

# CHEWING DEMOSTHENES'S PEBBLES: EMBODIED EXPERIENCE MAKING THE SCIENTIST'S PERSONA, CA.1830-1910

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## ABSTRACT

*This paper argues for an embodied approach to the scientist's persona, using 'experience' as its focal point. Rather than noting that embodied experiences influenced scientists' practices and identities amidst (or despite) ideals of objectivity, I want to draw attention to the ways in which personal, embodied experiences were celebrated in nineteenth-century science, and presented as primordial for the practice of competent research.*

*I am focusing on those scientists involved in the study of the voice in order to do so. Because the physical workings of the voice are largely hidden inside the body, fields such as laryngology and phoniatria developed a number of touch-based, experiential scientific practices before and alongside tools of visual observation. These non-visual practices were very closely connected to researchers' sensations of their own bodies, and connected to their identity (whether as a middle-class amateur singer, a hoarse professor, a stammerer, etc.). As scientific disciplines studying the voice developed over the century, personal 'experience' (understood both as particular practices and notions of personal background and identity) was increasingly brought forward as a unique source of understanding and expertise. This resulted in a highly diverse field of experts on the voice, in which otherwise non-elite researchers could participate and even rise to fame. They did so because, and not despite, physical and social impediments such as a stutter or a limited education.*

*Studying the experiential practices and memories brought forward by this network of experts allows me to look at the construction of their scientific personas from an intersectional perspective. A focus on the nineteenth-century notion of 'experience' and its inclusion in scientific discourse allows us some insight into the various constituent elements of a persona built within the context of a particular field. Experts drew liberally on aspects of identification that do not always fit the classic categories of gender, class, age, health, etc.*

## KEY WORDS

Experience; Gender; Voice; Laryngology; Speech Impediments; Observation

In 1890, Charles Rivail spoke to his peers at the *Cour d'Appel* (Court of Appeal) in Grenoble, urging for more attention to children's and youngsters' vocal education. In order to learn to speak well, he argued, pupils needed practical exercise of their voices and were being badly served by an educational model of quiet classrooms. "The art of speech can be learned", he

insisted, “and to be an orator, one always has to have, more or less, chewed on Demosthenes’ pebbles” (Rivail 1890, p.16).

He would know. Rivail, a barrister and political speaker (he would later become mayor of Grenoble) was known as a particularly artful orator, so his pronouncements on the subject were likely to carry authority. It is interesting to see where or, rather, whom he himself bases that authority – and therefore his right to speak – on. The figure of Demosthenes looms large in Rivail’s construction of the competent barrister and consummate speaker, a sensible choice for a role model, perhaps, as knowledge of the great classic orator’s work showed off Rivail’s education and erudition. It also allowed him to inscribe himself into a long tradition of illustrious orators. But Demosthenes was also known for his (initial) difficulties with oratory and –most notably- his struggles with speech impediments. Yet that is exactly the aspect of Demosthenes’s life that Rivail highlighted, by mentioning the ‘pebbles’. It represents the very tangible pain of impeded speech, and the physical fight against it. What makes a good orator, according to Rivail, is not great learning, but hard-earned experience. And that experience is both emotional and embodied: it encompasses the practices of mouth, lungs, and larynx (if necessary weighed down with marbles, like how Demosthenes famously exercised his tongue and jaw), and the failures that precede the birth of a good orator.

Rivail’s phrasing is, true to type, particularly eloquent, but the ideas he was expressing were far from original. At the end of the nineteenth century, he was part of a large and growing number of authors who connected good speech to experience and practice. Whether they were mostly concerned with vocal health, rhetorical aesthetics, or social propriety, vocal ‘experts’ not only argued for an experiential and embodied approach to cure, ameliorate, and polish speech. They also based their own claims of expertise increasingly on their own, embodied experiences as brilliant or impeded speakers, and as ‘scientists’. The latter aspect of their identity was somewhat unclear, however, and will be central to my argument below. Experts on vocalicity, speech, speech impediments, and laryngeal health proliferated throughout the nineteenth century to form a somewhat chaotic network of researchers and practitioners in a field that could not really be properly named. (Authors on the subject identified themselves as ‘vocal physiologists’, ‘phoniatrists’, ‘vocal hygienists’ and other neologisms). It is perhaps no surprise that the need to present oneself as a credible and dependable authority on one’s subject of expertise was keenly felt in such an unstable disciplinary environment. Although not all who participated in the discussions on this emerging field of knowledge would later be counted among the forerunners of the discipline that would eventually become speech therapy, or *logopédie*, I will argue that it was common practice for most of them to adopt and adapt a scientific persona in order to claim legitimacy and authority throughout most of the nineteenth century.

The scientific personas produced in this emergent community on vocalicity borrowed some characteristics from more general tropes of (mainly experimental and medical) science at the time, but – like Rivail- also drew liberally on the physical realities of their throats, lungs, and tongues. Embodied experiences were so central to their practices and identity-formation, that they regularly reported on them in their written work, thus underlining their amalgamation of strategies in building an identity as a ‘scientist’ (as defined by Daston and Sibum 2003, p.4). This reliance on experience in the formation and expression of a scientific persona was not wholly particular to the field of vocal health. For scholars in the humanities, for example, Henning Trüper (2013, p.1349) has shown that “the virtues constituting scholarly authority easily cohabitated with the precepts of scholarly travel and experience”, and experimentation on the researcher’s own body occurred in different branches of the medical field. I will argue, however, that the role ‘experience’ played in the scientific persona of practitioners in the field of vocal

health was particular, partly because the nature of their object of research, the voice, defied 'observation' and therefore demanded a thorough engagement with experience through senses other than sight, and partly because the somewhat disjointed field of expertise on vocal health accommodated bodily experiences in a particular way through the close ties between vocal artistry (both in speech and song) to middle-class civility. In order to retrace the different ways in which embodied experience was mobilized in the production of the vocal expert's scientific persona, I analyze written, and largely published, documents. Focusing on three centres of knowledge production (London, Paris, and Leipzig), I draw my source database of c.600 works on vocal health and education from collections that roughly represent the material that was available to both 'professional' vocal experts and interested amateurs in these cities. Currently held at the Wellcome Library, Royal College of Music, Royal Academy of Music, Samuel Heinicke Institut, Hochschule für Musik und Theater Felix Mendelssohn, Bibliothèque de la Conservatoire Nationale, and the Bibliothèque Nationale, these works roughly represent the knowledge available and exchanged in and between the UK, France, and Saxony in the nineteenth century. The three cities in which these collections were gathered were remarkable hubs of knowledge acquisition and exchange regarding vocal health and esthetics. They are home to major (and some of the oldest) music conservatories of Europe, but also to important institutions for the research on and cure of vocal pathology (schools for the deaf and dumb, for example, but also 'laboratories' in the new disciplines arising around vocal health, such as laryngologist Johann Czermak's *Spectatorium* in Leipzig, the Hospital for Diseases of the Throat founded by his student and colleague Morrell Mackenzie in London, and Colombat de l'Isère's *Institut Ortophonique* in Paris).

Although the database consists of documents in several genres, aiming for audiences including fellow-professionals as well as a more general 'educated' reader, they share some characteristics that make my performative and 'experience'-driven approach feasible. Firstly, because of the heightened attention given to the physiology of voice and voice production in the nineteenth century, the body and particularly the organs related to speech were very consciously presented as a central concern in these texts, as authors were often arguing against older, disembodied, notions of vocality. Secondly, the prescriptive nature of educational manuals prompted authors to explicitly address vocal 'performance' – either in describing patients' faulty vocalization, presenting idealized performances to be attempted by the reader, or indeed by presenting their own vocal performances as examples to be studied or imitated. In what follows, I read these texts for the way in which they describe and prescribe individual, embodied practice. First, I attend to the specific physicality of the voice. I explore the theoretical implications of its links and tensions with visual observation, and the consequences of a more varied sensorial approach for the notion of the scientific persona as it has been developed by historians. Second, I present cases of authors presenting their own identities and bodies in their scientific and educational work. This allows me to zoom in on the role of experience in particular constructions of modern individuality that allowed vocal experts to adapt tropes of experimental science to their own field. And third, I suggest that these adaptations, despite being largely predicated on the conventional authority bestowed upon middle-class white men, also created openings for 'other' researchers and practitioners to adopt these particular scientific personas, and we shall see a number of authors whose credibility was not compromised by their non-conventional bodies, but rather bolstered by the experiences these bodies afforded them.

## EXPERIENCE AS A BASIS FOR EVIDENCE AND EMBODIMENT

The focus on experience is hardly a new one: social and cultural historians have attended to historical actors' experiences throughout the last three decades. Often they have done so, as I do here, partly to account for diversity. Relying on experience as an analytical tool comes with its own challenges and dangers. As Joan Scott noted in her 1991 analysis of 'The Evidence of Experience', privileging personal experiences, and its resulting documents, as sources in historical enquiry risks leading us toward a fixed and essentialized understanding of identity - the very thing an analysis of persona is trying to avoid. Experience, Scott warns, "serves as a way of talking about what happened, of establishing difference and similarity, of claiming knowledge that is 'unassailable'" (Scott 1991, p.797). Yet, whilst the notion of unassailable knowledge is an unproductive one, experience also serves as a way to give credence to the irreducible reality of the body and its foundational role in performing the 'self' (including the different personas construed by any one actor throughout their lifetime). Despite its pitfalls, I will therefore insist on the importance of experience precisely *because* it can "establish difference and similarity" and thus can make 'others' visible in the historical record. The visual metaphor - so often used in studies sensitive to issues of diversity- is not coincidental: "When experience is taken as the origin of knowledge, the vision of the individual subject becomes the bedrock of evidence on which explanation is built" (Scott 1991, p.777). It therefore differs from the more explicitly emancipatory project of 'giving voice' to historical actors - yet insists that the personal is indeed political (or cultural), and that physicality co-creates social reality.

For our analysis here, however, 'vision' cannot quite suffice. The historical actors under scrutiny here deal with a largely invisible phenomenon, and that had a profound influence on the experiences they relied on to perform subjectivity and aspects of difference. The voice (one's own or somebody else's) is, as many theorists have discussed, of the body, but distinguishes itself from other corporeal features in its eeriness (e.g. Dolar 2006, Barthes 1972, Cavarero 2006). For nineteenth-century observers as for contemporary historians, it is elusive in its intangible, invisible nature. The practice of observation, therefore, has a different meaning and weight for vocal experts than it did for other scientists. If we take their experiences of their (socio-cultural and physical) world as a 'bedrock of evidence', a wider field of sensorial perception needs to be taken into account.

That is not to say that visual observation was of no importance in the field of vocal science or, more pertinently, that the codified practice of 'observation' played no part in these experts' performances of their professional selves. To the contrary, efforts to 'see' the workings of the voice were central to their scientific and therapeutic practices. Instruments were developed to see the vocal cords in action (first by an obstetrician who modelled his instrument on the speculum, later by several physiologists and singers who introduced laryngoscopic mirrors in their own and others' throats), and earlier experiments on 'dead' larynxes were equally visual in their approach (e.g. Merkel 1857, Müller 1839). Visual representations of the larynx and vocal folds were included in medical and educational treatises as a matter of course (e.g. Fournie 1866, Browne 1878) and pictorial representations of the expert 'at work' often presented them in the course of laryngoscopic examination (e.g. Johnson 1864). Nevertheless, the ultimate invisibility of the voice itself, combined with the inaccessibility of its producing organs, urged medical and educational experts alike to rely on a wider variety of sensory experiences, proprioception chief among them. If vocal practice was difficult to observe, it was very easy to 'perceive' in one's own body, after all.

This particular reliance on proprioception and other means of mobilizing one's own body in the practice of science will also have some bearing on how to understand the notion of

a ‘scientific persona’. As Lorraine Daston and Otto Sibum have noted, the mask-like character of the persona does not represent a clean break from the persona’s performing body. It is “a cultural identity that simultaneously shapes the individual in body and mind and creates a collective with a shared and recognizable physiognomy” (Daston and Sibum 2003, p.2). Whilst the persona ‘shapes’ the body, it seems clear that corporeal practices and experiences also shape the mask – a delicate balancing act that has long been recognized for other performances, such as musical practice for example. Freya Jarman, in her analysis of the queer voice, presents the voice itself as ‘a mask’ that is performance, identity, and body in one (Jarman 2011). Like these musicologists’ analysis, I do not want to suggest that an ‘authentic’ body (or an unassailable experience) somehow precedes the formation of the scientific persona. Rather, in keeping with Gadi Algazi’s comments on scholarly personas, I want to insist that even in the cerebral worlds of science and scholarship, “social relations and trajectories are not external to actors but inscribed in them” (Algazi 2016, p.30-31). And that inscription, I argue, is an embodied, practice-based matter, more performative than performance (i.e. understanding the performative quality of bodily practice much in the way Judith Butler (1990, p.25) has suggested it should be understood: as performative utterance).

In studying a type of expertise that was relatively ‘new’ in the nineteenth century (if not an entirely new field of science), this paper focuses on quite specific iterations of scientific persona. Nevertheless, the case of vocal science might be illuminating in a wider sense. As Daston and Sibum have noted, “the rise of a persona is a relatively rare event”, and “to fashion a new persona requires a delicate balance between old and new cultural forms” (Daston and Sibum 2003, p.5). In what follows, I will analyze the practices of vocal experts as building blocks in what Daston and Sibum have called the persona of ‘the scientist’ in a wider sense, rather than as a specific disciplinary construction of self. Nevertheless, the tension between ‘old’ and ‘new’ will be of particular salience for these practitioners as not all of their work was considered legitimately ‘scientific’ – and not all would later be recognized as ‘scientists’.

## **EXPERIENCE AS A BASIS FOR COMPETENCE**

Throughout the nineteenth century, phoniatrists, vocal physiologists, vocal hygienists and the like struggled to gain legitimacy as ‘scientists’. As the field developed, anxieties over ‘quackery’ in the ranks rose frequently and disagreements over the best cures for speech impediments or vocal ailments gave rise to long disputes. Individual experts were at pains to establish their own trustworthiness and reputation – partly by distinguishing their own work from that of others they were quick to denounce as charlatans. According to Dr. F. Angermann for example, stammering was “an issue” that had been “subject to the greatest charlatanism” (Angermann 1853, p.iii) Meanwhile, the very novelty of their specialism and the lack of institutionalized education or medical care for the voice presented experts with problems of legitimacy and credibility. As Mineke Bosch has noted, “the creating of a *credible* or *reliable* scientific identity” (italics mine) is particularly salient for the formation of the scientific persona (Bosch 2016, p. 42), and the fragility of that credibility in this particular field makes vocal scientists an interesting case study to look at how it was sought, constructed and performed. A number of experts seeking credibility, like Rivail, made efforts to embed their ‘new’ knowledge in the older, and much respected, classical traditions of rhetoric and natural philosophy (by referring to Aristotle’s notions of man as a social, speaking animal, for example). From the 1840’s onward, however, the legitimacy of individuals’ methods would increasingly be based on their novelty and their departure from conventional medicine as well. Most notably, experts on dysfluency increasingly turned away from surgery, and towards therapeutic methods (Rockey 1984),

claiming for the tongue, for example, that “all operations on that innocent organ are useless” (Hunt 1861, p.120).

The shift from a medico-surgical approach to a field in which legitimacy was constructed outside the established medical practice coincided with changes in the ways in which the voice and its pathologies were understood. The surgical method of almost literally ‘removing’ vocal pathology had rested on a very material understanding of the vocal organs as the seat of an almost mechanical production of sounds. Although the term ‘voice box’ remained (even now), the idea that the voice could be understood as easily localized in one small organ was increasingly seen as absurd. Morell Mackenzie, an influential laryngoscopist whose work consisted largely of looking into what we would commonly call the voice box noted in 1886 that “the larynx is sometimes absurdly called the “voice-box”, as it were one of those ingenious toys which grind out a thin strain of wiry melody on being wound up” (Mackenzie 1886, p.13). Throughout the nineteenth century, vocalization would increasingly be understood as a process in which not only the whole body was involved, but the mind as well. Neurological and psychological avenues to understand speech and vocalization were explored, and the modes of perception to study this newly holistic understanding of voice needed to widen. No longer caught in a ‘box’, the voice had nevertheless become even more invisible – and its study would come to rely even more on the researcher’s ability to mobilize his own embodied and psychological experiences. That evolution was possibly also strengthened by the simultaneous rise of recording technologies: gramophones, telephones, and other machinery had, on the one hand, made sound and voice even more eerie and immaterial, and on the other hand gave the ‘live’ embodied voice an even more individual status (a voice on the phone or on a recording could ‘stand in’ for a person) (Picker 2003).

Nevertheless, information gathered on the voice was narrated in a form that resembled that of experimentation and its reliance on observation. Experts not only reported to have ‘experimented’ on their own larynxes, they also encouraged their readers to do so. The experiment/experience within one’s own throat was subsequently used to give meaning to information gathered in other ways. It allowed readers to imagine the implications of statistical information, for example, or to match the visual representation of vocalizing throats to their own ‘felt’ one. Carl Ludwig Merkel noted in his work on vocal anatomy that *Selbstbeobachtung* (a very literal introspection) was the best way to become familiar with “the living larynx”.

The greatest gain is to be expected from self-observation. In the observation of other singers etc, one is always limited to the ear and the eye; the senses of feeling and touch can only rarely be called upon, all important vocal organs are inaccessible to the eye or direct manual exploration: therefore the observer is in a better position, when he is at least capable of operating somewhat more broadly within his own vocal organs.(Merkel 1857, p. 580)

Although the language of observation was used, experts referred to empathic practice to explain their findings, and appealed to similar performances of empathy to be understood. The repetition of experiments in ‘other’ throats was used as a way to further bolster the argument and lend it scientific credence, but in a field dominated by the technique of ‘autolaryngoscopy’, proprioceptive experiences were foundational. Indeed, the man usually credited with the invention of the laryngoscope used it first and foremost on his own throat or, as Morell Mackenzie phrased it: “M. Garcia’s laryngoscopic investigations were all made on himself; indeed, he was the first person who conceived the idea of an autoscopic examination” (Mackenzie 1865, p.28).

Rather than turning them away from modern conceptions of ‘objective’ observation, this minute attention to their own bodies brought them closer to another tenet of nineteenth-century practices of observation: their practice was an entirely personal one. The personal self, as a modern individual, was central to their work. In insisting that aspects of the voice could not be seen, authority was conferred—by the unconventional means of ‘feeling’—to the expert who was willing and capable of putting his own body on the line. According to Swiss singing teacher Heinrich Pestalozzi, who published a small monograph on the “avoidance of failure” in voice building, teachers would only be capable to help their pupils to amend their faulty vocalization if they could “empathically feel the students’ mistakes in their own throats”. His own authority, in that regard, was immediately established on the first introductory page:

During the last ten years – including the last years of my university studies – I have occupied myself with the problem of singing, experimented with my voice and have tried everything imaginable, until after many wrong turns and much fruitless effort I have found the right path. What I write down here, I have therefore largely experienced firsthand [*am eigenen Leib*] and has been confirmed by my experiences as a teacher. Had I accidentally found the way my individual vocal disposition needed to be developed at the time, immediately at the start of my vocal studies, I might have come to positive results more quickly, but I would have lost so many experiences. (Pestalozzi 1910, p.4)

In many ways, the embodied and emotional practices of vocal experts contributed to a specific iteration of the figure of the gentleman scientist. It dependent on a ‘management’ of feeling that was generally coded masculine and middle-class (Boddice 2016). It also allowed practitioners to walk the line between new demands of professionalization (by developing specific skills, operating new instruments such as the laryngoscope) and older notions of the learned gentleman (by engaging in scientific debates in a somewhat dilettantic style, liberally citing personal anecdotes interspersed with classical literature). The ‘performance’ of scientific or medical knowledge underwent a process of considerable professionalization between the eighteenth and nineteenth century (see e.g. Vandendriessche 2014), but ‘medicogentility’ (Brown 2011) did not simply disappear.

Although many laryngologists and vocal physiologists were, in practice, consummate professionals who depended on their therapeutic and scientific practices for their income, they often presented a public image much closer to a life a leisure. Collaborating with singing teachers (or sometimes citing their own amateur musicianship), they exhibited a penchant for cultural pursuits – next to the classical education they so proudly displayed. Marc Colombat de l’Isère, who dubbed himself an *ortophonist* provides an excellent example of this struggle to combine aspects of gentlemanliness with a more professional, businesslike persona. Colombat, son of a merchant and a founder of his own institute for the treatment of stammerers displays many of the characteristics of the busy ‘self-made’ newcomer in this (sub) field of medicine. On the title page of his *Tableau synoptique et statistique de toutes les espèces de bégaiement*, he presents himself as a respectable scientist by citing his many credentials within the world of scientific sociability:

Doctor, Founder and Director of the ortophonie institute for the treatment of stammerers and deaf-mutes; collaborator on numerous medical and scientific journals; member of the anatomical society of Paris, of the consulting committee of the society for intellectual emancipation, of the circle of surgeons of Montpellier, of the medical-surgical society of Lyon, correspondent to many philanthropic and literary societies, etc. (Colombat de l’Isère 1833).

Reading his many published works on stammering and vocal physiology, the constant interplay between his work as a practitioner and his 'scientific' interests becomes even clearer, as his discussions of vocal health are interspersed both with quotations of other recent (published) work and case-studies of patients under his care. But what stands out, too, is Colombat's reliance on literature, poetry, music, and the emotions these cultural products elicit. His publications advertised his institution and bolstered his reputation, but they also chronicled a careful practice of crafting a persona that would allow him to enter a world that was understood as more than just a 'profession'. It is perhaps because he was located on the edges of gentlemanly respectability that Colombat understood the need to display skills and sensibilities beyond his actual specialism in order to gain access to the persona of 'the scientist'. Although most of his work engages with thoroughly rigid modes of research (experimentation, observation, statistics) emotions and 'the soul' generally get a mention as well. After all, as he noted in the introduction to his vocal hygiene, "No sound goes more directly to the soul than the human voice" (Colombat de l'Isère 1857, p.15). Throughout the text, poets, composers, and philosophers are cited and, when laboriously describing the deeply personal nature of the object of his research, the *ortophoniste* turns to Plato:

Plato knew well that the sound of the voice could, in a sense, help to discover man's moral state and, when he wanted to know those who approached him the first time, he told them 'Speak, that I may see you' (Colombat de l'Isère 1833, p.43-44)

In constructing a persona of credibility these aesthetic and emotive experiences (indicative of class- and gender-dependent sensibilities) seem to have had an importance similar to his mastery of the discipline proper.

### **NON-NORMATIVE EXPERIENCE AS A PROFESSIONAL CREDENTIAL**

As Colombat's story shows, the reigning persona constructed in vocal science in the nineteenth century was largely a conventional one for its time and social context. The highly individualistic nature of these personas, and their connection to the particular bodies onto which they were grafted, often rested on the dependable propriety of those bodies. Overwhelmingly male, white, able and healthy, they could pass as 'neutral' in nineteenth-century understandings of humanity (Bourke 2011). Yet Colombat's story also hints at a less conventional characteristic of the ways in which the persona of the vocal scientist could be built and – consequently- the less conventional bodies these personas could inhabit. Unlike other practices of self-observation or self-experimentation, which essentially sought to find out how the human body 'is' or how it intuitively reacts to various stimuli, the vocal experiences used by these researchers and practitioners were studied as examples of what their body 'did', and how it performed. This set it apart from the increasingly standardized practice of experimentation, in which the repeatability of an experiment was defined very narrowly. It carved out a space for experts whose knowledge of the 'performative' experience of voice had to be far more intimate than was the case for other researchers with their test-subjects.

The clearest example of this mobilization of non-normative bodily experiences for the construction of a particular, trustworthy scientific persona is the work of stammering experts. Throughout the nineteenth century, as speech therapy and laryngology gained legitimacy as a field of research and practice, several experts in the field drew attention to their own dysfluency. The narratives of these experts – a youthful pathology, a period of struggle, and then cure and success in adulthood – replicated stories of heroism usually connected to war or battle. 'Former' stammerers showed their own strength by overcoming the enemy of pathology or

impediment. They are stories of transformation, but not of forgetfulness. Rather than simply inhabiting the persona of able-bodied, fluent, men, authors like Alfred Appelt, Benjamin Beasley, Walter Yearsley, Claude Vernet and numerous others stressed their stammering tongues not only as a weakness they had overcome, but as a basis for their legitimacy and success as scientists. Their intimate experience of the impediment they studied provided them with knowledge others lacked and therefore conferred to them an authority that was entirely dependent on inhabiting an *improper* body. Walter Yearsley's *practical self-cure* likened it to having gained a degree:

When I say practical experience, I mean that greatest of all qualifications – a life-long suffering with this galling affliction. No one understands the stammerer better than one who has likewise gone through the same hard school of suffering. Every stammerer knows this; he recognises that his experience carries with it the best possible diploma, and one better than any so-called specialist can ever hope to win. (Yearsley 1909, p.9)

Likewise, the French doctor Claude Vernet – who, unlike Yearsley, was a physician and would not seem to need another source of credibility, took care to mention his own experience with stammering. Vernet's publication – a contrived conversation between father and daughter – shows how this experience of a stammering body could be mobilized to construe a particular, masculine, scientific persona. Both 'characters' in the narrative stammer (a rarity, as stammering was widely believed to occur almost exclusively in male speakers), but only the male adult character can present himself as an authoritative scientist. It is Vernet-père who has gone through a heroic struggle toward fluency. When Coralie asks "Daddy, have you already had occasion to apply your methods?" he answers: "My dear, I have tested them on myself, and even though I am old, they have been of great advantage to me because at present I consider myself cured" (Vernet 1841, p.8). Coralie, even though she is named as a co-author on the title page, is presented mainly as a foil unto which Claude can project his own, transformed, and surpassed, former self. Her role in the narrative is to ask the questions her father can then expertly answer: "Dear daddy, why can I not express myself with the same ease and facility as my friends Antonine and Eugénie?" (Vernet 1841, p.5)

Nevertheless, with distinctive vocalic bodies and their experiences playing such a pivotal role in the discourses and practices of laryngeological science, embodied notions of gender could be moulded and mobilized in different ways as well. Whereas Coralie's voice was merely presented as an object of study, to be transformed before it could be a physical attribute of the 'experienced' scientist, several women did present their own, explicitly female, vocality as a strong basis for their scientific work and performance of self. Emma Seiler, for example, who was a student of Helmholtz and combined her practice as a singing teacher with that of laryngoscopy, depended on her own experiences and observations on her own throat for her scientific arguments. Noting that studies of tessitura and vocal registers had always been performed on male voices, she too turned to autolaryngoscopy. "When, in using the laryngoscope upon myself, I slowly sang the ascending scale", she noted, and promptly reported to have found that the change between registers in female voices occurred in a different place than had been expected based on experiments on 'male' throats (Seiler 1879, p.54). Or, more accurately, her observations on her own throat differed from those reported by Manuel Garcia, and she interpreted these differences as a result of her differently gendered body. Her authority would have been difficult to question: if autolaryngoscopy counted as one of the most credible ways of establishing vocal registers, she was the only credible source of knowledge on the female voice. Like other voice professionals, Seiler was convinced that a female voice would benefit from having a female teacher. The notion of gendered 'experience' plays an important role in this argument (one that male authors, incidentally, were less eager to make). Leo Kofler,

for example, who dedicated several pages of his *Art of Breathing* to biographical notes detailing his own experience as a vocalist, felt perfectly at ease discussing the registers of the female voice from a more distant position:

Let us ask a lady to sing the low treble C and, while sustaining it, to hold her flat hand firmly on the upper chest. She finds the chest vibrating with strong oscillations, too numerous to count. (Kofler 1901, p.165)

Kofler eventually refers back to the listener's perspective to assess the register break, and although the 'lady's' own felt experience plays a role in his account, her gender is only relevant to him as part of the particular qualities of a 'test-case'. Female voices could be trained, according to Kofler, by any number of teachers (including organists), and were to be trained and developed in the same way as treble voices. Seiler's contention, to the contrary, was not that female voice teachers and singers were 'as competent' as their male counterparts, but that the experience of inhabiting a female body has a particular value for teachers *and* scientists. It would be easy to read her published work as the reflection of a scientific persona calqued on the masculine model of the vocal expert: she, too, employed the language of observation for an embodied practice, used personal experience alongside a more experimental approach and leaned on a middle-class notion of cultural fluency to exhibit trustworthiness. However, the simple fact that Seiler spoke from a body that could not 'pass' as a neutral one gave new meaning to how her experiences were scientifically relevant, and could be mobilized in the construction of a scientific persona.

## CONCLUSION

For some unconventional scientific actors, then, embodied experience could have an emancipatory quality. Benjamin Beasley did not only gain authority from his great business acumen and his manly appearance, but also – or perhaps even more so – from his stammering tongue. Emma Seiler was respected for her musical literacy and her scientific ability not despite, but also because she was a woman and used her experience of the female body for her scientific work. This supplementary authority, moreover, was not based on the simple fact that their idiosyncracies made them good test-subjects (as was the case with numerous cures invented by those afflicted), but because the long-term experience they could boast was understood as something more profound than self-observation or mere familiarity. The experience of producing a particular voice (with all the cultural associations it carried) was both embodied and affective, and thus the owners of 'other' voices could lay claim to 'other', otherwise inaccessible, knowledge and skill.

The reliance on embodied experience in vocal science overall was strongly connected to modern understandings of individuality: no-one could understand the modern individual's voice better than that individual himself. However, cases like that of Pestalozzi insisting that he alone could truly understand his own vocal journey also show that such individuality could only be understood in highly contextualized terms – as the result of a number of embodied, affective, and culturally defined practices. And thus the individuality experience leads us to consider is not a matter of irreducible uniqueness. Rather, the embodied, affective, and context-dependent qualities of experience should lead us to consider its necessary intersectionality. Even if a heightened role of 'experience' in certain scientific fields opened doors for experts inhabiting unconventional bodies, this did not lead to broad access to the field for anyone inhabiting such bodies. Experiences of producing a voice from a female body were relevant only if that body also moved in culturally literate circles, and spoke a language recognizable to middle-class scientists. And just as femaleness was co-defined by class and education, ability was co-defined by notions

of gender and age (and, indeed, race which was absent in these discussions of expertise or credibility, but only because the scientist's white and Western identity was so dominant it was never under question). The scientific persona constructed by actors within the field of vocal science was therefore a particularly, but not endlessly, accommodating one. The mask changed considerably for each wearer, accommodating many (but not all) different bodies, and changing its form and meaning on many (but not all) socially defined attributes and contexts.

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