

Conference Proceedings:

Sound, Language and the Making of Urban Space

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KEYNOTE

The Sonic Revolution of 19th Century Copenhagen

Jakob Ingemann Parby

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The author is Senior Researcher and Curator at the Museum of Copenhagen and PI of the Sound of Copenhagen-project since 2019-2025. His most recent book is 'Den Grænseløse By - København 1850-1920' (GAD, 2022).

This talk takes its cue from ongoing work on a monography about the sonic and aural history of 19th century Copenhagen to be published in spring 2025. In the book I use a mapping of urban aural and sonic experiences to explore the role of noise, sound and listening in the recalibration of power, spaces and identities that took place in the Danish capital at the time.¹ An important impetus for this mapping was the notion of the 19th century as a particular 'auscultative age', 'an era devoted to sound and listening' suggested by Jonathan Sterne and John M. Picker.²

As demonstrated by Alain Corbin urban societies saw from the late 18th century onwards an increasing amount of noise complaints among the educated classes. This can probably be ascribed to a change in sleep patterns among burghers that rose and went to bed later than the average population, but also to a new sensitivity and new ideals of privacy, that lowered the threshold of tolerance.³ During the 19th century, industrialization and urbanization transformed the urban soundscape and led to further reinterpretations of the conditions of urban existence and the consequences of a perceived auditory and sensory overload.⁴ Simultaneously, the invention of new aural and sonic technologies like the stethoscope, the telegraph,

1 For similar studies on other cities, see f.i.: P. Payer, *Klang der Grossstadt: Eine Geschichte des Hörens. Wien 1850-1914*, (Vienna: Van den Hoeck/Ruprecht, 2018); Aimée Boutin, *City of Noise: Sound and Nineteenth Century Paris* (Urbana: University of Illinois Press, 2015).

2 J. M. Picker, *Victorian Soundscapes* (Oxford: OUP, 2003), introduction; J. Sterne, *The Audible Past: Cultural Origins of Sound Reproduction*, (Durham/London: Duke University Press 2003).

3 P. Coates, 'The Strange Stillness of the Past: Towards an Environmental History of Sound and Noise', *Environmental History*, 10, (2005), 64; A. Corbin, *Foul and Fragrant: Odor and the French Social Imagination* (Harvard: Harvard University Press, 1986), 57 and 59 and A. Corbin, *The Culture of the Senses in the Nineteenth-Century French Countryside* (New York: Colombia University Press, 1998), 304-5.

4 G. Simmel, 'The Metropolis and Mental Life', Levine, D. N., ed. *Georg Simmel on Individuality and Social Form*. (University Press of Chicago 1971/1903), 324-339.

and the phonograph both inspired and were nurtured by new listening practices and ‘audile techniques’.⁵ The technological and epistemological advances in medicine, sound reproduction and communication fostered alternative understandings of and specializations within the aural field. Last, but not least, the ideological battleground of the emerging class society imbued the experience of urban soundscapes and sounds with new content and meaning.⁶

Factory whistles and aural flânerie

My talk unfolds how part of this general process of aural and sonic change took place in 19th century Copenhagen. Let us start with a novel sound, that came to dominate the urban soundscape of Europe in the latter part of the era:

And then the factory whistles began to sound. [...] At first, a couple of them could be heard out in Nørrebro, then one at Christianshavn. In the end, their sounds came from everywhere – a cockcrow of a hundred voices – a matutina [morning prayer] of a new age, that would soon drive all the ghosts of darkness and superstition in the ground.⁷

In this rather thick description of an industrial signal sound, the steam whistle, in solitude and concert, we get a sense of an urban soundscape, now lost. We can still reproduce the sound of individual steam whistles, but the experience of the multitude of slightly differently sounding steam whistles spreading across town and creating a kind of involuntary musical piece, eludes us. The passage, from the novel *Lucky Per* by the Danish author Henrik Pontoppidan, not only conveys an impression of the soundscape itself, but also the meaning ascribed to it by some of its contemporaries. The sense of multiplicity, of hundreds of steam whistles interacting in a kind of orchestrated wake-up call hovering over the big city. Interpreted by Per/Pontoppidan as a harbinger of progress and of the possibilities offered by the new modern, industrialized society. Similar positive readings of the factories’ steam whistles can be found in other sources too. In an overview of Danish Industries published in connection with the Nordic Exhibition of Industry, Agriculture and Art in Copenhagen in 1888, it is described how the monasteries and castles of the past have been replaced by industrial castles of work ‘with their skyward,

5 Sterne, *Audible Past*, 91-99.

6 P. Simpson, ‘Sonic affects and the production of space: ‘Music by handle’ and the politics of Street Music in Victorian London’, *Cultural Geographies*, (24, 1, 2016), 89-109; S. Llano, ‘Mapping Street Sounds in the Nineteenth-Century City: A listener’s guide to social engineering’, *Sound Studies*, (4,2, 2018), 143-61.

7 H. Pontoppidan, *Lykke-Per*, I-III, (Copenhagen: Gyldendal, 1905), I, 104.

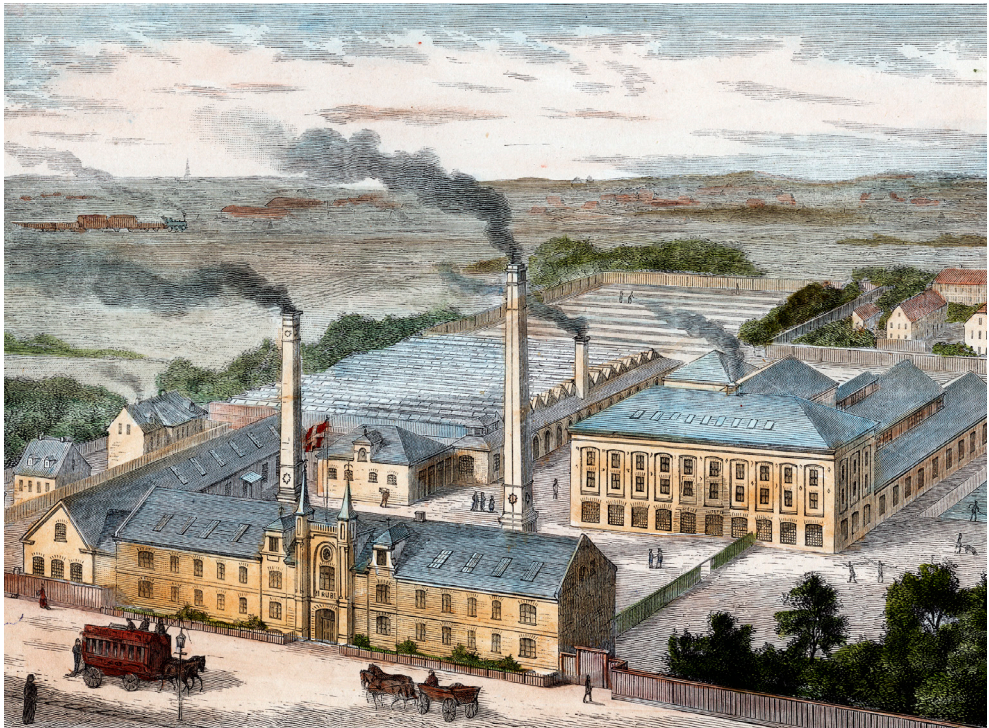


Fig. 1: Ruben's Clothes Factory, Frederiksberg. App. 1885. Museum of Copenhagen.

smoke-spewing chimneys. The piercing sound of the steam whistle has long ago replaced the tolling of the castle and monastery bells [...].⁸

These readings of the industrial steam whistle orchestra are examples of what Canadian scholar Aimée Boutin has dubbed 'aural flânerie', referring to the ability and inclination of some 19th century urbanites to transform the disorganized and often chaotic sounds of the city into meaningful compositions.⁹ It is well documented how visual flânerie and the figure of the flaneur in this era became increasingly tied to a uniquely modern urban sensibility embedded in the crowds of the modern metropolis. To Charles Baudelaire the flaneur was a mirror as vast as the crowd itself; a kaleidoscope gifted with consciousness, responding to each one of its movements and reproducing the multiplicity of life. The composer Victor Fournel compared the flaneur to a 'mobile and passionate daguerreotype'.¹⁰ But the modern flaneur was more than an 'untouchable mobile gaze', Boutin claims. Rather he/she was bathing 'in a multitude of sounds and sights' that he/she 'organized into a panorama that presented the attractions in an orderly narrative'.¹¹ The

8 N. Malmgreen, *Danmarks Industrielle Etablissementer, I-III*, (Copenhagen: N. Malmgreens Forlag, 1886-1889), I, preface.

9 Boutin, *City of Noise*, ch. 1.

10 V. Fournel, *Ce qu'on voit dans les rues de Paris*, (Paris: Delahays, 1858), 268.

11 Boutin, *City*, 11-13.

aural flaneur interpreted the city as concert and gave musical form to what others experienced as disorganized noise.¹²

In Copenhagen, multiple examples of this kind of aural flânerie can be found in the works of another writer and journalist, Herman Bang. For instance, in this passage from his novel *Stuk* (*Stucco*) published in 1887:

*The crowd broke out of all gates, poured life and noise down the stairs and forward through the streets [...] row after row singing. At Kongens Nytorv the crowds coagulated into smaller, noisy and merry islands from which joyful trams broke out and away each in their own direction along the trails. Now the noise separated into the awaiting street mouths. Weaker and weaker it rolled forward through the vast silence of the houses; murmuring through a gate, down an alley – as if the silent gray rows of stone slowly absorbed it.*¹³

Here Bang combines the amassed sounds of voices, laughs and steps of the theatre audience pouring out into the streets with the acoustic quality of the built city. Elsewhere in the novel, other sonic phenomena are ascribed positive and negative values. For instance when the protagonist Berg recalls listening to the workers building “the new Copenhagen” on the old ramparts in the 1870s, the air full of ‘clanging hammer blows and song, as reels turned and wheelbarrows shedded’.¹⁴ Here the relative mundane sound of construction work is translated into a heralding promise of the new city emerging at the heel of the transformation of the city’s old ramparts into parks, boulevards and new residential neighborhoods. In other passages Bang even composes whole soundscapes loaded with meaning combining machine noises, tram bells, steamboat whistles and the sound of rush hour with hundreds of rumbling wagons and thousands of clogged feet of workers resounding on the pavement.

Aural flânerie also emerges from the memoirs by regular Copenhageners growing up in the late 19th century.¹⁵ Alf Cock Clausen remembers how the hundreds of wheels of horsedrawn wagons against the pavement ‘sounded like a continuous boiling’ and H. Malmberg remember ‘the clattering of clogs early in the morning and evening’ when a multitude of workers (among them his father) walked the

12 Boutin, *City*, 17-19.

13 H. Bang, *Stuk* (Copenhagen: J. H. Schubothe 1887), 17-18.

14 Bang, *Stuk*, 70.

15 Copenhagen City Archive (KSA), *Pensionisterindringer*, 1969.

paved streets on their way to work.¹⁶ A signature rush hour sound at the time, now forgotten.

The development and refinement of aural flânerie is one dimension of the sonic and aural revolution in 19th century Urban Europe. Another is appearance of ‘audile techniques’ or ‘virtuoso listeners’ mapped by Jonathan Sterne in his seminal work *The Audible Past* from 2003.

Rediscovering (urban) sounds and noises

During the massive urbanisation and industrialization of 19th century Europe, urbanites became exposed to a host of new sounds and intensified soundscapes that effected their understanding of urbanity and urban existence as well as their mental and physical health. Technological advances and inventions made doctors and telegraph operators into a kind of aural avantgarde of virtuoso listeners,¹⁷ who – being introduced to new ways of communicating with sound and listening to bodies and sonically transferred messages – fostered and promoted new listening regimes based on focused listening and the optimization of aural skills and vocabularies. In Copenhagen, it is possible to follow closely how the introduction of the stethoscope impacted understandings and vocabularies of bodily sounds and aural skills.

The stethoscope, first invented by the French doctor René Laennec in 1816, was an important addition to auscultation, a diagnostical practice used in the examination of patients with heart conditions and lung diseases like tuberculosis. The invention ideally transformed ‘talking patients with silent bodies to silent patients with talking bodies’, distanced the physician from his patient and, according to Laennec, made way for a more objective diagnostic practice.¹⁸

The first Dane introduced to this new instrument and diagnostical method was Oluf (Ole) Bang who visited Laennec in 1823 and after his return to Copenhagen held lectures on stethoscopy and its potential for his colleagues. Bang at the time worked as chief physician at the Frederik Hospital in Copenhagen and his word had impact. In his initial presentation of the new diagnostical tool and practice he expressed optimism and enthusiasm and helped the stethoscopic auscultation gain ground among Danish physicians. Bang was, however, never fully convinced about the new methods and later in life expressed his doubts and difficulties with

16 KSA, *Pensionisterindringer* 1969, no. 1873, Alf Cock-Clausen, b. 1886 and no. 1642, H. Malmborg, b. 1900.

17 Sterne, *Audible Past*, 99ff and 137.

18 J. Sterne, ‘Mediate Auscultation, the Stethoscope, and the “Autopsy of the Living”: Medicines Acoustic Culture’, *Journal of Medical Humanities*, (22:2001),115-36, 135.

mastering the new technology as one among many contemporary colleagues.¹⁹ Instead, his assistant physicians Seligman Trier and Emil Hornemann became the first to master stethoscopy in Denmark. They also produced the first instructions books on stethoscopy in Danish in 1830 and 1843.

Trier's book is primarily a mixture of passages from foreign textbooks combined with some of his own practical advice. F.i. the preface contains information were to buy a stethoscope in Copenhagen at a turner workshop in Pilestræde. The price was 9 Danish marks, equal to a day's wage for a district surgeon at the time.²⁰

Hornemann's book, on the other hand, documents the explosion of new terms and descriptions of bodily sounds that had appeared in the wake of Laennec's invention. A nomenclature, that, according to Hornemann, had made it very difficult for new doctors to access and learn the methodology. But now, in 1843, a consensus has been reached 'that the many newly invented signs, sonic nuances and wobbly descriptions [of bodily sounds] had mainly contributed to making the teaching of stethoscopy more complicated, blurred and impractical.'²¹ The need to rationalize and weed out the vocabulary was the next step in optimizing the auscultative method. Still, from an outsider, Hornemann's book is full of rather wobbly descriptions and terminologies on bodily sounds. He mentions f.i. bronchophonia, pectoriloquia, aegophonia, the fluctuation sound and the rattling sounds: vibrating sounds, blatter-rattle sounds, lung squeaking sound, veiled puffing, friction-sound, amforic breath-, voice-, cough- and drop sound as well as the metallic ringing.²²

In the beginning of his book Hornemann emphasized that, in recent years, the nomenclature of the auscultative medicine had been reduced as it had branched out in a too complex and no longer useful system, but the summary above demonstrates that it was still quite a large and rather vulnerable nomenclature, dependent on the training and interpretation of individual doctors.

The instruction book also exemplifies how the inventions of new technologies that enhanced and brought forth hitherto hidden or unheard sounds, gave rise to an obsession with the description, analysis and interpretation of specific sounds and conglomerates of sounds. Not only in, but also outside the body. Not least in the city. Thus, in one passage of his book, Hornemann explains how sound waves and acoustics work and even takes a crack at a definition of noise based on sonic

19 S. M. Trier, *Anviisning til at kjende Lunge- og Hjerte-Sygdomme ved Percussion og middelbar Auscultation*, (Copenhagen, 1830), vii. M. A. Skydsgaard, *Ole Bang og en brydningstid i dansk medicin*, (Århus: Aarhus Universitetsforlag, 2006), 136f.

20 Trier, *Anviisning*, IX-X, 89-90, XV,

21 E. Hornemann, *Stethoskopien og den stethoskopiske Diagnose: En Haandbog ved den kliniske Øvelse*, (Copenhagen: Reitzels Forlag 1843), 4.

22 Hornemann, *Stethoskopien*, 99ff.



Fig 2: Laennec at Necker Hospital, 1816, Wellcome Collection.

wave patterns: 'Noise [...] appears, when sound waves succeed each other in uneven intervals. If the intervals are regular, one will – as long as each sound wave and sonic impression can be separated from each other – simply hear a buzzing og crackling sound. If the sound waves follow in faster sequence that does not allow a separate perception of each sonic impression a note is heard, the height of which is a product of the order of the sound waves.'²³ The instruction book offers an incredible insight into Horneman's simultaneous effort of both mastering and tutoring the stethoscopic diagnostical methods as well as his attempt to get a grip on the physics behind acoustical phenomena.

The detailed interest in the physics behind sonic experiences later found its way into popular media and publications aimed at the broader public. A new way of listening that accompanied the massive urbanization and sonic change and helped put it into words.

23 Hornemann, *Stethoskopien*, 20-21.

Urbanization and sonic change: the tramway

During the nineteenth century the total numbers of Europeans living in cities rose from 19 million to 127 million. The share living in cities with more than 5.000 people also grew from 10 % in 1800 to 29 % in 1890 and 41 % in 1910. The growth was accompanied by a transformation of the scale, extent, materiality²⁴ and reverberance of urban spaces. In his study of the sonic transformation of Vienna, Peter Payer, has documented how contemporary citizens experienced noise reverberating against new five to eight storied buildings with walls made entirely out of stone and iron. A kind of “street canyons” that “held together and amplified” sounds of traffic, animals and human voices and turned the city into a “stone vessel... from which noise cannot escape”.²⁵ The new layout of roads and buildings motivated by urban planners' increasing attention to the flow of people and commodities through the city, had the spread of background noise as an important sonic side effect. The background noise consisted of traditional but multiplied sources of noise like the horsedrawn wagons and clattering clogs already mentioned, interspersed with soundscapes influenced by new industries and infrastructures. One of the most significant new soundscape-elements came from the tramway.

The transformation of the urban plan and materiality accompanied an increasing interurban and intraurban mobility. The separation of work and living areas gave birth to mass-commuting as a new urban practice and to new forms of public and private transport like omnibuses, bicycles and – first and foremost - tramways. From 1870 to 1910 annual use of public transportation such as hired carriages, trams and the Stadtbahn in Vienna rose from 20 to 131 trips per person. In 1913 the tram system alone carried 322.6 million passengers on 3,001 electric streetcars.²⁶ A similarly development can be found in Copenhagen. Here the number of tram trips per inhabitant pr. year rose from 13 in 1866 to 84 in 1898 and 176 in 1912-13 and the extent of the tramway-system from 8,8 km in 1866 to 95 km in 1912-13.²⁷

Sonically, the bell signals and squealing of the tram became an acoustic symbol of the modern metropolis, that in a four- or five-minute interval “saluted the city” from early morning to late night. At the central station in Copenhagen, newcomers to the city experienced ‘the noise and rattling of trams, omnibuses, and the ringing and clanging of bells – laughter and footsteps and voices and yells,

24 De Vries, J: *European Urbanization 1500–1800*. Cambridge, Ma., Harvard University Press, 1984, 44-45. Bairoch, P.: *Cities and Economic Development - From the Dawn of History to the Present*. Chicago: The University of Chicago Press, 1988, 217

25 P. Payer, ‘The Age of Noise: Early Reactions in Vienna, 1870—1914’, *Journal of Urban History*, (33,5, 2007), 773-793, 775.

26 Payer, ‘Age of Noise’, 776-77.

27 S. Røgind, ‘Københavns Sporveje gennem 50 År’, *Nationaløkonomisk Tidsskrift* (3,21, 1913), 595-619, 617.



Fig. 3: Copenhagen Central Station with electrical tram, 1910. Museum of Copenhagen.

the barking of dogs and the stomping of horses. A confusing, bubbling, sound of life [from] a Copenhagen, that never sleeps!'.²⁸ (Fig. 3)

For some urbanites the sounds of the trams turned into habitual homeliness. The tram bell as a recurring – soothing – element in the rhythm of modern urban life is found in many journalistic and literary portrayals: ‘The buzzing noise of the city below her feet and the constant, distant rumbling of the carriages, comforted and calmed her, along with the bells of the approaching and disappearing trams [...]’.²⁹

In the literature published in late 19th century Copenhagen, the tramway-sounds, particularly its bells, work as a distinct reminder to their readers that the plot is situated in Copenhagen, the only big city in 19th century Denmark and until the early 20th century also the only Danish city with an extensive tram system. The tram bells are rarely central to the plot of the novels, but function as a sort of signal sound or even sound mark identifying Copenhagen to the reader and even conveying a special big-city-feel. The sound of bells attached to a mobile, repetitive infrastructure became a significant part of the soundscape and chronobiology of the streets and neighborhoods it passed through. (Fig.4)

28 *Dagbladet Kjøbenhavn*, December 11, 1892.

29 H. Bang, *Fædra – Brudstykker af et Livs Historie*, (Copenhagen, Schubothe, 1883), 128.



Fig. 4: Horsedrawn tram passing from Nørrebro to the City Center across Peblinge Bridge, 1884. Museum of Copenhagen.

Neurasthenia and the right to silence

For some the tram was a sonic intruder and its “whimpering howls” and “infernal noise” a recurring transgression of their “right” to silence. A complaint to the Viennese anti-noise society from the early 20th century described “the bell signals of the Viennese trams [as] the most hideous of any city in the world. They screech brutally, in a provocative, tormenting, and offensive way.” At the turn of 20th century, the extensive time schedule and spread of the tramway in the suburbs was cause of concern. Wilhelm Stekel, a Viennese doctor, wrote: ‘Far into the hours of sleep, the noise goes on and on. The rattling of the vehicles, the buzzing and groaning of the electric tram, they keep our brains alert even while we are asleep.’³⁰ In a similar vein a Copenhagen-based doctor, Poul Hertz, wrote a piece on noise in 1901 arguing for change in the policies surrounding noise and noise-reduction in the Danish capital: ‘The Trams! Is it necessary that they make all this noise? Initially they were fitted with smaller bells, later replaced with larger ones the size of gate bells. And now these bells have given way to electrical apparatuses producing a noise equivalent of the blows of a sledgehammer. Are all this noise even necessary?’³¹ Hertz moved on to promote the need for asphalted and wooden road sur-

30 Payer, ‘Age of Noise’, 778 and 784.

31 P. Hertz, ‘Støj!’, *Nationaltidende*, April 23, 1901.

faces in Copenhagen, like the ones found in Strand or Piccadilly in London, to impede the ear-piercing noise from the endless flow of wagons through the streets. ‘This is not a matter of aesthetics’, Hertz concluded, ‘but rather of the preservation of a healthy mind and stable nervous condition among our inhabitants, that will in turn create more capable citizens – and fewer patients at the mental institutions.’³²

Hertz and Stekel’s comments are related to a broader medical and sociological analysis, that connected diagnoses of depression and anxiety to the presumed overstimulation of the sensory apparatus of urbanites also found in the Italian neuro-anthropologist Paolo Mantegazza’s bestseller *Secolo nevrosico*.³³ According to him, office clerks and middle-class women were particularly susceptible to nervous breakdowns in the booming cities, as their class, gender, sedentary tasks, and social pretensions made them vulnerable to the sensorium of urban life. ‘Neurasthenia’ was the medical term invented to describe the condition of the most heavily struck patients, a term that soon turned into fashionable description of the stressful nature of modern city life in a broader sense. Even among factory workers and middling to poor tenants.³⁴

In 1894 a Copenhagen landlord complained that insufficient planning regulations was a permanent threat to men of his profession. Landowners, endured the constant risk of having noisy industries and workshops move into their neighborhood almost overnight. Their machines operating from early morning to early evening created ‘an unhealthy environment that affected the health of all his tenants in a more or less nerve-wracking fashion’ and made them move away.³⁵ In another case, newspapers criticized the incessant noise from a machine factory close to the newly built school at Oehlenschlägersgade in Vesterbro. The employees at the factory were hammering out metallic kettles from dawn till dusk, creating a noise that made learning and teaching almost impossible and created a serious nuisance to the tenants in the apartment buildings surrounding the school as well.³⁶

Eventually such complaints led to a call for the improvement of urban health legislation to prevent noisy industries from being established close to schools and rental apartments. And even if such legislation did not come true in the immediate aftermath, the complaints anticipated the city- and later nation-wide noise abatement policies of the 20th century. They highlighted the need to separate industrial

32 Hertz: ‘Støj!’.

33 P. Mantegazza, *Nervositetens Aarhundrede*, transl. by P. D. Koch. from *Il secolo nevrosico*, (Florence, 1887), (Copenhagen: Vilhelm Priors Forlag, 1888).

34 J. I. Parby, ‘Fremskridtets lyd? Lydrevolutionen og håndteringen af støj under Københavns industrialisering ca. 1850-1910’, *Kulturstudier*, (12, 2, 2021), 41-71, 56-59.

35 *Dagbladet København*, August 14, 1894.

36 *Dagbladet København*, November 8th, 1897.



Fig. 5: Cover of Robert Henriques: Meditation Prélude sur les H.A.G.E., 1910.

from residential areas in future city planning. In 1907 the first planned industrial district in Copenhagen was established at Amager. And during the following decades, following the invention of the first sound-level meter in 1917, a more detailed and substantial regulation and monitoring of noise with specific limits on noise levels slowly took shape.

Noise, however, did not stop being an urban nuisance and talking point. As noise abatement became a more integrated part of urban policies, new sounds and noise components appeared as well. When the current Copenhagen City Hall was built between 1892 and 1905 and were equipped with a carillon consisting of 5 cast iron bells with a combined weight of 6 tons, the architect Martin Nyrop had three composers finetune the tone of each bell and create a bell signal for each quarter of an hour based on the notes h, a, g and e. The composition was an interpretation of the night watchmen's song of old and fitted in with the historicist ambitions of the architecture. But just as the night watchmen's song had been a source of complaint in the past, the new quarter-hourly bell signals became a concern for some citizens who feared it would interfere with their sleep and need for peace and quiet. Other citizens heard the new electrically driven and automated signal as another sign of modern productivity and awareness of the value of time, not unlike the celebratory descriptions of the factory whistles. Composers even created piano and orchestral compositions interpreting the sound signal of the city hall carillon and released them as illustrated music-books.

Today the sound of the city hall carillon of Copenhagen has become what Sound Studies founder Raymond Murray Schafer would have called a soundmark – a sound unique for a specific place, “printing their mark on a whole community”, f.i. the carillon of the City Hall of Stockholm, Big Ben or the Salvatore Mundi of Salzburg.³⁷ The City Hall carillon immediately had a similar function in Copenhagen, a function that has later turned it into a national soundmark every New Year, when the bell signals mark the new year for everyone in Denmark through mass media coverage. But this is another story – connected to a second or perhaps third aural and sonic revolution of Copenhagen, which should be a rewarding topic of future sound studies.

37 R. M. Schafer, *The Soundscape: Our Sonic Environment and the Tuning of the World*, (Rochester, Destiny Books, 1994), 239.

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