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Introduction

Sound modernities: histories of media and modern architecture

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*'Seems', madam? Nay, it is; I know not 'seems'.¹
William Shakespeare, Hamlet (to his mother)*

Sound is everywhere, ephemeral and physical. We control our environment with our speech, ordering the gendered voices of our digital assistants and commanding voice recognition systems to transcribe tones to electrical signals that then travel through cables, antennae, and satellites. Machines talk to one another even in our absence. Telephones listen to televisions, whilst the bigger economic conglomerates are eavesdropping on our vocalisation of desires and identities. We carefully curate the soundtrack of our atomised acoustic bubbles. Some of us find comfort and concentration in acoustically dampened environments, and some seek out noise to put ourselves to sleep or make private our discussions. We protest, meditate, chatter, complain, make music together or alone, or listen to others. Sound is evidently knowable in so many everyday practices, where aesthetics and politics manifest themselves sonically.

Despite its ubiquity, sound is largely missing from histories of architecture and the built environment. Historians and scholars often rely on their critical gaze to unlock the interpretative potential of objects, buildings and sites. These ocularcentric architectural histories, following the tools and man-

nerisms of Western art-historical methods, look at the built environment through various scales (from object to territory) and media (from bricks to master plans). They do so with an asymmetrical focus on visuality, both as the method and resource of writing about space, ultimately, displacing the multi-sensorial spatial experience outside the purview of architectural analysis.

Sound Modernities started as a conversation, during our doctoral studies, when we discovered that we shared a research fascination with sound as a question, problem and material in the history of modern architecture. Our exchanges opened up to us the many topics beyond the bounds of our respective dissertations. This Issue of *The Journal* covers a few of those themes, pointing to possibilities found in the archives of architectural knowledge in the long twentieth century, from monographic studies to investigations of cities, from silence to noise, and from chambers to landscapes.

We ask: what can architectural history learn from using sound as its primary evidence? In other words, the Issue explores an *acoustemology* of the built environment in an effort to understand, as Steven

Feld put it, 'what is knowable, and how it becomes known, through sounding and listening'.² Acoustemology's critique of Western historiography and its visual focus forges new venues for architectural and urban history and the different sets of actors who shape the built environment.

The possibility for an acoustemology of modern architecture may be most apparent in the spectacle of the everyday. The soundscape, as a sonic topography, also inspired R. Buckminster Fuller's 'Thoughts on Creativity, Sensorial Reality, and Comprehensiveness' in his talk on 'The Music of The New Life'.³ The philosopher and planner Jean-Francois Augoyard proposed 'sound-walking' as a method in urban studies, inspiring Michel de Certeau to write on walking in the city.⁴

Previously, architectural historians examining the intersection of acoustics and architecture either discussed concert halls and cathedrals as the acoustic architectural environments *par excellence*, or delved into questions of proportion and the transfer of musical ideas and concepts to architectural culture, such as the Wagnerian *Gesamtkunstwerk*, Schoenbergian serialism, and Xenakian explorations of form in music and architectural envelopes. Recent scholarship has expanded this interest in acoustical phenomena beyond the realm of musical sound, from Cold War fabrications to Hi-Fi in suburbia, and from radio infrastructure to sound photography.⁵

Communication technologies such as the wireless and the telephone demonstrate how through the study of the everyday one can also tell stories about the larger infrastructures, that transform the local, and their geopolitics. These technologies produce a mediated public that, to follow Kate

Lacey, prescribe new positions and power structures among listeners and speakers, governing and governed bodies.⁶ Incorporating a wide range of disciplines, telecommunication networks entangle the urban fabric with old imperial and new institutional webs of information circulation, challenging traditional notions of citizenship and state sovereignty, as Nicole Starosielski demonstrates.⁷ This deep engagement with the sound of modern architecture inevitably turns acoustics from 'a matter of fact' to 'a matter of concern'.⁸

The industrial production of insulation material promised an untapped potential for environmental control that transformed the housing industry and, by extension, ideas about the sounds permitted within the domestic sphere, as Emily Thompson has shown in *The Soundscape of Modernity*.⁹ Soundproofing in architecture warrants the exclusion of unwanted sounds from buildings, but offering proof that sound is a knowable phenomenon means the opposite, namely the inclusion of sonic experience into the realm of architectural histories. Architects and designers transformed sound into a central field of design inquiry, a material to build with, and a concept to think through.

With such entanglements in mind, the acoustic histories of twentieth-century architecture in this issue bring forth forgotten archives and overlooked connections, to make audible the sounds and the debates surrounding acoustics that took part in shaping the modern environment. Each contribution reveals one of the many forms of modernity that architects and planners produced while encountering sound in their projects. The authors investigate the spatial construction of acoustics, as well as the

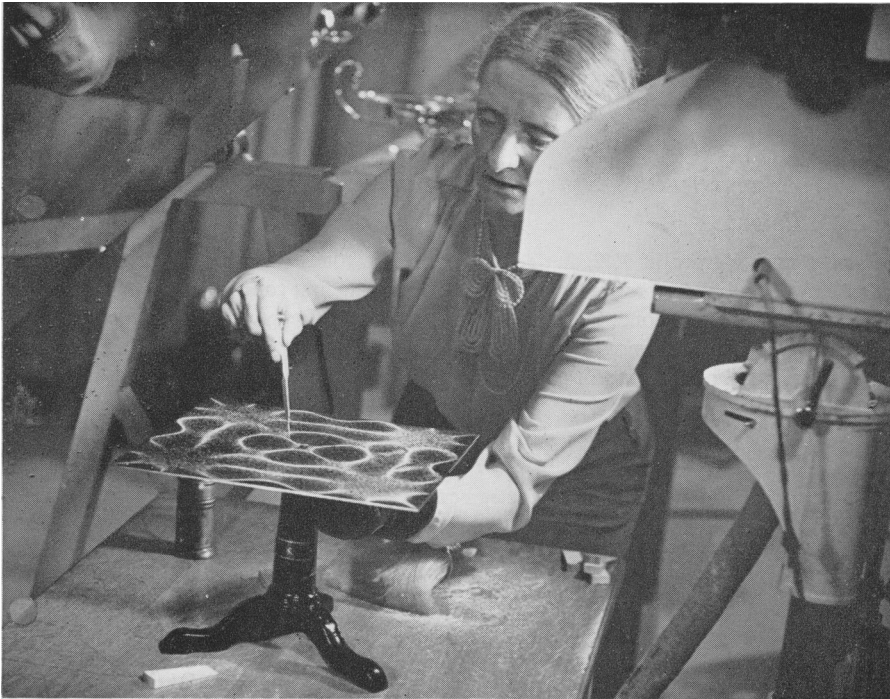
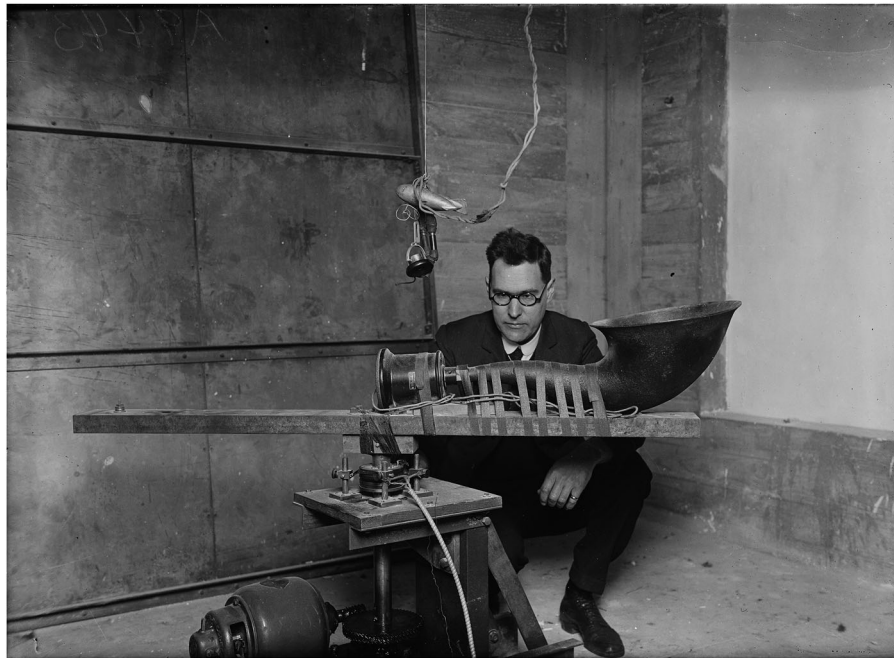


Figure 1. Mary Desiree Waller, 1938, re-enacting Chladni figure experiments for early television (image source: Mary D. Waller, *Chladni Figures. A Study in Symmetry* [London, Bell, 1961]).

reception of new acoustic modalities in architectural culture during the twentieth century, and demonstrate how crucial the forms and politics of sound are to a comprehensive history of architecture and space at large. Our goal is to put forward sound as a knowable, material basis of and a productive new entry point into the study of architecture and the environment, especially as pertaining to histories of media and modern architecture. At the same time, our Issue forges a place for architecture in the growing field of Sound Studies.¹⁰

During the twentieth century, the acoustic sciences evolved into a professional and academic field that offered opportunities for interdisciplinary collaborations. The mathematician Mary Desiree Waller performed Chladni figures for the BBC Mini Series in the 1930s (Fig. 1), whilst the acoustic engineer Vivian Leroy Chrisler at the National Bureau of Standards tested amplifiers (Fig. 2). If photography was the mass medium transforming architectural culture in the late-nineteenth and early-twentieth centuries, the phonograph was the other to mark

Figure 2. Vivian Leroy
Chrisler, c. 1930,
looking over a
loudspeaker horn at the
National Bureau of
Standards (image
source: American
Institute of Physics;
Emilio Segré Image
Archive).



the passage to an architectural modernity. Modern architects seized the opportunity to determine their place both in the domestic realm and the public, shaping the social space surrounding them and, even more so, cultures of listening. For example, the defining object within Hannes Meyer's Coop interior is neither the mounted folded chair nor the minimum-existence bed, but rather the horn of the phonograph that socialises the otherwise nomadic affect of the room (Fig. 3).

Sound Modernities declares that all environments are acoustic, even in the absence of audible sounds.

The authors call for close examinations of sound as a cultural, spatial, economic and aesthetic construct. By investigating the practice and discourse of architects, engineers, acousticians, composers, doctors, patients and publics, the essays ignite a groundbreaking dialogue between cultural studies, institutional histories, socio-technical histories of sound and architectural histories. The contributors engage with the full spectrum of architectural programmes and practices, from landscape design and telecommunication infrastructure to assembly halls, libraries, banks and hospitals. Our goal is to broaden this new

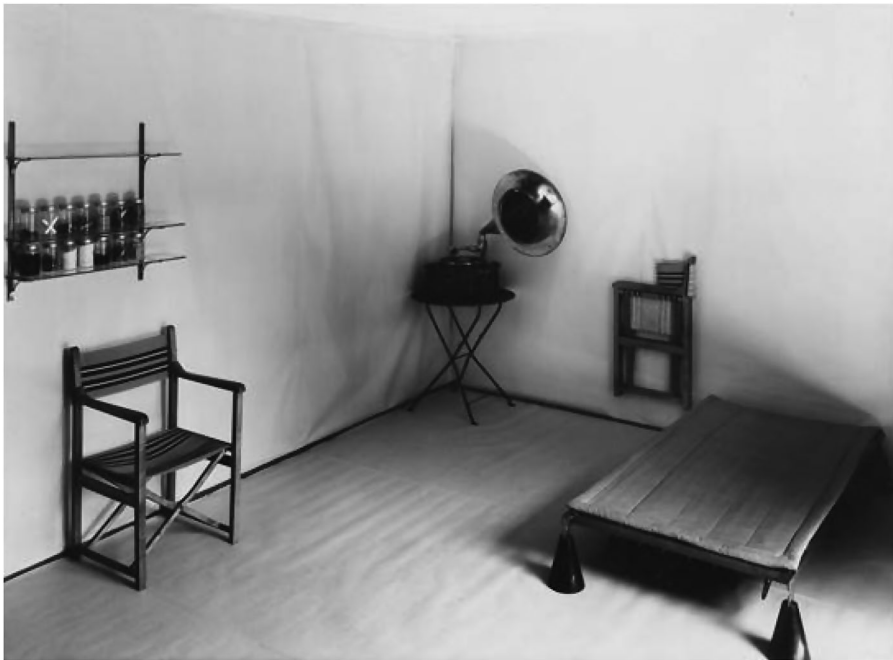


Figure 3. In Hannes Meyer's CO-OP bedroom, 1926, the gramophone amidst the radically minimal furnishings also stood for a social agenda (image source: gta Archives, ETH Zürich).

field of inquiry and, in scrutinising these sound formations, to acquire a better grasp of the historical shifts and forces that shaped modern architecture, while addressing questions of scientific method, aesthetics and politics at large.

With 'Frank Lloyd Wright's intuitive sound modernity', Jack Quinan examines the architect's approach to sound as a material to build with and explores how Wright brought the soundscape of his houses into dialogue with the surrounding landscape. He discusses the important role of music in his life and explains that, at times, the architect projected

himself to the world as a composer of space and buildings. Quinan argues that Frank Lloyd Wright called for a subjective use of acoustics that did not follow his contemporaries' quantitative and empirical approach, but rather called upon the architect to determine what the acoustics of a space should be.

In 'Lines for listening: on Gustave Lyon's geometrical approach to acoustics' Carlotta Darò takes the perspective of an acoustician and follows Gustave Lyon, the prominent acoustic consultant in France, in his effort to establish his 'ortho-phonics' method within the world of architectural acoustics. Her

article unpacks the endless modernist attempts to tackle the 'mystery' of acoustics in a methodical and visual way that spoke to the modernist architects' ocularism. She proposes that Lyon's geometric method of resolving and calculating reverberation shaped modern architecture's encounter with acoustics, and sparked a major debate on the value of empiricism and calculation in architectural production and design.

Debates over architectural *versus* electrical amplification of sound were prevalent in the League of Nations competition. Whilst following the statements over the questionable feasibility of loudspeakers at the end of the 1920s, the entanglement of technologically driven narratives with political agenda and social debates materialised in arguments over acoustics. In her essay 'Debating volume: architectural vs. electrical amplification in the League of Nations, 1926–28', Sabine von Fischer merges the widely known rhetoric of the architectural historian Siegfried Giedion and of participating architects in the competition with recently discovered material on the practice of Franz Max Osswald, Switzerland's first academic expert on architectural acoustics.

Radio, or the wireless, as Shundana Yusuf shows, offered the potential for an ear-centric approach to architecture. In 'The porous shells of radiophony, or towards a theory of radio stations', she considers the emergence of a typology for early broadcasting radios and contends that broadcasting studios challenged architects to consider the aural dimension of the quotidian life. Yusuf asks what these early examples can tell us about the reception of the concepts of ephemerality, virtuality and simulation in

modern architecture, as well as architecture's role in shaping the studios for the production of virtual architectures for radio dramas to be consumed at home.

Acoustics were also an essential component of the design of modern institutions and their organisation. Olga Touloumi asks us to consider the acoustic environment of the modern library. In 'Sound in silence: design and listening cultures in the Woodberry Poetry Room' she focusses on Aino and Alvar Aalto's Woodberry Poetry Room at Harvard University to explore how modern architects shaped social practices of listening together and cultures of atomised listening alone. Bringing attention to the central place that phonographs and turntables held in the architectural imaginary, Touloumi argues that modern architects reimagined listening stations as the new hearths of modern life and used their design to shape social space structured around the poetic voice within the silent sanctuary of the modern library.

David Theodore explores the question of sound within the institutional framework of medical spaces and the hospital. 'Sound medicine: studying the acoustic environment of the modern hospital, 1870–1970' looks at the emergence of acoustic problems in response to the treatment of the human body and medical practices. He argues that within the context of hospitals, architects were called in to respond to sound problems, especially noise, concluding that actually the 'cure' to sound is architectural.

Other essays address sound as a communicative medium that extends beyond its immediate physical surroundings. Sandra Jasper's 'Sonic refugia: nature,

noise abatement and landscape design in West Berlin' discusses the emergence of an acoustic ecology in the Cold War wastelands of West Berlin, where architects and planners treated air pollution and noise with landscape design, researching the properties of plants and implementing new rules of urban zoning according to their findings. These efforts, she claims, speak to early twentieth-century ideas of nature as remedy. Jaspers argues that landscape designers understood noise as a matter of public health and urban nature as the answer to that problem.

Michael Windover discusses the design of the national radio infrastructure for the Canadian Broadcasting Corporation. In 'Building radio publics in post-war Canada', he situates CBC within the larger effort to reconstruct post-Second World War Canada as an industrialised and connected nation. Windover demonstrates that the radio infrastructure presented architects with an opportunity to investigate modernist aesthetics, as well as to endow the public with instantiations of the Canadian welfare state and its objective to connect and bring coherence in the production of a harmonised 'imagined community'.¹¹

Gretta Tritch Roman expands the domain of acoustic inquiry to the soundscapes of capitalism. In 'Tumult unchained: the Chicago Board of Trade pits and the order of noise', she looks at the response to the chaotic and noisy flow of capital and the architectural efforts to contain it with structures of rationality, such as bells and trade pits. Tritch Roman demonstrates that the naturalising processes of commodification were not only an architectural business, but rather an environmental one, and

that the Chicago Board produced cacophony as ordered noise.

In addressing all these questions, *Sound Modernities* launches a critical discussion of the aural history of space and the spatial history of aurality. Rather than a conclusive statement, the essays in *Sound Modernities* offer an opening to the many more stories that are yet to be told about modern architecture and acoustics. As guest editors of this Special Issue, we hope that the conversation continues, in order to amplify and complicate this initial line of inquiry beyond the Western world and its modernities.

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4. Michel de Certeau, 'Walking in the City', in *The Practice of Everyday Life* (Berkeley, Los Angeles, University of California Press, 1984), pp. 91–110. His borrowing from Jean-Francois Augoyard's research for his dissertation 'Pas à pas' is discussed in: Justin Winkler, 'Zur Einführung: Gehen als widerständige Alltagspraxis', in J. Winkler, ed., *Gehen in der Stadt* (Weimar, Jonas, 2017), p. 12. See also Jean-François Augoyard, Henry Torgue, eds, *Sonic Experience: A Guide to Everyday Sounds*, David Ames Curtis, transl. (Montreal, McGill-Queen's University Press, 2005), pp. 9–17.
5. A growing number of historians of architecture and media are embracing acoustics as a valid field of inquiry that bridges some of the gaps in the visual histories. Journals have been taking up the topic of sound, most notably *Audio/Visual* (2011), Mara Mills, John Tresch, eds, and *Acoustic Modernity* (2015), Joseph L. Clarke, ed., both Special Issues of the journal *Grey Room*. Jonathan Clarke's essay 'Cata-coustic Enchantment: The Romantic Conception of Reverberation' was originally presented at Olga Touloumi and Sabine von Fischer's 2014 panel *Sound Modernities*. Books range from Carlotta Darò, *Avant-gardes sonores en architecture* (Paris, Les presses du réel, 2013) to Mark Wigley, *Buckminster Fuller Inc. Architecture in the Age of Radio* (Zurich, Lars Müller Publishers, 2015). Essays on sound and architecture: Dianne Harris, 'A Tiny Orchestra in the Living Room: High-Fidelity Stereo and the Postwar House', in *Places Journal* (April, 2015): <https://placesjournal.org/article/a-tiny-orchestra-in-the-living-room/> [accessed 20/05/18]; Olga Touloumi, 'Contentious Electronics/Radical Blips', in *Architecture Is All Over*, Marikka Trotter, Esther Choi, eds (New York, NY, Columbia University Press, 2017), pp. 160–175; Sabine von Fischer, 'A Visual Imprint of Moving Air: Methods, Models, and Media in Architectural Sound Photography, ca. 1930', in *Journal of the Society of Architectural Historians*, Vol. 76, no. 3 (2017), pp. 326–348, which will be followed by a larger study of Switzerland's first acoustic expert in *Das akustische Argument. Wissenschaft und Hörerfahrung in der Architektur des 20. Jahrhunderts* (Zurich, gta publishers, forthcoming).
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10. Jonathan Sterne has been pioneering the field and supporting research on sound across disciplinary divides. For a survey of the field, see the recent reader Sterne edited, *The Sound Studies Reader* (London, Routledge, 2012).
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