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# «Noise, Music, and the Meaning of Modernity»

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*The following is a revised version of a talk presented to the Société de Physique et d'Histoire Naturelle de Genève on 22 October 2004. It is drawn from The Soundscape of Modernity: Architectural Acoustics and the Culture of Listening in America, 1900-1933 (The MIT Press, 2002).*

In 1920, a Japanese governor visited the United States for the very first time. «My first impression of New York,» he admitted, «was its noise.» Initially appalled by the clamor that surrounded him, he soon became enamored of the task of listening to the noise and identifying individual sounds within the cacophony. «When I know what they mean,» he explained to a reporter, «I will understand civilization.»<sup>1</sup>

Like that visitor from long ago, I have attempted to listen to the sounds of the past in order to comprehend the civilization that created all that noise. In the 1920s, native New Yorkers, as well as foreign visitors, considered the pervasive din that surrounded them to be the keynote of modern civilization. Some chose to celebrate this noise while others sought to eliminate it. All perceived that they lived in an era uniquely and unprecedentedly loud. I believe we can better understand that era if we listen carefully to those sounds and examine critically how people attempted to control them.

Of course, people have always complained of noise. Buddhist scriptures dating from 500 years before the Christian era list the «ten noises of a great city,» and this list includes horses, chariots, elephants, drums,



Fig. 1: William Hogarth, «The Enraged Musician,» Hogarth Moralized (London: J. Major, 1831), facing p. 138. Graphic Arts Collection. Department of Rare Books and Special Collections. Princeton University Library.

cymbals, and loud people, among other things.<sup>2</sup> And complaints of noises similar to those compiled by the Buddha have been voiced continually over the centuries. The ruins of ancient Pompeii include a wall marked by graffiti that pleads for quiet. The din of eighteenth-century London was well captured by artist William Hogarth in many of his prints, particularly «The Enraged Musician» (1741). [Fig. 1] The

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<sup>1</sup> *New York Times Magazine* (1 February 1920): 13.

<sup>2</sup> E.V. Wilcox, «To Heal the Blows of Sound» *Harvard Graduates' Magazine* 33 (June 1925): 584.

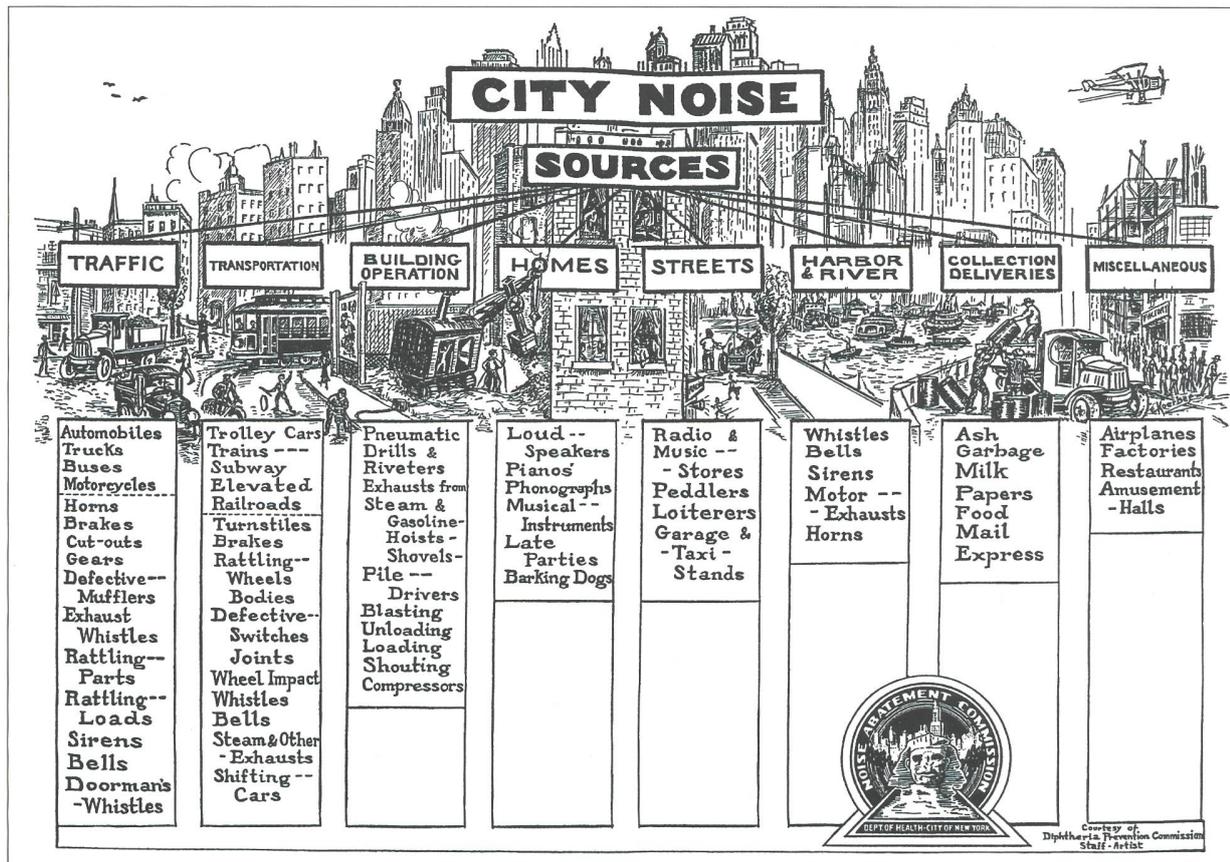


Fig. 2: City Noise (New York: Department of Health, 1930), Frontispiece.

acoustical distress suffered by Hogarth's musician – from street musicians, noisy craftsmen, and fighting cats, among other things – was experienced by countless other urban inhabitants as cities' populations increased more rapidly than their geographies expanded. In the nineteenth century, as the congestion resulting from urbanization further concentrated the noises of everyday life, the frequency – as well as the urgency – of complaint only rose. Goethe hated barking dogs; Schopenhauer despised the noise of drivers who cracked their horse whips; Thomas Carlyle tried – without success – to build a sound-proof room at the top of his London townhouse to escape the noise of the city's streets.

The sounds that bothered Carlyle and Goethe were almost identical to those that had been identified by the Buddha centuries earlier: organic sounds created by humans and animals, at work or at play. These sounds constitute the constant sonic background that has always accompanied human civilization.

With urbanization, these sounds were certainly concentrated. With industrialization, however, new kinds of sounds began to offend. Over the course of the nineteenth century, the sounds of the factory, the railroad, and the streetcar were gradually added to the city's sonic score. But in the early twentieth century, a whole new onslaught of sounds descended with unprecedented force and rapidity, and people were forced to come to terms with these new sounds in unprecedented ways. [Fig. 2]

When a medical doctor in America catalogued «The Plague of City Noises» in 1896, almost all the noises he cited were traditional sounds: horse-drawn vehicles, peddlers, musicians, and animals.<sup>3</sup> Less than thirty years later, however, this «plague» had mutated into a very different organism. Indeed, by 1925, it was no longer organic at all:

«The air belongs to the steady burr of the motor, to the regular clank clank of the elevated train, and to the chitter of the steel drill. Underneath is the rhythmic roll over clattering ties of the subway; above, the drone of the airplane. The recurrent explosions of the internal combustion engine, and the rhythmic jar of bodies in rapid motion determine the tempo of the sound world in which we have to live.»<sup>4</sup>

<sup>3</sup> J.H. Girdner, «The Plague of City Noises» *North American Review* 163 (September 1896): 300.

<sup>4</sup> «Noise» *Saturday Review of Literature* 2 (24 October 1925): 1.

TABULATION OF NOISE COMPLAINTS—March 1, 1930		
SOURCE	NUMBER	PERCENT
Trucks—Motor .....	1,125	10.16
Automobile Horns .....	1,087	9.81
Radios—Homes .....	774	7.00
Elevated Trains .....	731	6.62
Radios—Street & Stores .....	593	5.36
Automobile Brakes .....	583	5.27
Ash & Garbage Collections .....	572	5.17
Street Cars .....	570	5.16
Automobile Cut-Outs .....	504	4.55
Fire Department Sirens and Trucks .....	455	4.12
Noisy Parties and Entertainments .....	453	4.10
Milk and Ice Deliveries .....	451	4.07
Riveting .....	373	3.37
Subway Turnstiles .....	317	2.86
Buses .....	271	2.45
Trucks—Horse Drawn .....	268	2.41
Locomotive Whistles and Bells .....	238	2.15
Pneumatic Drills—Excavations .....	233	2.11
Tug and Steamship Whistles .....	223	2.01
Pneumatic Drills—Streets .....	213	1.93
Newsboys and Peddlers .....	212	1.91
Subway Trains .....	183	1.65
Dogs and Cats .....	140	1.26
Traffic Whistles .....	137	1.24
Factories .....	117	1.06
Airplanes .....	113	1.02
Motor Boats .....	66	0.59
Motorcycles .....	41	0.37
Restaurant Dishwashing .....	25	0.22
	11,068	100.00

CLASSIFICATION		
SOURCE	NUMBER	PERCENT
TRAFFIC (Trucks, Automobile Horns, Cut-Outs, Brakes, Buses, Traffic Whistles, Motorcycles)	4,016	36.28
TRANSPORTATION (Elevated, Street Cars, Subway)	1,801	16.29
RADIOS (Homes, Streets & Stores)	1,367	12.34
COLLECTIONS & DELIVERIES (Ash, Garbage, Milk, Ice)	1,023	9.25
WHISTLES & BELLS (Fire Dept., Locomotives & Tugs & Steamships)	916	8.28
CONSTRUCTION (Riveting, Pneumatic Drills)	819	7.40
VOCAL, ETC. (Newsboys, Peddlers, Dogs, Cats, Noisy Parties)	805	7.27
OTHERS	321	2.89
	11,068	100.00

Fig. 3: Results of a 1930 survey of noise in New York. City Noise (New York: Department of Health, 1930), p. 27.

All felt challenged to respond to the new soundscape in which they now lived.

While nineteenth-century Americans had celebrated the hum of industry as an unambivalent symbol of material progress, many people in the early twentieth century began to argue the opposite. Noise was now the enemy of progress, an unnecessary expenditure of energy, a sonic symbol of inefficiency and waste. In New York in 1906, a group of concerned citizens (including the novelist Mark Twain) formed the Society for the Suppression of Unnecessary Noise. The Society sought to introduce legislation to prevent the creation of noise, particularly around hospitals and schools. Some laws were passed, but they were only weakly and selectively enforced, and most people who were bothered by particular noises were forced to take the particular noisemakers who bothered them to court, to sue for silence before a judge.

In 1925, for example, Mrs. Martha Sanders, the superintendent of an apartment building, took her tenant Arthur Loesserman to court, complaining that the music student constantly

Not long thereafter, the amplified output of loudspeakers was added to the score and the transformation was complete. When New Yorkers were polled in 1930 about the noises that bothered them, only 7% of their complaints corresponded to traditional sounds. [Fig. 3] The ten most troubling noises were all identified as the products of «machine-age inventions.» Clearly, the sound world circa 1930 had little in common with that of 1900. To those who lived through this transformation, the change was dramatic and deeply felt. Some were energized, others enervated.

«pounded on the piano and scratched the fiddle.» Mrs. Sanders brought two witnesses to corroborate her complaint. In his defense, Mr. Loesserman brought only his violin. Upon hearing his rendition of *Ave Maria*, the audience in the courtroom burst into applause and the judge dismissed the complaint.<sup>5</sup> In another case, Miss Veronica Ray defended the late-night sounds of the Russian Music Lover's Association by arguing, «Why, we number among our members Feodor Chaliapin and other singers of fame. Their music is music any time and any place.» This time the judge disagreed, and he stipulated that the club's music must stop before midnight.<sup>6</sup>

Without a general law regarding noise in place, each case could only be settled on an individual basis and the results were inconsistent – there was no objective means by which to define noise and thus to enforce

<sup>5</sup> «Wins with Violin in Court» *New York Times* (15 January 1925): 12.

<sup>6</sup> «Late Music a Nuisance» *New York Times* (26 July 1924): 2.

its suppression. Courts of law were not, however, the only place in which the definition of noise was being tested in the 1920s. In nightclubs and concert halls, musicians too were responding to the new sonic environment by exploring the distinction between noise and music.

The connection between jazz and the sound of the city was evident to virtually all who listened in. In 1925, the African-American journalist Joel Rogers explained, «With its cowbells, auto horns, calliopes, rattles, dinner gongs, kitchen utensils, cymbals, crashes, clankings and monotonous rhythms, jazz bears all the marks of a nerve-strung, strident, mechanized civilization.»<sup>7</sup> Rogers was an enthusiast, but critics of jazz similarly disparaged the new music as, not music at all, but simply noise. In addition to jazz artists, many avant-garde composers were similarly challenging their audiences by bringing noise into the concert hall.

«The Joys of Noise» were what inspired composer Henry Cowell to explore what he considered to be a «natural element of music.» «Music and noise,» he wrote in 1929, «according to a time-honored axiom, are opposites.»

«If a reviewer writes, 'It is not music, but noise,' he feels that all necessary comment has been made.

Within recent times it has been discovered that the geometrical axioms of Euclid could not be taken for granted, and the explorations outside them have given us a non-Euclidean geometry and Einstein's physically demonstrable theories. Might not a closer scrutiny of musical axioms break down some of the hard-and-fast notions still current in musical theory?»<sup>8</sup>

In fact, by 1929, numerous com-

posers had already weakened those axioms considerably. As early as 1905, Charles Ives in America and Ferruccio Busoni in Italy had begun to lead the way. By the 'teens, Italian Futurists like Luigi Russolo were arguing for a new kind of music to fit the modern world. «Noise is triumphant,» Russolo proclaimed, «and reigns sovereign over the sensibility of men.» «Today,» he continued, «the machine has created such a variety and contention of noises that pure sound in its slightness and monotony no longer provokes emotion.»<sup>9</sup> Russolo designed new «noise instruments» to create a new, noise-based music. Others, like the French composer Edgard Varèse and the American George Antheil, used traditional instruments in untraditional ways, creating music that led audiences to create some untraditional noises of their own, including hisses, boos and the occasional riot. Most critics dismissed the new music. For example, Olin Downes of the *New York Times* characterized Varèse's *Hyperprism* as a medley of «election night, a menagerie or two, and a catastrophe in a boiler factory.»<sup>10</sup> But others, like critic Paul Rosenfeld, heard something more. «For

Fig. 4: Chart of noise levels out of doors. City Noise (New York: Department of Health, 1930), p. 131.

NOISE LEVELS OUT OF DOORS DUE TO VARIOUS NOISE SOURCES				
SURVEY OF NEW YORK CITY NOISE ABATEMENT COMMISSION		NOISE LEVEL	OTHER SURVEYS	
DISTANCE FROM SOURCE	SOURCE OR DESCRIPTION OF NOISE		SOURCE OR DESCRIPTION OF NOISE	SURVEY NO
		DB		
		130	THRESHOLD OF PAINFUL SOUND	4
		120		
2	HAMMER BLOWS ON STEEL PLATE-SOUND ALMOST PAINFUL (INDOOR TEST)	110	(AIRPLANE; MOTOR 1600 R.P.M; 18 FT FROM PROPELLER)	5
			AERO ENGINE UNSILENCED-10 FT	4
		100		
35	RIVETER			
15-20	ELEVATED ELECTRIC TRAIN ON OPEN STRUCTURE	90	PNEUMATIC DRILL-10 FT.	4
			NOISIEST SPOT AT NIAGARA FALLS	2
15-75	VERY HEAVY STREET TRAFFIC WITH ELEVATED LINE	80	HEAVY TRAFFIC WITH ELEVATED LINE, CHICAGO	7
15-50	AVERAGE MOTOR TRUCK		VERY NOISY STREET NY OR CHICAGO	1
15-50	BUSY STREET TRAFFIC	70	VERY BUSY TRAFFIC, LONDON	4
15-50	AVERAGE AUTOMOBILE			
3	ORDINARY CONVERSATION			
15-300	RATHER QUIET RESIDENTIAL STREET, AFTERNOON	60	(AVERAGE SHOPPING ST, CHICAGO)	6
			(BUSY TRAFFIC, LONDON)	4
15-50	QUIET AUTOMOBILE			
	MINIMUM NOISE LEVELS ON STREET:	50	QUIET AUTOMOBILE, LONDON	4
			QUIET ST BEHIND REGENT ST, LONDON	4
15-500	IN ENTIRE CITY (MIN. AVERAGE DAY TIME)			
50-500	IN MID-CITY (MIN. INSTANTANEOUS NIGHT)	40		
50-500				
		30	QUIET ST, EVENING, NO TRAFFIC (SUBURBAN LONDON)	4
		20	QUIET GARDEN, LONDON	4
			AVERAGE WHISPER - 4 FT	3
		10	QUIET WHISPER - 5 FT. RUSTLE OF LEAVES IN GENTLE BREEZE	4
				3
		0	THRESHOLD OF HEARING	

<sup>7</sup> J.A. Rogers, «Jazz at Home» in Elaine Locke, ed., *The New Negro* (1925), pp. 219 and 218.

<sup>8</sup> Henry Cowell, «The Joys of Noise» *New Republic* 59 (31 July 1929): 287.

<sup>9</sup> Luigi Russolo, «*The Art of Noises*» trans. Barclay Brown (1916; trans. 1986), pp. 23-24.

the concert-hall just quit,» Rosenfeld wrote after hearing Varèse, «overtones and timbres and rhythms corresponding to the blasts and calls of the monster town had formed part of a clear, hard musical composition: a strange symphony of new sounds, new stridencies, new abrupt accents, new acrid opulencies of harmonies. Varèse has done with the auditory sensations of the giant cities and the industrial phantasmagoria, their distillation of strange tones and timbres, much what Picasso has done with the corresponding visual ones. He has formed his style on them. Or rather, they have transformed musical style in him by their effect on his ears and his imagination.»<sup>11</sup>

Clearly, some musicians – and some listeners who appreciated this music – reacted constructively and creatively to all the new sounds that surrounded them in the modern city. More typically, however, people sought to eliminate this noise as it was perceived to be only destructive.

In the 1920s, the work of earlier reform-minded organizations like the Society for the Suppression of Unnecessary Noise was superseded by a new generation of technical experts, sound engineers and acousticians who brought powerful new tools and techniques to bear in the ongoing battle against noise. In 1929, the city of New York formed a Noise Abatement Commission to study – with scientific precision – the problem of noise, and to present a plan of solution. Armed with new electric sound meters, the engineers of the Noise Abatement Commission went out into the streets to map and measure the city's noise. A new, objective technique for measuring noise, expressed in a new unit of sound called the decibel, enabled these men to understand scientifically the amount and distribution of noise in New York. [Fig. 4]

Others, including physicians and industrial psychologists, brought their science to bear on studies of the impact of noise on human health and behavior. If earlier noise-abaters had understood only generally that noise constituted an inefficient waste of energy, by 1930, numerous studies could calculate the degree of that waste to the very calorie and dollar. Researchers demonstrated that noise inhibited digestion, raised blood pressure and brain pressure, and perhaps even worse – could reduce the mental or manual output of workers by as much as thirty percent. Noise was shown to cost the American economy as much as five million dollars per week.

People read about these studies in newspapers and magazines, and the work of New York's Noise Abatement Commission was soon being duplicated in cities across America and around the world. But the new ease with which scientists could now measure noise was not matched by a similar success in actually abating it. The Noise Abatement Commission of New York was active for two years (1930-1932), during which time it met with very limited success in convincing the municipal government to rewrite the city's laws regarding noise. Local politics – which were plagued by scandal and corruption – impeded the Commission's efforts, and with the onset of the Depression, the problem of noise was soon overshadowed by far more significant social and economic challenges.

Early twentieth-century efforts to solve the problem of noise had focused on attempts to eliminate noise by regulating the actions of noise-making people and machines. The goal was to control the public soundscape of the city, to enforce and ensure the civic right of all people to enjoy a noise-free environment. This goal was not attained. Simultaneous with this failed effort to control the public soundscape, however, modern acousticians were far more successfully exerting control over the soundscape of private life. Indeed, the success of this latter approach may be partially responsible for the failure of the former. Even as the Noise Abatement Commission measured and mapped the noise in the streets of New York, new sound-absorbing building materials were being deployed to transform homes, offices, hospitals, and hotels into shelters from that noise. By manipulating and controlling private space, by turning inward and creating acoustically efficient refuges from the noise of public life, architectural acousticians offered a compelling alternative solution to the problem of noise.

Earlier in the century, these new sound-absorbing materials were employed in special locations, places that people visited but did not continually inhabit, for example churches and concert halls. As the problem of noise propagated in the 1920s, the use of such materials migrated out into the spaces of everyday life. Still, American architects struggled to integrate these modern acoustical materials into a visual aesthetic that looked exclusively to the past for exemplars of architectural beauty.

When the New York Life Insurance Company constructed new headquarters in 1929, for example, their office skyscraper was designed to look like a towering Gothic cathedral. It was filled with innovative new materials, sound absorbing felts, that were applied to ceilings and walls to eliminate noise. These materials were not considered to be aesthetically pleasing, however, so they were disguised

<sup>10</sup> Quoted in Louise Varèse, *Varèse: A Looking-Glass Diary*, Vol. 1: 1883-1928 (NY: Norton, 1972): 224.

<sup>11</sup> Paul Rosenfeld, *An Hour with American Music* (1929; Hyperion, 1979), pp. 160-162.

behind painted murals or otherwise concealed throughout the building.

In Europe at this time, a new generation of modern architects – like the modern musicians – were rejecting the aesthetic rules of the past and creating a radically new style of building, one that celebrated modern technology as vociferously as did the noisy compositions of Luigi Russolo and Edgard Varèse. Americans were slow to embrace the new approach to design, but modern architecture finally made a bold debut in Philadelphia in 1932, when a young Swiss emigré named William Lescaze teamed up with the venerable American architect George Howe. Together, Howe & Lescaze created a sleek new office tower for the Philadelphia Saving Fund Society, the first large scale modern building in America, and the first modern skyscraper to be built anywhere in the world. [Fig. 5]



Fig. 5: Philadelphia Saving Fund Society Building, 1932. PSFS Archive, Box 6, Folder: PSFS Building Exterior Views. Courtesy of Hagley Museum and Library.

The PSFS Building was not only state-of-the-art modern architecture, it was also state-of-the-art acoustical technology. It was filled throughout with sound-absorbing materials, and this time these materials were not disguised or hidden, but visually celebrated as a crucial element of the modern interior. [Fig. 6] The ceilings of the PSFS building were constructed out of suspended acoustical tiles which also incorporated custom-designed lighting and air-conditioning fixtures to offer complete tech-

Fig. 6: Office space in the Philadelphia Saving Fund Society Building, 1932. PSFS Archive, Box 3, Folder: Open Office Space. Courtesy of Hagley Museum and Library.



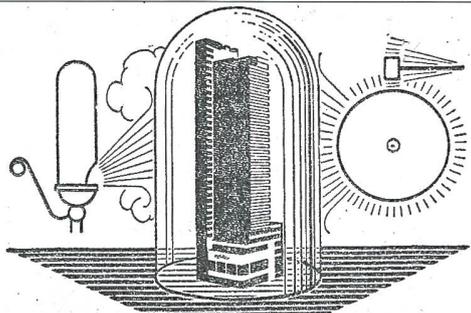
nological control of light, heat, and sound. The mass-produced tiles additionally created regular, modular patterns that modern purists required. When the Museum of Modern Art presented a pathbreaking exhibit on the new modern architecture, the curators of that exhibit referred to «the geometrical web of imaginary lines» that «integrates and informs a thoroughly designed modern building.»<sup>12</sup> In the PSFS building, this imaginary web became real, stretching out across the ceilings of the rooms and swallowing up the wayward sounds that impinged upon its orderly surface.

The PSFS building offered an unprecedented degree of control over sound, and it did so by acoustically isolating its inhabitants from the larger world. [Fig. 7]

<sup>12</sup> Henry-Russell Hitchcock and Philip Johnson, *The International Style* (1932; W.W. Norton and Co., 1966), p. 61.

Fig. 7: Newspaper ad for Philadelphia Saving Fund Society Building, 1932. MSS Acc 2062 (Box 90). Courtesy of Hagley Museum and Library.

The PSFS building celebrated its quiet, boldly advertising the fact that it was cut off from the noisy city as effectively as if it were in a vacuum, sealed tightly within a hermetic bell jar. The modern solution to the problem of noise was achieved, not by reforming urban space, but by denying it, by turning buildings into placeless and spaceless artifacts that defied their location in the world. This architectural solution to the problem of noise would succeed where campaigns for noise abatement had failed, and we continue to inhabit the architectural legacy of this world today.



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