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# Metaphors of Tinnitus as an Acoustic Environment

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## *Abstract*

This paper is a qualitative study of metaphors at the levels of *lexico-encyclopedic conceptual* (LEC) metaphors (Johansson Falck 2018, *forthc.*) in nineteenth-century medical records of tinnitus and hearing disorders by English-speaking (the UK and the US) practitioners. Metaphor is essential for the linguistic and conceptual expression of illness (Semino 2008: 175) and, as we observe, remains endemic for the description of tinnitus in medical records. Our primary aim is to identify the metaphors used to describe the sounds of tinnitus, the kinds of experiences involved in these metaphorical conceptualizations and the cognitive and affording presence of tinnitus metaphors. The results suggest that metaphor provides a framework for the analogical reasoning about tinnitus and the methods of its treatment. Nineteenth-century accounts of ear diseases reference the sounds of biological and non-biological natural categories, transport and industrial sounds, the sounds of domestic interiors and music.

Metaphorical descriptions of tinnitus sounds connect with the affordances of the environment (Gibson 2015) and are inherent to the location and occupation of the patient. As our findings support the historical explorations of tinnitus accounts, they make it possible to contribute to our current understanding of tinnitus by highlighting the importance of a patient-centered approach and establishing the significance of metaphor analysis in tinnitus studies.

Keywords: the medical humanities; metaphor; affordances; personal geographies; soundscapes

## *1. Introduction*

Ringing, hissing, roaring, or buzzing noises, a chorus of singing voices or ‘the stormy midnight waves crashing against the lighthouse standing alone in the harbor’ (DiCesare 2020: 17)—the many forms and expressions of tinnitus reveal its hidden complexity and spatial outreach. Another example is librettist Eliška Krásnohorská’s quotation of Czech composer Bedřich Smetana who referred to the sensation of tinnitus as noises in his head:

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That ringing in my head ... that noise ... that is worst of all! Deafness would be a relatively tolerable condition if only all was quiet in my head. However, almost continuous internal noise which sometimes increases to a thunderous crashing tortures me greatly. This inexplicable pandemonium is pierced by the shrieking of voices, from strident whistles to ghastly bawling, as though furies and demons were bearing down on me in a violent rage. (Clapham 1972: 50)

The term *tinnitus* can be traced to Latin *tinnire*, (En. *to ring*) and it was supposedly coined by Pliny the Elder (CE 23–79) (Morgenstern 2005: 397). According to the American National Standards Institute (1969), it means ‘the sensation of sound without external stimulation’ (Jastreboff and Hazell 2004: 1).

In most cases, tinnitus is ‘subjective’ (in that only the individual reporting the sound can hear it) and there is no objective measure to determine its presence (Burns-O’Connell, Stockdale, and Hoare 2019: 1). Age, trauma, and occupational settings have a marked effect on tinnitus prevalence. Overall, tinnitus is more prevalent in older adults than in other population groups (Baguley et al. 2013: 13). It is higher in men and may be induced by stress, cochlea damage, and high-risk occupations with harmful exposure to noise (e.g., construction, machine-room, and hammering noise) (Engdahl et al. 2012). Reliance on patients’ reports in tinnitus diagnosis and treatment (Baguley et al. 2013: 115; Baldo et al. 2012: 6) points at the connection between perception, language, and subjective experience in expressing the sensations of tinnitus, and underscores the role of metaphor as a device that allows us to convey the disorder and trace the repertoire of past experience. Hence, the ‘stormy midnight waves’ and the ‘thunderous thrashing’ in the quotations above, reflect sensory experiences of tinnitus sufferers and shed light on the intensity and variation of distress associated with tinnitus as well as on the quality and spatial location of the disturbing sound.

This study deals with a qualitative analysis of metaphor in nineteenth-century medical records of tinnitus and hearing disorders by English-speaking (the UK and the US) medical practitioners. Our main aim is to identify the use of metaphor in audiological investigations of tinnitus, the kinds of experiences involved in these metaphorical conceptualizations, and the epistemological and affording presence of tinnitus metaphors. The methodology is developed in the tradition of combining literary and cognitive-based approaches to metaphor (Lakoff and Turner 1989; Semino and Swindlehurst 1996; Semino 2008: 36–80; Dorst 2019). Metaphor is

essential for the linguistic and conceptual expression of illness (Semino 2008: 175). Literary perspectives, as Semino proposes in *Metaphor in Discourse*, relies on the combination of ‘representative analyses and intuitive validity, rather than on hard figures’ and is ‘not in fact concerned with the overall frequency of metaphorical expressions, but rather on what *kinds* of metaphors tend to be used’ (56). A cognition-based approach positions tinnitus metaphors within the body of research on metaphorical expressions of illness.<sup>1</sup>

The present study is in the field of the medical humanities, and specifically narrative medicine, or ‘medicine practiced with narrative competence’, and might be useful for scholars and practitioners in this broad interdisciplinary field, including students of health professions (Charon 2001, 1897). According to Shapiro et al. (2009: 192), studies within the medical humanities teach health care professionals and students how to better understand and critically evaluate health care in order to become ‘more self-aware and humane practitioners’. Informed by clinical practice and patient-centered approaches, medical records of the past provide the means to understand the connections between the patient and the physician, and ‘the medicine’s discourse within the society it serves’ (Charon 2001: 1898). Specifically, tinnitus metaphors launch two ways of new affording possibilities: for diagnosis and for the treatment of tinnitus based on acoustic therapy.

By focusing on metaphor in tinnitus accounts, we aim to attract attention to the importance of metaphor in narrative medicine, and in particular to metaphorical descriptions of tinnitus as a hearing disorder. In addition, the study complements insights from a biomedical understanding of tinnitus by reducing the gap between the clinical measurable signs of tinnitus and their articulated experienced symptoms (Pryce and Shaw 2019: 428), and thus contributes to the development of a patient-centered approach and the humanization of healthcare.

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<sup>1</sup> For instance, studies on metaphorical expressions that convey the experience of pain (e.g., Semino 2010), cancer (e.g., Semino et al. 2020; Semino, Demjén, and Demmen 2018; Hendricks et al. 2018), HIV/AIDS (e.g., Sontag 1989), depression (e.g., Harvey 2004; Semino 2008: 175–90; Levitt, Korman, and Angus 2000; Fullagar and O’Brien 2012), anorexia (e.g., Bates 2015; Wilson and Wilson 2016), or recently added COVID-19 (e.g., Kennicott 2021; Kearns 2021; Burnette et al. 2021), among others.

First, we describe the primary sources and address the entanglements of medicine and the humanities in tinnitus diagnosis and treatment with the inclusion of historical perspectives. Next, we present the methods used for identifying metaphorical descriptions of tinnitus. Then we proceed to an in-depth qualitative analysis and discussion of the findings. The conclusion outlines the main results, limitations, and possible directions for future research.

## *2. Material: Attending to the voices of the past*

The study draws upon medical accounts of ear disorders that circulated in nineteenth-century Britain and America. The major etiology of what we now refer to as ‘subjective tinnitus’, or the ‘perception of auditory sensations inaudible to anyone but the patient’ (Goodhill 1952: 779) was clear in this period (Eggermont and Zeng 2012: 6). Studies of tinnitus inquired into what makes tinnitus audible and presented reports of how sounds were perceived and described in patients’ own words. A review by S. D. G. Stephens ‘The Treatment of Tinnitus – A Historical Perspective’ (1984) offers initial insights into such studies with a brief reference to the works of W. Wilde (1853), R. Brenner (1868), H. McNaughton-Jones (1891), J. Spalding (1903), J. H. Curtis (1831), and J-M. G. Itard (1821). For the present study, we inquired into the works of these authors, as well as other nineteenth-century medical treatises on ear disorders available in the public domain. In all, nine open-access medical texts written in English that specifically include references to tinnitus (i.e., symptoms described by patients or/and the treatments advised for the experience of tinnitus) were selected: W.R. Wilde’s *Practical Observations on Aural Surgery and the Nature and Treatment of Diseases of the Ear* (1853), J. Hinton’s *The Questions of Aural Surgery* (1874), G. P. Field’s *Tinnitus Aurium: A Paper* (1875), L. Turnbull’s *Tinnitus Aurium, Or, Noises in the Ears* (1875), W. D. Hemming’s *Tinnitus Aurium, Or Singing in the Ear. Remarks on Its Causes and Treatment* (1878) and *The Forms, Causes and Treatment of Tinnitus Aurium* (1880), H. McNaughton-Jones’ *Subjective Noises in the Head and Ears* (1891), D. B. S. J. Roosa’s *A Practical Treatise on the Diseases of the Ear* (1892), and J. Spalding’s *Tinnitus, With a Plea for its More Accurate Musical Notation* (1903).

The interconnections between medicine and the humanities in the lived experience of tinnitus benefits from paying attention to the historical explorations of tinnitus and harkening to the voices and sounds of the past.

In the 'Introduction' to *The Edinburgh Companion to the Critical Medical Humanities*, Whitehead and Woods give numerous points of reference to how the inclusion of historical perspectives into the (critical) medical humanities offers 'an alternative mode of moving beyond the dominant paradigm of biomedicine (2016: 6–7). Specifically, they summarize three main arguments as to how approaches within medical humanities profit from analyses of historical accounts: by offering alternative standpoints on how to interact with the biomedical, by attending to forms of critical thinking that were valuable in the past and still retain their value today, and by advancing our understanding of the alternating and continuous process of negotiation through which certain practices and objects are brought to or withdrawn from our attention (2016: 7). As Sabroe and Withington (2016: 509) suggest, attention to the language of medicine and health of the past gives an insight into 'the continuities and disruptions in the values and practices that characterize healing in the present'. Unpacking the history of tinnitus treatment is equally valuable as it may enrich our understanding of hearing conditions and the means to address them (Millar 2019: 406). Engaging with the historical in how tinnitus patients used to describe their experiences of tinnitus allows us to bridge past and contemporary practices in the continuity of mutual concerns. Finally, addressing patients' narratives from the historical scope works towards the existing goals of prioritizing the patient's voice and re-humanizing healthcare (Pryce and Shaw 2019: 431), as well as contributing to the understanding of tinnitus measurement, diagnosis, and treatment.

In effect, entangling the humanities into clinical research of tinnitus is necessitated by the concerns and preoccupations of tinnitus studies. Very few case studies on tinnitus position patients' narratives as the main focus of their research, which, according to Dauman et al. (2012: 2), retards contribution to 'an enhanced insight into the circumstances leading to tinnitus suffering'. Consequently, Dauman et al. (2012: 2) argue that the psychodynamic narrative approach could articulate the unique meaning behind the experience and enhance a clinical practice in its theory and methodology. Otherwise, according to Pryce and Shaw (2019: 248), turning tinnitus exclusively into an observable measurement, for instance, with the help of a listening aid in the ear canal (Baldo et al. 2012: 3), palpation and auscultation (Crummer and Hassan 2004) entails the risk of 'missing the opportunity to explore the subjective and meaningful aspects

of tinnitus’, thus reducing the experience of tinnitus to mechanics and dehumanizing sufferers.

Mobilizing narrative approaches in tinnitus diagnosing and treatment presupposes absorbing, interpreting and responding to the stories of illness (Charon 2001: 1897). Such process entails the use of appropriate narrative techniques that include interpretations of metaphor as fundamental to narrative medicine (Coulehan 2003) and the descriptions of tinnitus in nineteenth-century medical records.

### *3. Literary Perspective and LEC Metaphors*

What attracts practitioners in patients’ accounts of tinnitus is the metaphorical way experienced sounds are described. Although most tinnitus patients commonly ascribe such qualities as ‘ringing’ and ‘buzzing’ to their sensations (Stouffer and Tyler 1990: 443), more recent studies of tinnitus point to the fact that some patients report different and distinct combinations of sounds and find a metaphor for the sound (Baguley et al. 2013: 115). For instance, the study by Pryce and Shaw clearly gestures towards metaphorical descriptions of tinnitus, with patients reporting ‘invasion’ and ‘intrusion’ by noise in the individualized experiences of tinnitus (2019: 429). Baguley et al. (2013) outline the importance of asking the patient if the tinnitus sounds resemble anything heard before and observe that ‘there are many common metaphors for tinnitus’, with ‘ringing sounds’ as a commonly used metaphorical description of tinnitus (115–116). Although Baguley et al. (2013) note that tinnitus is not usually described as ‘something dramatic and interesting’, they outline the lack of systematic research into the perception of tinnitus sounds and suggest that this area ‘deserves further research as there are useful clinical implications for some patients’ (116). We explore this area using a qualitative analysis of metaphors of tinnitus in nineteenth-century medical records.

Most studies of metaphors and illness represent cognition-based approaches to metaphor and demonstrate the use of Conceptual Metaphor Theory (CMT), in which metaphorical mappings occur across conceptual domains and source-domain structures are used for reasoning about target domains (Lakoff and Johnson 1980). Analyses within a CMT framework have the potential of providing some insights into the metaphors of tinnitus (i.e., about what source domains are used for describing tinnitus in metaphorical ways), but their focus on conceptual mappings between

domains means that they cannot be used to identify speakers' metaphorical uses of more specific experiences to think and talk about tinnitus in metaphorical ways. With such metaphors of tinnitus as 'the stormy midnight waves crashing against the lighthouse standing alone in the harbor', tinnitus is not merely understood by means of the domain of WAVES, but by means of very specific waves connected with very specific qualities in a very specific context. The description evokes the mental scene of stormy midnight waves that crash against a lighthouse that stands alone in a harbor somewhere. The scene includes associations that contribute to our understanding of what the sound must be like, and ultimately to our understanding of what the tinnitus sound must be like to the speaker. Metaphorical mappings at this level of generalization must be considered if we want to give a full account of the metaphors of tinnitus. Such mappings are conceptual in the sense that they involve understanding one type of experience (someone's perception of tinnitus) by means of another type of experience (that of stormy midnight waves that crash against a lighthouse that is standing alone in a harbor somewhere), but richer in meaning than conceptual mappings at more schematic levels of abstraction. They are directly attested by the linguistic constructions that speakers use but inextricably linked to 'the stores of knowledge that allow us to make sense of [the linguistic constructions]' (Langacker 1987: 155). They are *lexico-encyclopedic conceptual (LEC)* metaphors (Johansson Falck 2018, *forthc.*).

Another aspect of tinnitus metaphors deals with the nature of representation. Metaphors of tinnitus not only involve visual imagery but mainly render acoustic experiences by means of sound qualities associated with objects, figures, and places. They are part of 'cognitive activit[ies] that make [...] use of different representational modalities' (Müller 2009: 58) and multimodal interaction of images and sounds that involve patients' experiences of acoustic characteristics of objects and places in particular. Underscoring the aural aspect of tinnitus metaphors reflects a shifting tendency to move away from what Pinch and Bijsterveld (2012: 11) call the ocular-centric perspective that dominates scientific paradigms in Western culture, and towards the role of sound and listening in science, medicine, and technology. Regarding the aural as knowledge producing makes it possible for us to apply an 'acoustemological' status to patients' experiences of tinnitus as it is in line with Steven Feld's 'acoustemology',



or a combination of ‘acoustics’ and ‘epistemology’ that theorizes sound as a ‘way of knowing (2015: 12).

Knowing through sound in tandem with the visual underscores the experiential status of audio-visual representations that involves the formation of knowledge through direct perception, memory, and environment. Regarding tinnitus, the epistemological characteristics of listening interact with diagnostic listening that supports intent behind the use of sound, when tinnitus patients are asked for descriptions of their tinnitus sensations.

Metaphors of tinnitus in their audio-visual characteristics rely on a rich repertoire of previous experiences and acts of perception that form the basis of how such experiences are verbally construed and of how they are interpreted and used for diagnostic purpose. Given this, they are lexico-encyclopedic as they engage with listeners’ embodied experience of the specific concepts by the specific lexical items they use (Johansson Falck 2018: 64). Converging evidence from corpus linguistic and psycholinguistic investigations (Johansson Falck and Gibbs 2012) shows that metaphorical mappings at this level of generalization are constrained by cognitive salience and by speakers’ embodied understanding of the world around them through affordances (cf., Gibson 2015).

The theory of affordances was developed by perceptual psychologist James J. Gibson, who describes the affordances of the environment as ‘what it [the environment] *offers* the animal, what it *provides* or *furnishes*, either for good or ill’ (2015: 119). The distinctive characteristics of affordances are as follows: they are relational properties and they are properties of ‘environmental features’ that exist independently of the perceiving individual (Heft 2001).

Affordances can be perceived on various levels, including aurally. Accordingly, Gibson’s theory of affordances provides a way of theorizing about tinnitus experience. Steenson and Roger (2015) discuss auditory affordances in connection with the different types of actions that we engage in with the world around us. They suggest ‘thinking about sounds as materials’ to account for this type of engagement (2015: 176). Drawing from Gibson’s ecological psychology and William Gaver’s accounts of musical listening, Steenson and Roger posit perception as the ‘*direct* pick-up of richly structured [...] information’ from the way it agrees with ‘the invariant interactions of physical environmental forces (2015: 175–176). In line with this argument, the ecological conception of auditory

perception allows us to account for the description of tinnitus sensations as based on interaction with the sonic environment on various levels, including physical perception and mental processing of events. An ecological approach to acoustic phenomena is in line with the concept of *soundscape* coined by composer and acoustic ecologist Murray Schafer as the sonic equivalent of landscape in an individual's experience of place: '[a] soundscape consists of events *heard* not objects *seen*' (1994 [1977]: 8). In their comprising relationships of sound, space and the listening subjects, soundscapes respond to how the memorized sounds from the environment supplement the individual's perception of place and afford for the communication of tinnitus experiences. Accordingly, we suggest that real-world sounds offer sufferers of tinnitus affordances for recounting and categorizing their experiences. This triggers a chain of affordances, for, when recounted as a metaphor, the experience forms a basis for response and affords for treatment strategies.

#### *4. Method*

Metaphorical descriptions of tinnitus were identified in a combined literary and cognition-based approach. We manually identified all references where tinnitus sounds (i.e., sounds generated within the head without external stimuli) are understood by means of an external audio-visual experience (e.g., as the sounds of nature, the sounds of music, etc.) by means of a contextual close reading of the texts. Tinnitus sounds such as these were considered metaphorical because they contrast with, and may be understood by means of, our experiences of sounds in the sense of the sensation produced in the organs of hearing. Overall, a high level of creativity and incongruity between the experience used to describe the tinnitus sound, as well as complexity, extension, and creativity of expressions involved in the description of tinnitus, added to the likeliness of a metaphorical interpretation. For example, 'the ringing of bells' for tinnitus sounds was interpreted as metaphorical, as opposed to simple 'ringing' (in the ears). Similar criteria are in focus in the metaphor identification procedure developed by Cameron et al. (2009). However, their suggestion that metaphors at the lexical level 'contrast to metaphors in thought' (Cameron et al., 2009: 71) is at odds with the view adopted here. We take descriptions such as the hearing of 'hammering on something hollow, like an iron foundry' (Field 1875: 23) to reflect an LEC

mapping of an (at times highly detailed) experience to describe the sensation of tinnitus in a metaphorical way.

Next, metaphorical descriptions of tinnitus were grouped into categories by shared sources (e.g., the sounds of insects, birds, and other animals were grouped into one category and the mechanical sounds into another one) to provide an overview of the types of experiences identified.

##### *5. Results: The soundscape of tinnitus in nineteenth-century medical records*

Many descriptions of tinnitus sounds in the medical records that we analyzed offer indexical information about the peculiarities of geography and occupation, or feature such sounds of nature as birds and insects. This categorization is generally ascribed to patients' sonic and spatial memories and is strongly grounded on experience. Wilde provides with a whole narrative as to how patients' accounts of tinnitus depend on their experiences, fantasies, and explanatory skills:

I think the descriptions which patients give of the noise which they experience depend, to a certain degree, upon their fancy, their graphic powers of explanation, and not unfrequently upon their rank of life, or the position in which they have been placed, and the sounds with which they are most familiar: thus, persons from the country or rural districts draw their similitudes from the objects and noises by which they have been surrounded, as the falling and rushing of water, the singing of birds, buzzing of bees, and the waving or rustling of trees; while, on the other hand, persons living in towns, or in the vicinity of machinery or manufactures, say that they hear the rolling of carriages, hammerings, and the various noises caused by steam-engines. Servants almost invariably add to their other complaints, that they suffer from 'the ringing of bells' in their ears; while in this country, old women much given to tea-drinking sum up the category of their ailments by saying, that 'all the kettles in Ireland are boiling in their ears.' The tidal sound, or that which we can produce by holding a conch-shell to the ear, is, however, what is most frequently complained of. (1853: 91)

This text was further utilized and praised by other practitioners who gave identical descriptions of tinnitus symptoms with their own patients. Roosa (1892: 348), for instance, admitted in his extended reference to Wilde that '[n]o description of tinnitus aurium has ever surpassed this one given by the great Irish observer'. What unites these observations on tinnitus sounds is the conviction that tinnitus is contextualized according to locality that is important in forming its meaning. The ways of territorializing tinnitus with people 'from the country or rural districts',

‘persons living in towns’ or ‘servants’ are bound with class and cultural status, but mainly reflect the phenomenology of experience—the patients’ personal geographies and relations with experiential settings. Similarly, in the beginning of *Tinnitus Aurium, or, the Noises in the Ears*, Turnbull gives a sharper focus to experiential status of the condition and connects tinnitus sounds to profession and habits. For instance, the servant ‘has a constant ringing of bells in her ears’, the engineer compares the noise with ‘a faint locomotive-whistle’, whereas the sailor identifies the sound of tinnitus with ‘the roar of the ocean’ (1875: 5).

The first category that we identified in the descriptions of the tinnitus experiences consists of **metaphors of nature**. The nature metaphor category contains elements that offer affordances for the expression of tinnitus sensations. Among the analyzed examples are those that relate to non-biological sounds of **water**, such as ‘the falling and rushing of water’, (e.g., Wilde 1853: 91; Field 1875: 7–8), ‘the falling of water in cataract’ (Hemming 1880: 3) or ‘the roaring of the sea’ (e.g., Field 1875: 7–8, 21). Macnaughton Jones refers to a range of water sounds, such as ‘sea roaring’, ‘rushing water’, ‘sea waves’, ‘rain falling’, and ‘waterfall’ (1891: 5–6). Another related group of sounds emanating from natural landscapes comprises the sounds of **trees**, such as ‘the waving and rustling of trees’ (e.g., Wilde 1853: 91; Field 1875: 7–8; Hemming 1878: 7) or a more intricate combination of sounds that combine different types of flora, such as the ‘rustling of leaves, or waving of ripe grain’ (Turnbull 1875: 5). Field notes a patient ‘R.B.’ whose tinnitus experience includes a noise like ‘being in a forest, the wind blowing very hard through the trees’ (1875: 23). Some observations of tree sounds record the cases of personification, with ‘the murmur of trees’ (Roosa 1892, 347) or the sounds of ‘trees agitated’ (Macnaughton Jones 1891: 5–6). Field (1875) alludes to more nuanced descriptions of tinnitus sensations that include multi-sensorial types of embodied experience with the environment: ‘The tidal sound, or that which we can produce by holding a shell to the ear, is, however, most frequently complained of’ (8).

The sources of tinnitus sounds include the humming, hissing, and buzzing sounds of **insects, birds, and animals**. The ‘buzzing’ (e.g., Wilde 1853: 91; Field 1875: 8; Hemming 1878: 6) displays differences in intensity when patients are trying to match their sounds to a particular tone with a specific insect and its location in space. As a result, patients report tinnitus sounds of varied loudness, from ‘the buzzing of a fly on the

window' or 'sound as that of a fly on a window pane' (Turnbull 1875: 35) to a closer sound of 'a fly buzzing in the ear' (Field 1875: 15, 23); and from deeper 'buzzing' sounds like 'the swarming of bees' (Field 1875: 23), to 'the buzzing of a bee' (Hemming 1880: 3). Sometimes the patient would use an extended multisensory metaphor for the tinnitus sounds to show the complexity and traumatic effect of the experience. The idiosyncrasy of such experience requires an affirmation of the patient's sanity: Macnaughton Jones (1891) refers to a female patient, 'a woman in no way insane who, as the result of tinnitus, firmly believed that an insect ha[d] entered into her ear and penetrated her brain, and it was constantly biting the latter, as she heard it within' (23). The 'hissing' sounds of tinnitus are represented by 'the hissing of a snake' (Turnbull 1875: 19), whereas the 'singing' tinnitus is compared to a bird song: Turnbull describes the case of a middle-aged woman who 'spoke of the noise as a low singing of birds' (1875: 5), and Macnaughton Jones reports of the 'chirping of birds' with some of his tinnitus patients (1891: 6).

Also identified is a **mechanical frame** that evokes the understanding of tinnitus sounds as transport and industrial sounds. Such metaphors connect perceptual experience with the realities of industrial development in nineteenth century Britain and the United States. In his seminal *Victorian Soundscapes*, John Picker refers to the age of industrialization in Victorian Britain as one of 'unprecedented amplification, unheard-of loudness': 'It was, to use Preece's words, an age "alive with sound": alive with the screech and roar of the railway and the clang of industry, with the babble, bustle, and music of city streets, and with the crackle and squawk of acoustic vibrations on wires and wax' (2003: 4). As to nineteenth-century America, Smith (2012) asserts that industrialization in the understanding of contemporaries was 'very much an aural affair' (40). The American soundscape underwent a considerable transformation with the cacophony of mills, the machine sounds of factories, and the sonic interventions of such transgressive technologies as steamboats or the railway. Eventually, machine sounds left their imprints in the soundscape of tinnitus.

Nineteenth century accounts of ear diseases reference the sound of **steam engines** as matching the sounds of tinnitus to express the pitch, loudness, and annoyance with the experienced sound. Wilde's (1853: 91) general observation on 'the various noises caused by steam-engines' opens up a more nuanced composition with Field's 'distinct' sound of 'a

steam engine blowing' and 'a steamer on the water' (1875: 18, 19), or Roosa's 'puffing sound [...] like the puff of a miniature steam-engine' (1892: 281). In fact, steam whistles came to dominate the industrial 'booms' of the time as 'the acoustic signal of industrialization' (Thompson 2002: 120), causing irritation and concern. Thompson explains that the sound of the steam whistle was disturbing for two reasons: its loudness and its unfamiliarity (2002: 117). Famous for his noise intolerance, historian Carlyle compared the 'mechanical scream' with 'the screech of ten thousand cats, each as big as a cathedral' (Thompson 2002: 117). Thus, it is not surprising that the rising density and noise of the steam engine brought about massive anti-noise complaints and resulted in Julia Barnett Rice winning her turn-of-the-century relentless campaign against steamboat whistles on the Hudson River.

Another scenario involves a different type of experience with tinnitus sounds presented in terms of **railway sounds**, such as 'a railway whistle heard coming into a station from a tunnel', a sound like 'meeting a lot of trains on the underground railway' (Field 1875: 21–23), 'a faint locomotive whistle' (Turnbull 1875: 5), or 'railway whistling' (Macnaughton Jones 1891: 6). As with steamboat whistles, the metaphorical noise from the railway pertains to the degree of annoyance both with tinnitus sounds and the source of their framing. Railway noise caused outrage from the public and in 1878 a group of doctors complained before the grand jury about the noise from the Metropolitan Elevated Railway Company in New York (Thompson 2002: 145). Transgressive mechanistic sounds reflect the patient's encyclopedic audio-visual experience with the world, which in certain cases correlates with the severity of the affliction. For instance, Field refers to a 'Mr. R' who suffered from chronic catarrh, deafness, and noise that the patient described in terms of 'Pickford's van filled with iron bars going over the stones' (1875: 22). The expression is linked to the patient's specific experience with Pickfords—a UK-based moving company that was founded in the seventeenth century. By the early nineteenth century, the company owned numerous canal boats, wagons, and horses and even built its own facilities ('The History of Pickfords').

Other expressions indicating the conceptualization of tinnitus sounds in terms of **mechanistic sounds** include 'hammering' noise, such as 'hammering on something hollow, like an iron foundry' or 'a noise heard in a stone-yard' (Field 1875: 23); 'whirring' sounds, like 'the whirr of the

wheel' (Turnbull 1875: 5) or the sounds of a 'mill wheel' (Macnaughton Jones 1891: 6); 'knocking sounds' (Turnbull 1875: 5); and muffled 'pumping sounds', like 'the sounds resembling the action of a pump' (Turnbull 1875: 19). The sounds invoke a series of experiential settings from engineers, millers, boiler makers, and other industrial workers of the time.

The areas of experience extend from outside noise to domestic interiors, where class status becomes more pronounced. Two metaphors for tinnitus sounds figure in the medical accounts: tinnitus as the 'ringing of bells in the ears' and tinnitus as 'the noise of a kettle (boiling)'. Where the class distinctions of the latter remain unspecified, the former gestures towards tinnitus experienced by servants. Wilde (1853: 91), Turnbull (1875: 5), Field (1875: 8), and Hemming (1878: 6) specifically allude to 'the ringing of bells' as the tinnitus symptom of servants, which gives an insight into the affordances of this representation. House bells or servant call bells were prevalent in the Western domestic household for operation, maintenance, and communication practices from the late 1700s to the early twentieth century (Madill 2013: ii), where 'the growing desire for privacy and improved technology led to the removal of all the servants' bedrooms to a separate attic floor, linked to those of their employers merely by a bell and a bell-wire' (Stone 1990: 212, cited in Meldrum 1999: 31). The master or mistress had only to pull a cord to summon a servant. In their use of house bell technology, the master or mistress exercised greater control over the servants' behavior and made their lives tougher as they expected them 'to drop their work at a moment's notice to attend to their master's summons' (Madill 2013: 12). The metaphor of mechanical bells for tinnitus sounds, insinuates the patient's annoyance with both tinnitus sounds and constant regulating bell ringing as the affordance for its auditory representation.

The metaphor of a **tea kettle** for tinnitus allows for less class precision but reveals a more nuanced experience with the affording sounds. The sonic compositions of metaphorical 'boiling kettles' include 'singing' sounds (Field 1875: 18; Turnbull 1875: 5; Macnaughton Jones 1891: 5), 'humming' sounds (Roosa 1892: 347), and more specific sounds mainly observed with elderly female patients. As such, Wilde refers to 'old women much given to tea-drinking' who describe their tinnitus as 'all the kettles in Ireland [...] boiling in their ears' (1853: 91).

With certain patients, tinnitus could sound like fragments of **songs or music**. Turnbull informs of an ‘old deaf lady’ who ‘was often serenaded by lovely voices and would inquire of her children if they did not hear the same sweet sounds’ (1875: 5). Yet more common are the descriptions of musical instruments linked to the speaker’s knowledge and proficiency in music. For instance, with Field, a female patient reported after the treatment of her ‘singing’ tinnitus that the noise turned to a completely different sound: ‘My head seems quite clear, and the noise is like a faint hurdy-gurdy, delightful compared to the other’ (1875: 18). Such an account of experience points towards the peculiarities of auditory affordance: a hurdy-gurdy is a Medieval stringed musical instrument resembling the lute or guitar that uses a wheel to rub strings and produce music. Other sounds of musical instruments include ‘drumming’ (Macnaughton Jones 1891: 6) or ‘the beating of a drum’ (Hemming 1880: 3), ‘piano’ sounds (Hinton 1874: 268), and ‘sounds like an Aeolian harp’ that Hemming connects to ‘deficiency of cerumen’ in the ears (1880: 3). Musical metaphors of tinnitus provide the auditory information that gives an insight into the patients’ embodied and encyclopedic relationship with the world and their situational activity with musical instruments as sounding objects.

The complexity of people’s experiences of tinnitus necessitated divergent ways of describing them, and some patients articulated their tinnitus sounds by **mixing the soundscapes** from different domains. Field (1875), for example, reports of a patient who had ‘two distinct sounds, which she describes, one like a steam engine blowing, and the other a singing noise like a kettle boiling’ (18), and a patient ‘E.O.’ ‘with constant severe tinnitus aurium like singing of a kettle and ringing of bells’ (21). With a case from Turnbull (1875), a tinnitus patient suffered from sounds ‘resembling the action of a pump and the hissing of a snake’ (19), whereas Macnaughton Jones (1891) references ‘a gentleman, aged fifty-three’ suffering from tinnitus and migraine, with the ‘noises he described as a “steam engine and a singing in both ears”’ (4). According to Gibbs (2016), such complex use of metaphor that employs more than one source domain in a stretch that addresses a particular experience ‘offers testimony to the cognitive flexibility that is the hallmark of human intelligence and creativity’ (ix). More specifically, mixing metaphors in the description of an illness can be accounted for by the intensity of this (distressing)



experience and be ‘purposeful’ in contribution to a ‘particular communicative goal’ (Charteris-Black 2016: 156).

In addition, if taken together through the historical lens, mixed metaphors offer an insight into the changing understanding of soundscapes in the age of Industrialization. In his studies of acoustic experience in the first factories of Lowell in industrialized America, Smith (2012) observed that the workers mediated the emergent soundscape through religious and natural terms. The Lowell women conceived of the noises of the factory in the context of remembered rural sounds, and one Lowell worker compared the cacophony of industry with pastoral sounds, which Smith connects to her possible tinnitus (2012: 48).

Thus, with selected accounts from tinnitus patients, industrial, domestic, and rural soundscapes meet in the representation of experience, where the diversity of sounds affords to foreground and explain the distressing situation. Moreover, mixing metaphors for the description of tinnitus suggests a mechanism by which sounds complement each other and reflect the tendency of nineteenth century industrialized society to mediate the new sounds with the old ones and merge the audible past and present in the communication of sensations. Observations on the perceived degree of metaphoricity make it possible to suggest that with tinnitus metaphors, what is metaphorical depends on the complexity of the descriptions.

#### *6. Discussion: The affordances of tinnitus metaphors*

The metaphorical descriptions of tinnitus identified in the investigated audiological accounts rely on a rich repertoire of previous experiences and acts of perception that form the basis of how such experiences are verbally construed and of how they are interpreted and used for diagnostic purposes. The descriptions reflect patients’ individual concerns and experiences, and how they are related to the outcome or the process of therapy. The highly detailed and personal qualities of the descriptions suggest that they are related to speakers’ individual associations between the sounds of tinnitus and other kinds of (quite specific) sounds that they have experienced:

Individual conceptualizations may be momentarily created on-the-fly, or soft-assembled, from a vast background of people’s embodied, personal experiences, including conceptual metaphors and metonymies, in highly context-sensitive ways

(e.g., within dynamical systems theory, regularities in thought and behavior emerge as the products of self-organizing tendencies within the system, see Gibbs, 2017). (Gibbs 2022: 12)

The metaphors are inherent to the location and occupation of the patient, and connect with the affordances of the environment (Gibson 2015). Their epistemological and affording presence operates on two levels: of personal acoustic geographies and as affording material for the formation of treatment. Interiorized sounds of tinnitus and their patterns of expression find their development along the paradigm of cognitive studies. Cognition is important in the humanities when the mind is not reduced to the brain but is considered within ‘world-involving, situated, flexible action’ in interaction with ‘non-neural structures and media’ (Garratt 2016: 8). The soundscape concept in its adaptability to different areas of sonic studies (Schafer 1994 [1977]: 3) makes it possible to accommodate not only the audible physical reality but the innermost territories of the mind. Thus, the acoustic geography of the natural world with its perceived environment is complemented by what David Herman in his discussion of narrative refers to as ‘new geographies’ of the mind, interwoven with the external world in response to its afforded possibilities (2011: 255). In their articulation of illness, tinnitus metaphors encompass spatial and occupational acoustic experience inseparable from the phenomenological dimension of the mind as a ‘spatially extended world’ (Bernini 2018: 291) filtered through an audible framework. In his study of the artefactual representations of the mind, Bernini introduces the concept of ‘innerscapes’, or the ‘representations of mind and consciousness as spatially structured locations’ and suggests that spatial representations of inner experience ‘enable an enactive exploration of inner worlds as inhabitable or navigable environments’ by using the examples from literature, radio plays and a creative documentary (2018: 293).

Nineteenth-century accounts of tinnitus sensations feature an acoustic personal geography of the mind, or the (portions) of interior navigable sonic environments that we might tentatively and protractedly identify as ‘inner-soundscapes’. To illustrate, we see the portions of natural soundscapes that include the sounds of insects, animals and birds, mechanistic soundscapes with the noise of industrial and urban environments, domestic soundscapes that figure the sounds of house bells and tea kettles, and the sounds of music as represented by tinnitus patients. Such soundscapes of the internal worlds not only unfold in their spatial

location but are also highly personalized as they give an insight into a specific subjective experience that pertains both to the patient's occupation or habits, and the intensity of tinnitus sensations (for example, Turnbull observes that the engineer would compare the noise with 'a faint locomotive whistle', whereas the boiler maker has 'a succession of noises in his ears' (1875: 5). In a more categorized sense, this taxonomy of sounds can be encoded with Krause's (2008) 'anatomy of the soundscape', where a single term expresses a particular component of the soundscape: biophony for biological sources of sound, geophony for non-biological sources, such as the wind or the ocean, and anthrophony as human-induced noise.

Geophony, biophony and anthrophony of tinnitus are germane to actual real-world soundscapes. Yet inner geographies of tinnitus display the complexity of acoustic sensations that both support and undercut reality. According to Bernini, with 'geographical models of inner experience', elements from the external world sculpt affordances of the inner world, which result in a combination of real and impossible elements, or the configuration of 'introspective imagery' (2018: 294). Personal geographies of tinnitus patients manifest a similar process in the articulation of mixed metaphors and the intersection of soundscapes from different domains (for instance, with the simultaneous experience of 'the action of a pump and the hissing of a snake' (Turnbull 1875: 19). Such mixtures and interconnections of settings are informative not only as to the intensity of experience or the forms of its communication and the mediation of transition from one sonic world to another. The sonic cartographies of tinnitus may serve as a tool for exploring operations of the mind as an 'enactive environment' (Bernini 2018: 307). This environment, however, suggests a phenomenological ambiguity that results both from the incomprehensible and potentially terrifying sensation on the one side and the combination of affordances construed by different systems on the other.

Metaphor not only provides a framework for thinking about and describing tinnitus sensations but also affects behavior, as it influences how people think about the topics that the metaphors relate to (see Thibodeau, Hendricks, and Boroditsky 2017). First, 'musical' tinnitus, or the description of tinnitus sensations in terms of music, attracted attention of the specialists for its potential capacity to record the sensation as a musical notation and tailor it to the cause or origin of the affliction. It was

observed that certain patients could report ‘a distinct musical note’ in the ears that allowed the translation of the sensation into a particular octave (Hinton 1874: 258). For instance, Hinton (1874: 258) instrumentalized the musical proficiency of his patients and tried to localize the pitch and intensity for tinnitus by matching the experienced sound with a musical note. Testing and matching the ‘musical’ tinnitus of a patient ‘N.W.’ with a tuning-fork and a piano allowed Hinton to diagnose the patient with ‘no apparent disease of tympanum’ and an ‘old disease of sternum’ (1874: 257–259).

Another example of diagnostic ‘musical’ tinnitus refers to studies from the turn of the century by Spalding (1903: 264–265), who treated a professional musician that could write his tinnitus as a musical composition and a patient with no musical education who could locate upon the piano the note matching his tinnitus. Although Spalding drew from his patients’ metaphorical accounts of tinnitus (for instance, as the music of ‘vast orchestras’), he was mainly interested in the tonal and not metaphorical descriptions of sounds and suggested that detecting the exact note could facilitate the establishment of tinnitus location and etiology (1903: 267). By examining ‘Aus meinem Leben’ (‘Scenes from My Life’) by composer Smetana, Spalding managed to extricate the instances of tinnitus from the string quartet, in which a ‘prolonged note’ of the violin was associated with the composer’s original tinnitus (1903: 268). Spalding’s observations of ‘musical’ tinnitus display certain limitations: the author admits the fact that not every patient can recognize musical pitch and posits ‘some musical education’ as a prerequisite for tinnitus studies (1903: 264, 272).

Second, the studies of tinnitus point towards further affording possibilities of sounds—the development of acoustic therapy. Commonly known as ‘using external sounds to provide relief from tinnitus’ (Folmer et al. 2014: 107), acoustic therapy has been used since antiquity. For instance, physician Alexander of Tralles (ca. 525–ca. 605) believed that walking in ‘sondry places’ could bring relief to tinnitus sufferers, and Swiss pathologist and pharmacologist Johann Jackób Wepfer (1620–1695) mentioned a patient who ‘banged two pebbles together next to his ear so that the sound made by these stones would solve his problem’ (Folmer et al. 2014: 107–108). Yet advances in understanding tinnitus and relieving its symptoms were made with the publication of *Traité des Malades de l’Oreille et de l’Audition* (*Treatise on the Maladies of the Ear*

*and Hearing*) by French physician Jean-Marc Gaspard Itard (1774–1838). Itard promoted concern for the behavioral manifestation of tinnitus, especially sleep disturbance, and suggested the use of external environmental sounds to mask the tinnitus (Baguley et al. 2013: 4). Since he concluded that the external sound had to match the sound of tinnitus as closely as possible (Stephens 1984: 969), attention was given to the patients' metaphorical descriptions of tinnitus sensations. As a result, according to Itard, tinnitus that sounded like 'the distant murmuring of wind and a river in flood' and 'whistling tinnitus' could be covered with 'a roaring fire in the grate'; tinnitus like the sound of bells (albeit not too loud) could be masked by 'the resonance of a large copper bowl into which falls a trickle of water from a vase'; and 'in the case of tinnitus resembling the sound of a set of wheels turning' one could place next to the bed 'a noisy spring-driven motor adapted to a mechanical organ, or a large watch, of which the movements are speeded up by removal of the regulator' (Folmer et al. 2014: 108).

Late nineteenth-century practices of tinnitus treatment were not devoid of the principles of acoustic therapy and supported the same rationale—to match or increase the level of external sound in order to decrease the tinnitus sensations (Folmer et al. 2014: 108). For instance, Spalding (1903: 272) concludes in his observations on tinnitus that playing 'an organ or reed pipe or violin of the same pitch' could diminish or remove the annoying sensations. Harold Wilson used a telephone transducer to relieve the tinnitus 'like escaping steam' and in other forms (1893: 221). At the same time, though effective in some variations, the early principles of acoustic therapy demonstrated little or no result in others. In Paris, a vowel-producing siren that Dr. Georges Marage used successfully to eliminate hissing or whistling sounds was ineffective in the face of 'the sounds of the pulse' or 'the sound of a bell' (Boyer 1911: 307; Schwartz 2011: 342). Thus, the early examples of acoustic therapy, or what Schwartz in his discussion of tinnitus metaphorically calls 'sonic surgery' (2011: 342), highlight the necessity of paying close attention to the patients' individual accounts of tinnitus and tailoring the treatment on the basis of their meaningful analysis. While certain studies privilege musically-trained patients for their ability to indicate the acoustic components of tinnitus and facilitate the development of a masking tone, the complexity and variability of tinnitus descriptions contain important information for further management options.

### 7. Conclusion

Metaphors of tinnitus in nineteenth-century medical records invite an interdisciplinary discussion at the intersection of the humanities, medicine, and sound studies that gives an insight into patients' embodied acoustic experiences with specific source concepts, the intensity and complexity of tinnitus, and the acoustic personal geography of the mind afforded by external sounds and the framework for thinking about tinnitus treatment. This study attests to the significance of patients' accounts and metaphor for the understanding and treatment of tinnitus, which is actualized by practitioners in their interpretation of patients' experience. Thus, elaboration of treatment is akin to creative meaning-making that recognizes revelatory and transformative effects of metaphor, from diagnostic musical tinnitus to the resonance of acoustic therapy.

As our findings support the historical explorations of tinnitus accounts, they make it possible to contribute to our current understanding of tinnitus by highlighting the importance of a patient-centered approach and establishing the value and significance of metaphor analysis in tinnitus studies. At the same time, there are several limitations to the current study. Because our focus was on identifying *experiences* that are used to describe tinnitus (i.e., concepts and more complex conceptualizations) metaphorical identification procedures that focus on metaphorically used words (e.g., Praggeljaz Group 2007; Steen et al. 2010) could not be used. We believe *Procedure for Identifying Metaphorical Scenes (PIMS)* (Johansson Falck and Okonski 2022, *forthc.*) will be apt for future investigations that similarly focus on the scenes evoked by linguistic constructions in discourse. Moreover, because some practitioners have inserted investigations from other medical specialists into their own studies of tinnitus, quantitative analysis of the data was not a viable option in our study. For instance, observations from Wilde (1853: 91) are cited in Field's (1875: 7–8), Hemming's (1878: 6) and Roosa's (1892: 348) editions. The categories accounted for here should be seen as a first provisional summary of the types of experiences that patients and medical practitioners have used to describe tinnitus sounds based on which more systematic and quantitative evaluation of the conceptualizations of tinnitus could be made.

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