

## Casey O'Callaghan—Research Statement

### Perception, Audition, and Multimodality

Theorizing about perception in philosophy and cognitive science has been shaped to a remarkable extent by attention to vision. The assumption has been that what we learn about perceiving by studying vision generalizes to the other sense modalities. My work is predicated on skepticism about this kind of claim. I do not share optimism that all we say about vision and its objects that is of theoretical interest extends neatly to audition, olfaction, taste, and the other sense modalities. I am convinced that to proceed as if it does is poor methodology. My work aims to discover what there is to learn about perception by thinking about other sense modalities and the natures of their objects. In short, I take the other senses seriously, theorize about how they are alike and how they differ, and articulate why this matters for an empirically-informed philosophical understanding of perception.

One main component of this work is focused upon audition and sounds. In a monograph, *Sounds: A Philosophical Theory* (2007), and in subsequent articles, I confront the visuocentric focus in perceptual theorizing and suggest that the case of sounds and audition challenges longstanding views about sensible qualities and the organization of perceptual experience. I develop an account of the nature of sounds, considered as objects of auditory experience, according to which they are neither secondary qualities, as traditional philosophical views since Locke have maintained, nor waves, as commonly accepted scientific accounts hold. Rather, I argue that perceptible sounds are events that take place in an environment when vibrating or interacting objects disturb a surrounding medium. According to this *event theory*, sounds are distally-located, perceptible individuals that instantiate audible qualities and take place over time. This proposal aims to capture the sense in which the role of time in hearing is analogous to that of space in seeing.

My work on sounds and audition leads me to challenge further visuocentric features of our understanding of perception. First, it has been common, historically, to assume that perception functions to furnish awareness of ordinary material objects—"medium-sized dry goods"—and their sensible features. Theories of perception have been strongly influenced by the attempt to explain such awareness. But, while the claim is intuitive for vision and touch, it fails when applied to audition and sounds (and other senses). A sound is unlike a table or a brick, and sounds do not auditorily appear to be bound to ordinary objects, as are visible colors, shapes, and textures; sounds audibly are distinct from ordinary objects and their features. Nonetheless, audition researchers increasingly speak of "auditory objects." On its face, this is puzzling. What is an auditory object? What is it to auditorily perceive an object? In a series of articles ("Object Perception: Vision and Audition," 2008; "Lessons from Beyond Vision (Sounds and Audition)," 2011; "Hearing Properties, Effects, or Parts?" 2011; and "Objects for Perception," forthcoming), I argue that a version of the empirical and philosophical case that we perceive objects in vision translates to audition. I propose a notion of auditory objects that is stronger than just that of the intentional objects of audition. According to this account, audition's objects, like vision's objects, are mereologically complex individuals. But such audible individuals, unlike visible individuals, are individuated and identified in virtue of temporal characteristics and pitch. Visible individuals, in contrast, are individuated and identified primarily in virtue of spatial characteristics, including boundedness, connectedness, and cohesion. An audible individual, for instance, may be heard to complete amodally behind a masking noise, in a way similar to how visible objects and surfaces appear to complete amodally behind occluders. Though there does exist a sense in which at least vision, touch, and audition target perceptual objects, understood as mereologically complex individuals, the objects in question

are not all commonplace material objects. My recent work, including “Objects for Perception,” extends this framework to provide an account of shared multisensory perceptual objects.

Attempting to provide an independently satisfying account of audition reveals a more insidious form of visuocentrism: that of believing we can exhaustively characterize the sense modalities entirely in isolation from each other. Understanding what is most striking about perception—its capacity to furnish awareness as of a world of things and happenings independent from experiences—requires comprehending the relationships and interactions among sense modalities. In several articles (“Seeing What You Hear: Cross-Modal Illusions and Perception,” 2008; “Perception and Multimodality,” 2012; “Cross-sensory Synesthesia,” forthcoming), I focus on a class of underappreciated perceptual phenomena—cross-modal illusions—in which one sensory system impacts experience ordinarily associated with another. For instance, as a result of cross-modal interactions between auditory and visual processes, playing two beeps while flashing a single dot on a screen leads perceivers to visually experience two dots flashing. In this *sound-induced flash illusion*, auditory processes restructure visual experience. I argue based on a wealth of empirical evidence that such effects are rampant, and it is not obvious they can be accommodated on prevailing theories that treat the senses as independent and experientially-encapsulated modes of awareness. Cross-modal illusions and other multimodal phenomena show that investigating the senses in isolation from each other leaves out what is perhaps most important to understanding perception’s capacity to furnish awareness as of a complex but nonetheless unified world. The elaborate patterns of interaction, communication, and recalibration among perceptual modalities must be accommodated by any future philosophical theory of perception and perceptual experience. In recent work (“Not All Perceptual Experience is Modality Specific,” 2015; “Intermodal Binding Awareness,” 2014; “The Multisensory Character of Perception,” under review), I begin to develop such a theory.

My work on audition and multisensory perception has led me to tackle *speech perception*. While philosophers of language have worked extensively on cognitive aspects of linguistic understanding, few have examined the perceptual requirements of understanding spoken language and the vast empirical literature on this topic. While it is natural to think that understanding language involves simply assigning meanings to perceived sounds, there are a number of respects in which speech perception is special that shed doubt on such a simple account. In several articles (“Experiencing Speech?” 2010; “Against Hearing Meanings,” 2011; “Speech Perception,” 2015; “Inner Speech and Hearing Meanings,” in progress) I distinguish distinct ways in which speech sounds and speech perception differ from non-linguistic sounds and audition. I propose an account according to which perceiving speech in a language you understand is an acquired perceptual skill that involves becoming perceptually sensitive to language-specific but non-semantic features. This type of account has noteworthy consequences concerning the “richness” of perceptual experience and the relationship between perception and higher cognition.

My primary current project is a book, *Beyond Vision: Multisensory Perception and Awareness*. This book draws upon and develops the above themes. It draws theoretical and philosophical lessons about perception, the nature of its objects, and sensory awareness through sustained attention to extra-visual and multisensory forms of perception and perceptual consciousness. Chapters in the book’s two main parts focus on auditory perception beyond sounds, the perception of spoken language, and multisensory perceptual processes and awareness. The book is under contract with Oxford University Press. I aim to complete it in 2015, with publication in 2016.

While sense perception plays an important role in central areas of philosophy, synoptic discussion of the nature and role of the senses is rare. Most recently, I have been synthesizing lessons drawn from my work on philosophical issues concerning perceptual modalities into a

book, entitled, *The Senses* (under contract, Routledge). In this book manuscript in progress, I explain the importance of the senses to casting and resolving central philosophical problems in metaphysics and epistemology. I develop empirically-informed accounts of the philosophical issues surrounding vision, audition, the chemical senses, and the bodily senses. In addition, I investigate a number of exotic sensory phenomena, including synaesthesia, cross-modal illusions, and non-human senses, and characterize how each impacts traditional philosophical puzzles about consciousness and the mind. These case studies demonstrate how careful attention to the “other” senses yields fruitful new directions for philosophical inquiry. The book also provides a working example of how attention to empirical work in psychology and the neurosciences strengthens traditional philosophical methods and perspectives, and raises novel philosophical questions. *The Senses* therefore serves as the basis for a penetrating theoretical understanding of the senses and their role in philosophical inquiry and psychological explanation.

My work thus can be summarized as providing an empirically-literate philosophical understanding of perception that is driven by thinking about non-visual modalities and the relationships among the senses.

## **Representative Work**

### SOUNDS

*Sounds: A Philosophical Theory*, Oxford University Press, 2007.

“Constructing a Theory of Sounds” *Oxford Studies in Metaphysics*, 2009.

### AUDITORY PERCEPTION

“Auditory Perception” *Stanford Encyclopedia of Philosophy*, 2009, substantial revision 2014.

“Lessons from Beyond Vision (Sounds and Audition),” *Philosophical Studies*, 2011.

### SPEECH PERCEPTION

“Against Hearing Meanings,” *Philosophical Quarterly*, 2011.

“Speech Perception,” *Oxford Handbook of the Philosophy of Perception*, 2015.

### MULTIMODALITY

“Seeing What You Hear: Cross-Modal Illusions and Perception,” *Phil. Issues*, 2008.

“Perception and Multimodality,” *Oxford Handbook of Philosophy of Cognitive Science*, 2012.

“Not All Perceptual Experience is Modality Specific,” *Perception and Its Modalities*, 2015.