# Sensory Sketching for Singers

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This position paper outlines my use study of vocalists and the relationships with the voice as both instrument and part of the body. I study this embodiment through a phenomenological perspective, employing somaesthetics and micro-phenomenology to explore the tacit relationships that singers have with their body. While verbal metaphor is traditionally used to articulate experience in teaching voice, I also use body mapping and material speculation to help articulate tactile and auditory experiences while singing.

CCS Concepts: • **Human-centered computing** → **HCI design and evaluation methods**; • **Applied computing** → *Arts and humanities.*

Additional Key Words and Phrases: singing, embodiment, phenomenology, body mapping, sensory experience

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## INTRODUCTION

In addition to being an human-computer interaction (HCI) researcher, I am primarily a musician. I work as a semi-professional vocalist and I am particularly passionate about music education and the body awareness of musicians. Much of my experience as an artist has been shaped by the teachers I have had in my voice lessons. These teachers strengthened my relationship with my body through my voice, which has also been reflected in my sense of identity. My research work focuses around the vocalist-voice relationship. For HCI, I believe vocal performance and education are a fascinating context to study embodiment and tacit knowledge. Singers, largely working without concrete, physiological information of their movement, have developed a sensory-based awareness of their actions [13]. Singers generally think about their practice in a non-verbal way [7]. Yet, the knowledge of the body and its movement can and has been taught for hundreds of years by voice teachers.

What is so fascinating about voice teaching to me is that voice teachers deal with a sensory-based understanding of internal movements and have been able to teach this understanding without technology mediation. Voice teachers are very good at describing their own experiences to others through abstract representations, gestures, sounds. These metaphors help students to contextualise what they feel and create imagery that helps them to train their action and behaviour while singing [5]. I explore interaction with the body within the domain of vocal education and performance with general human to human and HCI principles in mind. I use phenomenological perspectives [20] to examine this relationship between vocalist and voice as an embodied practice based in tacit knowledge of the body [10, 16]. The main research question I have focused on is: *How do vocalists relate to their body and instrument?* More specifically, I want to explore how *Working with a control mechanism we can neither see nor touch, how do we understand and perceive our movement while singing?* and *How can we use abstract representations to describe these internal, sensory experiences?*



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These questions are not specific to vocal practices. Being able to talk about sensory experience in a relatable way is very important for any kind of human interaction. This extends to design as well – in order to collaborate and work with stakeholders, we must be able to share our individual experiences, processes, and design choices [12]. These are directly related to our sensory experiences of interaction. In addition to other musical practices, any practice which focuses on awareness of the body and movement will benefit from understanding of how we can express our own sensory experiences and share them with others. This includes other artistic practices such as dance and extends to meditative practices, well-being, and even beyond to physical therapies and sports science. In order to better explore our experiences to ourselves and share them with others, we must work with multi-sensory experience and move beyond language-based communication.

## ARTICULATING AND SKETCHING SINGING EXPERIENCES

There is a critical link between the awareness of movement through internal tactile sensations and the resulting sound of the voice. Singers must be able to combine feedback about the way their body feels and the way they sound to react appropriately during performance. I therefore work mostly within the tactile and auditory senses. In order to study this link between body and sound and how singers perceive their movement, I have been using surface electromyography (sEMG) to provide a way to externalise the internal movements of the larynx [22, 23]. sEMG captures the activation of the muscles, which is then sonified to give the singer feedback about how their body is moving. This is based in somaesthetics [9, 24], wherein something about the typical practice is disrupted to allow the singers to explore their tacit knowledge and bodily awareness in their practice, which they might not normally examine [8]. The sonification of the muscular activity into a dynamic, filtered noise, mimics the normal action path which singers use – hearing their voice and then making small adjustments to their technique. However, this forces them to focus on the movement of a single muscle, isolated from a larger movement and presented back to them in a non-vocal sonification [11, 26]. In an ongoing study, I am examining how singers react to this new feedback, including the movements and techniques they perceive are causing changes to the sonification.

To study this perception and how the awareness of movement changes through new feedback, I must provide ways for singers to articulate their experience, which is difficult to do. In this workshop, I hope to contribute my experiences in addressing vocalists' sensory experiences through a combination of practices based in phenomenology and somaesthetics. For my research, sketching is a form of metaphor which can provide new paths for expressing the wordless parts of experience. As singing is based in a highly internalised way, working with parts of the body we have little access to, singers generally rely on such metaphors to understand their own experiences [2, 4, 14]. Voice teachers also use metaphors to make their experiences relatable to their students [6]. I have been using micro-phenomenology inspired practices to help guide singers through examining their experiences. The micro-phenomenological interview works to evoke an experience and bring an interviewee back into their interactions [21]. Together, as interviewer, I work with the singer to co-examine the fine-grained details of their experiences. The interview process helps to uncover different dimensions of experience which otherwise would have remained hidden in reflection [18, 19]. However, this is still linguistically based and the understanding of some experiences still remain beyond language. For this reason, I have been employing sketching and modeling for the study of vocalists' sensory experiences.

Sketching methods and physical, visible representations such as body mapping [1, 25] and material speculation [3] help to address this gap. I have been employing body mapping and clay sculpting [17] as ways to examine my own practice and internal sensations. While working with another singer, we discuss our technique and different action. In order to better articulate the

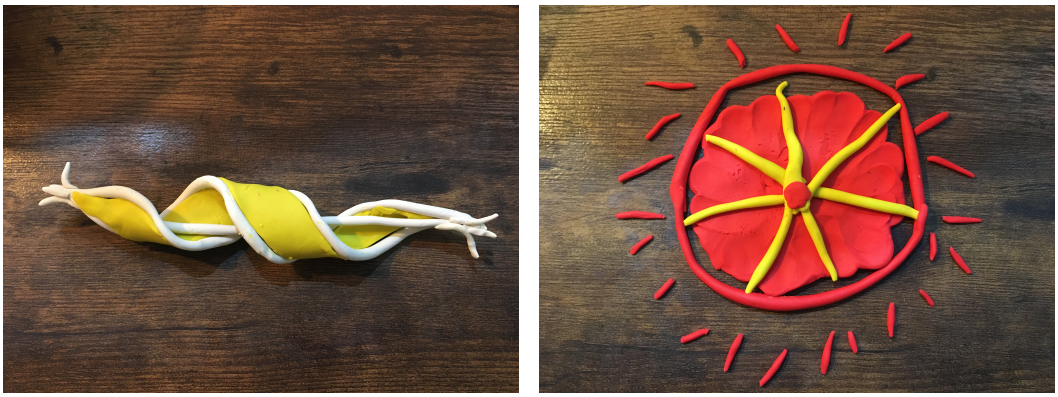

Fig. 1. Examples of using clay sculpting during self-reflection to represent internal sensations felt while singing different musical excerpts.

experience, I have been keeping a series of sketch diaries; following my practice, I examine a specific element which I found particularly notable (challenging, surprising, satisfying). I work to describe this as is typically done in vocal practices, through verbal communication. Before the verbal description, I use sketching to help me find different words and determine what parts of the experience I struggle to articulate through speech. Using a combination of body mapping and material speculation helps me to capture different points of the experience. Body maps are helpful for showing locations in the body and the size of an internal sensation. Clay modeling allows for elements of texture and shape to become more tangible. In these representations, I am able to express experiences which are not easily captured in language. After keeping my own diary of rehearsal, I hope to work with other singers through similar sketching practices.

I am particularly interested in this workshop because I am interested in other representations of sound which can be complementary to the experience of hearing. I have found that singers often *feel* sounds or have associated bodily sensations when hearing things, for instance as a feeling "spreading through the head" or being felt as a physical presence in the ears. I would like to explore new ways of representing auditory experiences. For instance, it would be worthwhile to explore ways in which a sort of sound speculation might be achievable, by using a specific media to recreate or approximate sound experiences. Sound sketching has been useful in describing sounds and their shapes in a visual modality [15]. I would like to further explore how sketching can be used to articulate the *experience* of hearing sounds and how this relates to other simultaneous sensory perceptions. I hope in this workshop to hear what others are using in their research to discuss and describe sound elements and work towards developing methods specifically for documenting, sharing, and collecting data on auditory experience.

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