiguring their constituent subjects, and can, in the best cases, call into question the very notion of a subject's pre-existence prior to their entry into the relation. This idea of listening cannot be reduced

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to the audiological event of hearing, nor the specialized comprehension of musical structure. Rather, this is a listening that composes the structures of the self, of community and of space in order to allow new forms of activity, including discourse, art and music, but also politics and ethics, to emerge.

Previously I have suggested the term *relational arenas* as a way to describe listening structures of this kind. While it could be said that every performance, every work of art, even every gathering produces a relational arena, at least in potential, I think that a specific focus on the form might help reframe certain dichotomies in cultural discourse, bringing them into renewed relation. Collective spaces of understanding and world-building—from art production to critical and poetic writing, from scientific finding to transcendental knowing—can unfold from resonant collisions and conversations. These conversations are not just open-ended but also *opened-at-all-sides*, or permeable, and I argue this permeability is an important aspect of their effectiveness and meaningfulness. In this introduction I will briefly trace the contours of listening as an activity of relational arena-making, and touch on how each piece in this issue explores a permeable space of its own, while allowing a larger space of resonance between the writings to unfold.

In what senses and under what conditions can we say that listening creates a space? Barry Blesser and Linda Ruth Salter, in their detailed discussion of aural architectures, explore the linked concepts of the "acoustic horizon" and "acoustic arena" in creating these structures. Every listener is at the center of their own acoustic horizon, defined as "the maximum distance between a listener and source of sound where the sonic event can still be heard."[1] For example, the voice of an instructor in a lecture hall falls within the acoustic horizon of a student in the class listening to the lecture. However, the door to the classroom is open and sounds from the hallway outside are also within the student's acoustic horizon, competing for the student's attention. The student gets up and shuts the door, and now their acoustic horizon no longer extends to the space of the hallway, allowing better focus on the class. Meanwhile, each sound source is the center of its own acoustic arena, "a region where listeners are part of a community that shares an ability to hear a sonic event. An acoustic arena is centered at the sound source; listeners are inside or outside the arena of the sonic event."[2] To return to our example: after the student closes the door, an-

1 Barry Blesser and Linda-Ruth Salter, *Spaces Speak, Are You Listening?* (Cambridge: MIT Press, 2006), 22.

2 Blesser and Salter, 22.

other student who is late to class finds the lecture hall door locked when they try to enter. Even though they can see into the lecture hall through a window in the door, the student can't hear beyond it and so is excluded from the acoustic arena of the class. Significantly, they are not considered part of the class, specifically because the community of the class is defined by the reach of the instructor's voice. "The acoustic arena is the experience of a social spatiality, where a listener is connected to the sound-producing activities of other individuals."[3] Consider a third student, who is inside the hall, but sitting so far back they cannot hear the lecture either. They too would be outside the arena of the class; despite being visually and physically present, membership in the arena requires an overlapping of the acoustic horizons of the participants. The correlative powers of sounding and listening produce an elementary social architecture. Because it is based in sound, this sphere is active and dependent on continual activation, relating the impulse of sounding to the response of listening in order to exist. Acoustic arenas reveal something of the relational quality of space-making and suggest how sound can provide techniques for an experimental inquiry into social and aesthetic form. At the same time, sound reveals the momentary, dynamic, and sometimes fragile nature of these spherical structures. They must be established, then constantly maintained and enacted, a process which inevitably involves being challenged, compromised, deformed, and reformed. A space is not a fixed structure, but rather a formal process of building and relating.[4]

Florian Dombois, Helene Romakin, and Berit Seidel are the architects of a unique structure of this kind, taking the form of a wind tunnel in which they cultivate relational structures of discussion and exploration meant to transcend disciplines. As they discuss in their polyvocal text in this volume, the Wind Tunnel Festival launched in 2022 on the roof of the Zürich University of the Arts (ZHdK). Each year since then they have convened a cohort of scientists, writers, curators, critics, engineers, students, artists, and musicians inside the circular wind tunnel itself to share their work and explore aspects of flow and turbulence through collective experiments. The wind tunnel itself becomes a mediator more than a focus of study—

3 Blesser and Salter, 25.

4 Sanford Kwinter calls this true formalism: "any method that diagrams the proliferation of fundamental resonances and demonstrates how these accumulate into figures of order and shape [...]. Formalism demonstrates first and foremost that form is resonance and expression of embedded forces." See Sanford Kwinter, "Who's Afraid of Formalism?," in *Far from Equilibrium: Essays on Technology and Design Culture* (New York: Actar, 2008), 144–49.

an arena that embodies the qualities of circulation and exchange that they want the festival to produce. This issue of *Sound Stage Screen* is rich with other models of conversational knowledge, including dialogues between filmmaker and artist Alison O'Daniel and curator Pablo de Ocampo ("The Tuba Thieves"); between musicologist and scientist Ryan C. Clarke and poet and writer Michael Nardone ("A Sediment Diversion for the Audible World"); and an essay co-written by Katherine Behar and David Cecchetto, whose individual practices blend theoretical research with art and music production ("After Alerts").

In *Spheres*, an ambitious three-volume political poetics of human spaces, Peter Sloterdijk expands on and intensifies concepts of space as developed in arenas based on listening. "In the wall-less house of sounds, humans become the animals that come together by listening. Whatever else they might be, they are sonospheric communards."[5] In *Bubbles*, the first part of his *Sphereology*, Sloterdijk identifies the origins of this sonospheric construction in the prenatal relation between fetus and mother: a calling and listening that produces a space that is simultaneously the dawning of the subject, perhaps the soul. "What we call the soul in the language of immemorial traditions is, in its most sensitive core area, a system of resonance that is worked out in the audio-vocal communion of the prenatal mother-child sphere." As one of the first experiences of an individual's existence, this space-making through sonic call-and-response is something we approach reflexively and instinctively. More fundamentally it is something that we do in part to form ourselves in the first place; an activity we later engage in collectively and socially with a vestigial awareness that it in turn creates us, defines our subjective consciousness. As a developing subject, the listener is defined by relation, "in the synchronicity of greeting and listening; this movement toward each other forms the most intimate soul bubble."[6] The subject is never solitary, not self-integral, "does not have a center of its own that radiates and collects everything, but rather two epicenters that evoke each other through resonance."[7] Thus Sloterdijk's ontology begins with the number two, not centerless but doubly-centered, defined principally by this resonance between two agents and the space that is produced as a result of their co-vibration.

5 Peter Sloterdijk, *Bubbles*, *Spheres Volume I: Microspherology* (Los Angeles: Semiotext(e), 2011), 520.

6 Sloterdijk, 510–1.

7 Sloterdijk, 100.

The birth of the subject occurs in listening but this does not perpetually bind it to the maternal figure; instead a quality of the listening, a quality of construction through resonance, is projected across the subject's future experience, into its expanding reality of spaces. Likewise, the activities of resonant spaces need not be limited to what sound "does" as a medium or a perception. The quality of relation is the fundamental aspect of space-making, even as it is one of the most difficult to define perceptually. Brian Massumi, paraphrasing William James, puts it succinctly: "relations are not only real, they are really perceived, and directly so."[8] We could say that spaces, while occasioned by sounding and listening, achieve their effects in ways that are perceptually amodal, that is, they are not contained in any one sense modality but are of a different order. Massumi identifies experiences of movement, rhythm, and intensity as characteristically amodal, "meaning they are not in one sense mode or another. Nonsensuous, they can jump not just between situations but also between sense modes … It is the direct perception of what happens between the senses, in no one mode."[9] He uses the simple example of watching a billiard ball hit another and knocking it forward. In visual perception, what we see does not describe what we more fully perceive or feel: "One moves toward the other and stops. The other then starts and moves away. That is what we see. But what we feel perceptually is the movement of the first ball *continuing* with the second … Movement 'detaches' itself from one object and transfers to another … We are directly experiencing momentum, to which nothing visible corresponds as such."[10] Energy moving across a system is perceived as movement itself, detached from its objects, a movement that cannot be seen directly but is perceived amodally. There are many other examples of this type of transfer-perception or relation-sensing that are fully perceivable but not properly assignable to any particular sense modality. Massumi includes tunneling, entraining, ampliation, attraction, and resistance.[11] To that list I would add resonance, the originary energy of sounding and listening.

Sound fluxes across, amid, and through all the terms in the system, relating them through vibrational energies. A crowd, for example, moves together to a drum beat through which it realizes itself as one body, in a rhythm attributable to the entire collective. Here, relations are real, perhaps more real than the

8 Brian Massumi, *Semblance and Event: Activist Philosophy and the Occurrent Arts* (Cambridge: MIT Press, 2011), 86.

9 Massumi, 109–10.

10 Massumi, 106–107.

11 Massumi, 107.

objects they relate. Just as the subject formed in Sloterdijk's prenatal bubble is an effect of an originary resonance, here we see how both objects and subjects in a situation can be considered effects of abstract forces that simultaneously create the space of their relating: "subjects and objects are not preconstituted foundations for purposive movement yielding useful effects. They *are* effects."[12] Sounding and listening situations can powerfully excite this intuition, a fitting medium for comprehending the energies of a "continuing *across* that seamlessly links the separate elements or inputs as belonging to the same change […]. It is, simply: relationship. Directly perceptually-felt; 'nonsensuously' perceived."[13] Massumi calls the spaces opened by such experiences *relational fields*.[14] We could go on to describe a relational field initiated through sounding and listening as a *relational arena*, combining the complementary concepts by Blesser & Salter and Massumi. We have the opportunity to regard sound or sound art not as a medium-specific discipline but as a resonant occasion for constructing relational arenas, amodal transfers in a social or collective space. Viewed this way, even the perpetual debates over the definition of "sound art" can be recast as productive openings onto new construction-relations, as opportunities to explore potentials and create novel realities.

"Resonance" by Caroline A. Jones sets the tone for this issue, calling for a listening that refuses to ignore the liquid nature of the body and the vibrational reality that exceeds the sonic, revealing how resonance "complicates reductive abstraction."[15] Jones traces also the important dialogues between art and science that vibratory practices can excite, a "switch from 'signal' to field [that] is characteristic of resonant epistemologies."[16] In her filmmaking and art practice, Alison O'Daniel directs our attention to the urgency of listening beyond the definitions of sound, toward a wider world attuned not just to more signals but to more subjects, and different ways of knowing and being in the world. Michael Nardone and Ryan C. Clarke's conversation follows the complex turbulences that result from an amodal examination of the coastal geology, extractive practices of colonial capital, and the "horizontal afrologics" of Black music in the Mississippi Delta. As Clarke concludes about New Orleans, "here lies a city of echolocation."[17]

12 Massumi, 33.
13 Massumi, 107.
14 Massumi, 20.
15 Caroline A. Jones, "Resonance," *infra*, 33.
16 Jones, 26.
17 Ryan C. Clarke in dialogue with Michael Nardone, "A Sediment Diversion for the Audible World," *infra*, 60.

We might well ask if the spherical relational arena is really the best shape for critical exploration. Surely the bubble is an unfortunate form to hold up as the epitome of spatial construction: the sealed sphere, the walled compound (sometimes in the shape of an ivory tower), the stifling enclosure? On the contrary, however, the bubble can be understood as the exemplary shape of life, and life's engagement with time and the future. To understand this, we will shift our attention to the membrane of the bubble, the border that defines the sphere, distinguishing inside from outside. Sloterdijk begins the *Spheres* trilogy within the micro-relational form of the bubble, but ends with a consideration of the macro-network of the Foam. Foams are the complex spaces in which the private bubbles of individual life and self-relation are pressed together in "a contamination-rich field of 'connected isolations.'"[18] It is a form that is both private and collective, in constant contact but held apart by internal atmospheric pressure and the tensegrity of each bubble membrane. This membrane is both literal and powerfully metaphorical, referring to architectural enclosures, familial relations, and acoustic horizons equally in a spectrum of human activities that produce the envelopes of social space. Foams are "multiplicities of loosely touching lifeworldly cells, each of which, due to its individual width, possesses the dignity of a universe."[19] It is this continual relating across the collective and the individual, between outward expansion and inward singularity, that produces the fundamental dynamic of social space and the becoming of civilization.

The membrane's surface functions dually as containing barrier and connective surface, just as the cell wall is for microscopic life, and as the skin and eardrum are for larger animals. Gilbert Simondon, in his pioneering research on individuation and ontogenesis considers the membrane constitutive of life itself. Elizabeth Grosz summarizes Simondon's work in *The Incorporeal*, her critical exploration of the interaction of the ideal and the material in concepts of ontology, leading to new considerations in ethics. For Grosz, how a cell is constituted tells us much about how a life should be led, what a future could look like, and how a new and better society could come into being. In her reading of Simondon, the membrane divides the world into a milieu of the interior, and a milieu of the exterior. "[T]he living organism is a transductive mediation of different degrees and forms of exteriority and interiority, from their absolute

18 Peter Sloterdijk, *Foams*, *Spheres Volume III: Plural Spherology* (Los Angeles: Semiotext(e), 2016), 537.

19 Sloterdijk, 565.

separation (with the evolutionary eruption of life) to their ever-mediated cooperation (in technologies)."[20] Sloterdijk brings a knowledge of this biological structuring to his analysis of social spaces, as bubbles suspended in foams. The bubble's membrane presses open the space and maintains the limits of its private integrity. At the same time, "one always shares at least one partition with an adjacent world-cell" and it is through the transmission across these connected membranes that the individualized bubbles reach and affect one another.[21] The analogy drawn from sounding and listening is again instructive: the membrane of an acoustic arena is defined by the sphere of listeners the sound brings into relation. That resonant energy is also a disturbing force, upsetting its separation from other bubbles. Sounding necessarily transduces its energies through media and across membranes; it co-vibrates and communes between separate spaces. Sound has relational force not only within bubbles or relation-spaces but between them, across individual bubbles in the foam. It causes the foam itself to resonate: within their co-isolation a greeting and listening begins to take place, drawing the multiple containments into new resonating macro-relational complexes.

In my own work as a moving image artist I have attempted to develop transductive methods of creative research and production, most recently with the audiovisual installation *The Great Refractor* (2024).[22] Previous work involving interviews with scientists about their observations and models of knowledge led me to the writings of Stefan Helmreich, an anthropologist of science specializing in sound, listening and waves. Helmreich develops a theory of transductive listening: in order to understand a phenomenon in depth one must attend to the various media that a signal or data has passed through on its way to the observer. This could include accounting for the refraction of waves as they pass from water into air, or through the glass of a lens; or the filtering of sound heard through a wall as it vibrates the solid materials of a structure; or even the alterations that occur when an idea is shared from one discipline or discourse to another. To listen well then is to be at all points alert to the effects produced by these transductions and how they shape the resulting phenomena, as well as how they illuminate the larger situation in which the signal circulates. As Helmreich contends,

20 Elizabeth Grosz, *The Incorporeal: Ontology, Ethics, and the Limits of Materialism* (New York: Columbia University Press, 2017), 184.

21 Sloterdijk, *Foams*, 565.

22 *The Great Refractor*, accessed October 20, 2025. https://www.andygraydon.net/The-Great-Refractor.

"More expansively, I suggest that a transductive ear can help to audit the boundaries, to listen for how subjects, objects, and presences—at various scales—are made […]. To think transductively is not only to listen to the changing qualities of signals as they propagate across media but also to inquire into the idea of the signal itself."[23]

In making *The Great Refractor*, I took up the challenge to think transductively by convening a group of researchers, including scientists but also artists and writers involved in research, and asked them to join me in a chorus: we listened to a set of audio recordings of their own findings and those of their peers—sounds that included hydrophone recordings; sunspot activity; gravitational waves; EMF radiation from telescope arrays—then imitated these concrete noises with our voices, becoming an unruly chorus of vocal utterances. The goal was not to decipher these findings as signals, but to inhabit their forms and energies from an intimate, even internal vantage—to bring the signal inside and emit it again from oneself, then trade it along to the next participant, tracing the transductive modulations occurring down the chain of listening, interpretation and expression. The results of this process can be seen in the screening version of The Great Refractor available on *SSS Lab*. I include the work here in conjunction with this issue of *Sound Stage Screen* because it represents the beginning phases of a collective thought process leading to, and continuing through, the issue's development.[24] By taking the signal inside and exercising its potentials through one's own, each participant in *The Great Refractor* opens a communication between world and self that shows both to be fundamentally permeable, and indeed finds them already engaged in an ongoing conversation. The nature of inquiry shifts from object to the entire sensitive system linking action, sensing and knowing, effect and affect in a circulating rhythm. Circulating, but not closed: the transductive listener, even when attending to one's own voice, is attuned to influences from the outside at all times—to the crossing of membranes—from cell walls to ear drums to architectural partitions to disciplinary borders. It is in allowing for the active vibration, the disturbance, of the self across these thresholds that a greater openness to the forms of the strange outside can emerge, and perhaps become incorporated.

23 Stefan Helmreich, "An Anthropologist Underwater: Immersive Soundscapes, Submarine Cyborgs, and Transductive Ethnography," *American Ethnologist* 34, no. 4 (2007): 632–3.

24 See "Andy Graydon - The Great Refractor," *SSS Lab* (October 25, 2025), https://youtu.be/_zFCnJLCLMk.

This disturbance is rich in its implications. In Grosz's unpacking of Simondon's theories of biological becoming or ontogenesis, she is careful to emphasize the membrane's role in not only creating the individual, but in initiating a notion of time for the organism. The action of bringing-across the membrane defines the past and future: "The present can be understood as a movement of metastability between interior and exterior, between the past that constitutes the interior and the future which beckons from outside."[25] The crossing of the membrane initiates a lived time, a bringing-into-the present/interior from the future/exterior, the living through of which becomes the past of the organism. "For Simondon, the future lies on the exterior of the membrane, the past on the interior of the membrane, and the living being is a manner of regulation of the interaction of the multiple points of the past with the impending actions of the future."[26] At the same time, life changes qualitatively the entire notion of time, bringing it into a constantly folding and distending self-relation. "Life transforms the continuity of temporality, the time of physics, into forms of condensation, contraction, succession, chronologies not only of continuity but also of discontinuity and envelopment."[27] The membrane is critical not simply for the individuation of subjects and spaces, or to the expansion of those spaces into wider complexes, but to a more fundamental expansion: the production of the future itself and the potential for change. "This means that every individual is open to becoming more, to further orders or dimensions of self-complication."[28] Changes in life made by life, toward the goal of more and new forms of living. Again, relations are paramount, as it is this new temporality of life that forces the emergence of the thinking subject itself. Grosz quotes Deleuze and Guattari's intuition that it may be the thought which forms the thinker, the field which creates the subject, and not the other way around: "Philosophy, art, and science are not the mental objects of an objectified brain but the three aspects under which the brain becomes subject."[29]

The fundamental role of the membrane, as a barrier of separation, a connective surface and a site of necessary disturbance, is echoed in many of

25 Grosz, *The Incorporeal*, 186.

26 Grosz, 186.

27 Grosz, 185.

28 Grosz, 186.

29 Gilles Deleuze and Félix Guattari, *What is Philosophy?*, trans. Hugh Tomlinson and Graham Burchill (New York: Columbia University Press, 1991), 210. Quoted in Grosz, *The Incorporeal*, 163.

this issue's essays. In "The Soundscape of Nothing," Gabriel Saloman Mindel pinpoints the importance of Raven Chacon's stipulation that his work be played on a church organ, binding its performance to the sites where indigenous voices were displaced by the force of settler religion and power, becoming the "voiceless mass" of the work's title. The sounding of the work itself becomes a resonant act of disturbance, and at the same time an attempted reclamation, a re-making of a new whole from what had been torn apart by colonialism. This question of how to disturb structures effectively in order to create new wholes is taken up by Ryan C. Clarke's notion, spanning geology, cultural history, and musicology, "of the sediment diversion as a way to resist those forces that conspire, contain, and foreclose the world."[30] Meanwhile, the figure of silence haunts the edges of this discourse, looming spectrally over discussions of sound and space like a disturbance in the negative, or an anticipated call that never arrives. Behar and Cecchetto examine in terribly familiar detail the negative resonance of sound withheld, in the form of mobile device alerts that no longer need to ring because they have become fully internalized by us as users. These tacit cues, an amodal graft into our attention and consciousness, are integral to techno-structures of extraction, exploitation and exhaustion, a haunting from which we may never be free. Mindel reminds us that "*Voiceless Mass* is music haunted by the silence of its missing choir,"[31] and explores the political violence that can occur when we define silence as emptiness, as with modern music's fetishization of silence as purity, and with landscape photography's attempts to render nature as empty space. Throughout these discussions, John Cage's infamous "silent piece" *4′33″* appears repeatedly, an impish house spirit whose provocations cannot be ignored, no matter how much one tries. In discussing a cameo by *4′33″* in her film *The Tuba Thieves*, O'Daniel locates the productive friction at the center of the canonical piece, and its valence for our interest in the membrane as both exclusion and connection: "Deafness is also misunderstood or mythologized as being about silence or being an experience of silence … Part of what John Cage was investigating, that I think is so beautiful and powerful, is this allowance of everything to come in."[32] It is, then, with this invitation for everything to come in that I welcome you to this issue of *Sound Stage Screen*.

30 Clarke and Nardone, 48.

31 Gabriel Saloman Mindel, "The Soundscape of Nothing: Raven Chacon's Silence Against Settler Colonialism," *infra*, 119.

32 Alison O'Daniel in conversation with Pablo de Ocampo, "The Tuba Thieves," *infra*, 93–4.

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