

Introduction

“I’d like to echo that sentiment; I totally hear you.” “The political impacts of that fateful decision have echoed throughout generations.” “The band’s performance was marred by a poor mix in the venue, which sounded like a jumbled mass of strange echoes that ultimately rendered the vocals unintelligible.” We speak often of sounds and echoes in our everyday language. In most cases, the meaning behind the use of these terms is unambiguous and not particularly philosophically interesting. Ordinary language philosophers (à la Austin) may point to particular turns of phrase around sounds and echoes as evidence of conceptual inconsistencies or possible metaphysical issues. Contemporary philosophers like Casey O’Callaghan have taken a more serious look at the ontological underpinnings of sounds and echoes within the nascent field of the Philosophy of Sound. Rather than look at ordinary language usage, O’Callaghan wrestles with the possible ontological status of sound — “What *is* sound?” and “Where does sound occur?” In this realm, we will seek to clarify the sub-questions of “What are echoes?” and “Where/when do echoes occur?”

Regarding the traditional approach to these critical questions, O’Callaghan notes, “Vision has dominated philosophical thinking about the perceptual experience and the nature of its objects” (O’Callaghan, 2017a, p 9). This historical tendency¹ makes sense on multiple levels. Our language is rife with references to vision, and “we evaluate *views*,

¹ Even in first-century BCE accounts of audition, vision was often the starting point. As Koenen notes, “After an extensive account of the mechanism of vision and a passionate refutation of the sceptical distrust in the senses [in *De rerum natura*], Lucretius embarks on the topic of hearing” (Koenen, 2004, p 698; Lucretius, DRN 4.524-62, p 116).

have *insights*, and *see* what is at issue” (O’Callaghan & Nudds, 2009, p 1). Although I provided examples above of this connection between sonic echo terminology and a more general repetition or continued impact of an event, the link between vision and language appears (pun not intended) much closer to the concept of knowing or grasping some more profound truth. It is easy to see (ahem...) why vision was the default go-to sense modality for philosophers working on perception. While the historiography of perception within philosophical discourse has leaned heavily on vision as the paradigm modality that warranted a primary focus (again, pun not intended), audition has seen (ahem...) a marked increase in attention over the last few decades. Importantly, this change “signals a departure from the tradition of relying upon vision as the representative paradigm for theorizing about perception, its objects, and its content” (O’Callaghan & Nudds, 2009, p 2). Not only has vision been singled out as the primary sense modality for philosophical inquiry, but it was assumed that whatever insights came from the realm of vision could be applied to sound, touch, smell, *inter alia*, without philosophical consequence. Turning our attention to questions about sounds in general and echoes in particular, it will also become evident that these entities pose unique philosophical issues that deserve a closer look (ok, the pun *is* intended this time).

While I approach the philosophical problems presented here in a predominantly ‘Analytic’ manner, these questions and concerns are no stranger to the so-called ‘Continental’ world of philosophy. Maurice Merleau-Ponty drew upon Husserl and other

philosophers, often viewed as the spiritual ancestors of the existentialist² movement, in forming the core of his *Phenomenology of Perception* (1945). The style of this work follows a pattern of “presenting, first, the realist or empiricist approach to a particular dimension of experience, followed then by its idealist or intellectualist alternative, before developing a third way that avoids the problematic assumption common to both” (Toadvine, 2016). This formula demonstrates the universality of primary questions of perception, which bear upon both Analytic and Continental philosophers in essential ways. A.J. Ayer, perhaps a good candidate for the title of the representative Analytic philosopher of the 20th century, would seem to agree that, at least regarding philosophical questions around perception, Merleau-Ponty was speaking his language³.

He notes:

Though it is often conducted in terms of which it is difficult to make much sense, the investigation of concepts by Husserl and his followers bears some affinity to the sort of conceptual analysis that G. E. Moore engaged in, and it might therefore

² I readily acknowledge the difficulties that arise when pressed to define an exact meaning or exhaustive history of ‘existentialism’. As Breisach notes, “Even the word existentialism itself must be used with great caution, since it refers not to a rigid set of propositions but rather to a number of themes which recur in the works of existential writers...” (Breisach, 1962, p 4). For that matter, given the space, we would likely want to draw out the distinction between existentialism and phenomenology, etc. We do not have the space here. My goal is solely to illustrate the point that whether we look to philosophers who would generally fit into the broad ‘Continental’ historical tradition or those in the ‘Analytic’ camp, there is likely a relevant and important connection to some element of auditory perception in their work.

³ See Merleau-Ponty pp 5-6 for the affinity in the conceptual analysis of auditory objects that Ayer is likely to consider, especially talk of “sensation as pure impression” (Merleau-Ponty, 1945/2002, p 5).

have been expected that Merleau-Ponty and I should find some common ground for philosophical discussion (Ayer, 1977, p 285).

It has been argued that an informal meeting in 1951 at a Parisian bar between Ayer, Merleau-Ponty, and Georges Bataille brought about “the first recorded observation of a split between ‘Continental’ and English philosophical cultures in the twentieth century” (Vrahimis, 2013, pp 1-2). Yet as the philosophical cultures and practices diverged, the importance of the question of perception—and arguably its visuo-centricity—remained in place for both groups. In short, all philosophers will likely veer into some question around perception, and most will tend to treat vision as the workable paradigm modality that can be moved from vision to audition *salva veritate*. Whether you tend to grab Ayer or Merleau-Ponty from your go-to philosophy bookshelf, a more rigorous inquiry into the unique aspects and the singular nature of sound and echoes will inevitably pay off philosophically in the long run.

At the heart of our inquiry is an account of sounds and echoes presented by O’Callaghan in his monograph *Sounds: A Philosophical Theory* (2007). In this work, O’Callaghan presents several possible theories about how sounds and their related echoes could be viewed philosophically. In the first section of this paper, I will summarize these theories, highlighting how each of the theories fares when subjected to a range of classic sound location scenarios. Section Two will challenge the particular theory O’Callaghan endorses (the distal theory of sound), leveraging a paper presented by Gregory Fowler in 2013, ‘Against the Primary Sound Account of Echoes.’ While I agree with Fowler’s primary arguments, I don’t think they go far enough. Thus, in section Three, I will go

beyond Fowler's case and push even harder on O'Callaghan's distal theory claims. To be as charitable as possible to O'Callaghan's position, Section Four presents several possible defenses against the challenges that Fowler and I present. Section Five demonstrates why the novel challenges specific to O'Callaghan's position are compelling and why they plausibly bring forth problems for the overall distal theory.

Section One: Philosophy of Sound

Given the space constraints of this paper, I limit the scope of the overall Philosophy of Sound exposition and the depth of analysis within each theory presented. O’Callaghan’s *Sounds: A Philosophical Theory* has arguably reached a canonical status in the field, yet it comes in at over 175 pages—much too long to include in its entirety here. The *Stanford Encyclopedia of Philosophy* entry on ‘Sounds’ runs over 15,000 words. To this point, it should be stated that this paper will largely bracket aside topics such as recorded sounds, cross-modal illusions, musical listening (Philosophy of Music), speech perception, etc., for another time. While two general frameworks for discussing Philosophy of Sound tend to be prevalent in the literature—the nature of sounds (roughly ‘where are they?’) and the metaphysical status of sounds (roughly ‘what are they?’)—the primary focus here will not include metaphysical concerns around sounds as events/properties/dispositions except when necessary in the charitable presentation of O’Callaghan’s specific philosophical position. No particular ‘positive’ stance will be made on the metaphysical nature of sounds. So what is the possible range of answers that can be given philosophically for the question, “Where does sound occur?”

Philosophy of Sound — Proximal Theories of Sound

As the opening lyrics to the 1974 classic George Jones country song ‘The Door’ state, “I’ve heard the sound of my dear old mama crying, and the sound of the train that took me off to war.” (Txmusicam & Jones, 2008). The proximal theorist would say that the sound Jones hears in these cases is a sensation, perceptual state, or property *within* (Sounds-as-Sensations). The sound of his dear old mama crying occurs within his

perceptual apparatus (perhaps roughly ‘at his ear’ is a fair simplified description of the case at hand). Put another way, “sounds directly perceived are sensations of some sort produced in the observer when the sound waves strike the ear” (Maclachlan, 1989, p 26). It is important to clarify here that the proximal theorist (and presumably George Jones) recognizes that there are important distinctions between the sound heard and the sounding source. What is heard (or rather perceived) in the proximal case is the sensation itself — the sound of Jones’ dear old mama crying is not strictly speaking emanating from ‘over there’ where she is. This seems problematic. O’Callaghan notes, “...we nearly always experience sounds as sounds of something: we hear the sound of the piano or the sound of the door closing or the sound of a car starting in the driveway” (O’Callaghan, 2007a, p 19). Following this line, Casati et al. point out the disconnect between this common experience (‘sounds as sounds of something’) and the proximal view since “if sounds were inner sensations, or mechanical events at the ear, we would be almost always mistaken in our aural perceptions, at least on important aspects of the sound. In turn, this amounts to accounting for auditory perception in terms of a massive error theory” (Casati et al., 2020). In other words, where we think the sound is located in most cases (‘sounds over there’) doesn’t align with the theory (‘sensations in here / at my ear’).

O’Shaughnessy takes a slightly different tact in his view (the Proximal Stimuli view), placing the immediate object of perception not at the perceptual apparatus but more generally wherever the hearer is located. The distinction between these proximal views is subtle—but important. He notes, “...while the sound originates at a distance and we can hear that it is coming from a direction and even place, and while there is no auditory

experience of hearing that the sound is where we are, the sound that we hear is nonetheless where we are” (O’Shaughnessy, 2000, p 447). Yet again, it would seem that the likely attributed location (‘over there’) fails to match up reliably to the theoretical stance (‘over here’).

Casati et al. highlight this disconnect as a significant issue with all proximal theories: "...they do not locate sounds where an untutored description of what is perceived suggests they are” (Casati et al., 2020). If one of our essential questions in the present inquiry is ‘Where do sounds and echoes occur?’ regarding an actual physical location, a theory that seems to fall well outside our everyday experience may not be a good candidate. In my informal surveying of a wide range of children and adults with varying degrees of philosophical background over the years, I’ve yet to have a respondent pick the proximal theory as their intuitive take on which central Philosophy of Sound theory seemed the most correct. Most responses align with medial or distal theories — the sound is the sound wave, or the sound is at the sounding source. Admittedly, this research was far from a scientific survey. In the majority of cases, the proximal theory doesn’t arise as a possibility for non-philosophers. Perhaps the disconnect that proximal theories highlight between the location of sound via the theory and the suggested location of sounds via ‘untutored’ perceptual experience is enough to give us pause.

On the other hand, one strength of various proximal views (especially the Sounds-as-Sensations variety) is their ability to track well with experiences such as experiencing hallucinations and hearing high-pitched ringing (tinnitus). While O’Callaghan is clear in stating that he thinks hallucinating a sound equates to failing to hear a sound at all (which

makes sense as he is *not* a proximal theorist), placing the location of sound where the sensation occurs would render ‘internal’ occurrences of sounds on par with other more pedestrian everyday sorts of sounds in the world. If you hear it, it is a sound. This holds even in cases where the sound is only audible to a person who suffers from tinnitus or a psychological condition where disembodied voices pop into their head. This Sounds-as-Sensations view also supports the sounds subjects report hearing while subjected to extended periods in anechoic chambers almost entirely devoid of external sound sources.

How does this theory fare when subjected to the classic ‘If a tree falls in a forest and nobody is there to hear it’ question?⁴ Does the tree make a sound? Strangely, it would seem not. Section Three will make the importance of this question and the rationale for its inclusion more apparent. On the surface, it seems counterintuitive to say that a hearer (or, more precisely, a perceptual apparatus) is necessary for sounds to occur. This calls to mind (pun not intended) Berkeley’s *esse est percipi (aut percipere)*⁵. The other perennial favorite in Philosophy of Sound, ‘Does a bell rung within a vacuum make a sound?’, also possibly suffers within the proximal view—it would not be perceived, so it would not make a sound. Of course, intuitions on this question can vary. Speaking of Berkeley, he would agree that no sound occurs in a vacuum, noting that “... a bell struck in the

⁴ See Killin for a more rigorous account of the ‘tree falls in the forest’ riddle as it pertains to Philosophy Of Sound (Killin, 2020, p 444). His pragmatic approach to answering the question fittingly invokes William James’ *Pragmatism* and is explored here in the Section One subsection entitled ‘A Fifth Option: The Polysemous Account’ (Killin, 2020, 442; James, 1907/2004, p 21).

⁵ I am also reminded of a favorite line from Lucretius: “But those voices that do not strike the ear / Are carried past, and lost, and all in vain / Are scattered through the air and perish there” (Lucretius, DRN 568-570, p 117)

exhausted receiver of an air-pump, sends forth no sound” (Berkeley, 1713/1975, pp 171–172). On the one hand, we admit sounds that don’t intuitively seem like they usually would count as sounds (like hallucinations), while on the other hand, we fail to admit others (like the tree falling) that seem like they should be counted. The vacuum question does align with my intuition, namely that without air, we don’t have a sound that could be heard, and therefore, we don’t have a sound. Yet interestingly, the proximal theorist arrives at this conclusion from a potentially questionable (and at least unintuitive) angle around the absence of a perceiving subject.

Philosophy of Sound — Medial Theories of Sound

Returning to our George Jones song, imagine a record spinning on a stereo system designed to amplify the song via speakers. The speakers vibrate and set off sound waves in a medium—the air between the speakers and the listener. The medial theory states that sounds equate to sound waves (in simple broad-brush terms), and the sound of the George Jones song exists wherever those sound waves propagate from the speakers into the room. Perkins presents a workable summary of the ‘sounds-as-waves’ subset of medial theories, stating that “...the sound we hear is identical with the train of airwaves that stretches from the distant sounding object to our ear” (Perkins, 1983, p 168). Many modern acousticians, audio engineers, and several scientifically-minded philosophers dating back to Aristotle and Descartes seem to have an affinity for wave theory. In many ways, it fits well with our experience of sounds and how we expect our perception to relate to the particular observable attributes of sound waves. For instance, the directionality of sounds tracks well to medial wave theory since hearers situated within

the direct expected propagation line of a sound source will generally sense a ‘match’ of the perceived direction of that same sound source. If I stand directly in front of the sounding speakers and close my eyes, I can still reliably report that the speakers are in front of me. With my eyes still closed, a move of the speakers 17 feet to the left of where they used to be could be identified by me as a move to the left around, say, 15-20 feet. The sound waves are no longer directly propagating to me as they were in the first case, and this shift of their position and/or direction logically follows what we’d expect, given how sound waves are known to travel. Even complex acoustic phenomena like the Doppler effect (the sound of a train horn rising and falling in pitch as it passes a stationary listener) can readily be explained by an appeal to wave theory.

Is the medial sound wave theory the correct theory? Along with the many admitted strengths of the sounds-as-waves approach to the ‘Where do sounds occur?’ question, several troublesome side effects exist. Let’s return to our enjoyable listening session of the George Jones record on the stereo system. Whether the system is right in front of us or remains in its last position 17 feet to our left, we don’t perceive the sound as traveling and occupying various spaces along the way as it emanates from the speaker, rises and falls many thousands of times in a wave-like manner, and ultimately strikes our eardrums. While there are some additional complexities that we’ll bracket aside for now, it is likely safe to say that we wouldn’t describe the sound *waves* as spatially located where we tend to report the *sound* as being located. In this case, the sound is reported to be ‘coming from’ the speakers; the sound is not occupying a sequence of locations one after another from the speaker to our eardrums. Sensing the directionality of an object

and explaining its general direction via the medial wave theory was listed as a ‘pro’ for the theory above. Still, it quickly can turn to a ‘con’ if we move from locational generalities (about 10 feet in front of me, now 17 feet to the left) to specific serial locations in movement from the general location to the hearer. Is this issue as serious as the “massive error theory” Casati et al. (2020) attribute to proximal views? O’Callaghan seems to think so, noting that “the science-inspired model of sounds as waves, like the traditional philosophical model of sounds as properties, qualities, or attributes, has important shortcomings [related to the idea that sound ‘travels’] that make it unsuitable as a philosophical account of sounds” (O’Callaghan, 2007a, p 28). While the sounds-as-waves view might top the survey results for a ‘Where does sound occur?’ poll, it does present at least a few philosophical hurdles.

Turning to the ‘If a tree falls in the forest and nobody is there to hear it, does it make a sound?’ question for the medial theorist, the answer seems to be an unequivocal ‘yes.’ Yet the theory can also admit infrasound and ultrasound examples as proper sounds, even though they fall outside the range of human hearing. According to Pierce, “disturbances with frequencies too low (infrasound) or too high (ultrasound) to be heard by a normal person are also regarded as sound. One may speak of underwater sound, sound in solids, or structure-borne sound” (Pierce, 2019, p 1). Stretched in this way to the extreme, one might argue that any minor movement of an object in a medium gets counted as sound and multiplies the occurrences of sounds to an untenable level—any mechanical wave motion at any scale can plausibly be counted as a sound. We’ll also return to this aspect of this particular read of the wave theory in Section Three as an issue

shared with the distal theorists. On the vacuum question, the medial wave theorists align well with my intuition that without a medium to transmit vibrations, we would not have a sound—coming to the same conclusion as the proximal theorists.

Philosophy of Sound — Distal Theories of Sound

We have surveyed the proximal and medial theories; now we turn to the distal theory, perhaps the most central theory to the project at hand. Avowed distal theorist O’Callaghan argues that “...sounds [are] considered as objects of auditory experience ... that take place in an environment when vibrating or interacting objects disturb a surrounding medium ... sounds are distally-located” (O’Callaghan, *Research Statement*, n.d.). As O’Callaghan’s particular framing of echoes in his account of sounds is at the heart of this paper, the distal theory will receive more attention in our survey of sound theories. To begin, the basic framing of distal theories of sound proposes that sounds occur at the surface or inside of the sounding object. The sound of our George Jones song playing on the stereo speakers is located where the speakers are located (technically, ‘in’ or ‘on’ the speaker) while vibrating. The actual sound of Jones’ dear old mama singing occurs mainly at her mouth as she sings. As noted, we’ll set aside where the *song* (the mechanical representation of the combination of sounds) resides—the topic of recorded sounds is an interesting project for another paper. Like the previous theories of sound, different varieties of the general distal concept present subtle differences in the ascribed ontology of the sounds in question. While at least four major distal sub-theories exist⁶,

⁶ According to Casati et al. (2020), key distal theories include “the Property Theory, the Located Event Theory, the Relational Event Theory, and the Dispositional Theory.”

we'll focus on the Relational Event Theory, which aligns most closely with O'Callaghan's stated view.

Importantly for O'Callaghan's distal Relational Event Theory, sounds are events. They "are events constituted by the interactions of objects and bodies with the surrounding medium," a hybrid "of the behavior of an object ... [and] the surrounding medium and its specific characteristics" (O'Callaghan, 2007a, p 56). Just as with medial theories, a suitable medium must be present for sounds to exist. As O'Callaghan explains, "To locate the sounds we must locate the place where the objects interact with the medium" (O'Callaghan, 2007a, p 56). As explained, we can find the sound of the George Jones record playing at the place where the speakers interact with the air in the room (technically, we'd also count the very low amplitude sound emanating from the record itself, where the needle is vibrating as it spins). If we remove either one of these elements (interaction or the medium), we have effectively removed the sound. Simply put, "There are no sounds in vacuums" (O'Callaghan, 2007a, p 56).

Philosophy of Sound — Aspatial Theories of Sound

Before tackling a basic overview of aspatial theories of sound, it is important to state that one commonality between the previous spatial theories is that they "share the assumptions that reflections on the spatiality of audition are crucial in order to tackle issues on the metaphysics of sound" (Casati et al., 2020). Di Bona stresses this point by noting:

These issues have to do with the metaphysics of sound, the segregation of the auditory scene into distinct sounds or sound streams, [etc.] ... As for the

metaphysics of sound, spatial information is helpful for understanding what sounds are since, by saying *where* sounds are, we can say what sounds may possibly be, in the sense that knowing where sounds are can help understanding what they are (Di Bona, 2019, p 107).

So, it stands to reason that the aspatial theorists have their work cut out for them if they are starting from a position of denying any real spatial attributes to sound and attempting to build a workable ontological/metaphysical description. As might be expected by the term ‘aspatial,’ the aspatial theorists take this exact stance—sound is not spatial. As Strawson notes, “Sounds...have no intrinsic spatial characteristics: such expressions as ‘to the left of’, ‘spatially above’, ‘nearer’, ‘farther’ have no intrinsically auditory significance (...). A purely auditory concept of space...is an impossibility” (Strawson, 1959, pp 65–66). This view is at odds with the various examples of the George Jones listening session. It is unlikely that upon reading the setup of the scenario (‘With my eyes still closed, a move of the speakers 17 feet to the left of where they used to be could be identified by me as a move to the left around, say, 15-20 feet’), you had issues following along and generally relating to the meaning of ‘to the left’ in the manner that Strawson highlights. What about the same George Jones thought experiment for a sounds-as-sensations proximal theorist like O’Shaughnessy? According to Casati et al., it is “possible to argue that auditory perception is not intrinsically spatial independently of a commitment to the claim that sounds do not have spatial locations” (Casati, et al., 2020). O’Shaughnessy appears to hold this view—granting sounds as having a position in space where hearers, rather than sources, are (Casati et al., 2020; O’Shaughnessy, 2009). Again,

this seems like we'd end up with a vast and persistent gap between our perceived sound location (where hearers are) and its suggested location (generally at or near the presumed sounding source). While aspatial theories pose fun philosophical scenarios to ponder and play with, they don't immediately seem to fit with how we generally speak about the location of sounds.

Philosophy of Sound — A Fifth Option: The Polysemous Account

Anton Killin presents a compelling fifth option regarding settling the 'Where does sound occur?' question that can be summarized as a 'none of the above' and/or an 'all of the above' view. Rather than attempt to narrow down our options and pick the one theory within Philosophy of Sound that answers the question once and for all, why not match up the best theory to the intended meaning (ordinary language usage) of the question at the time? As he notes:

For now, consider the following sentences. 'The sound is located over there', 'Sounds travel at around 340 m/s', 'I can still hear the sound of the crash in my mind's ear', 'This sound is pitched higher than the last one', 'Veridical perception of sound in a vacuum is impossible'. In these rather ordinary sentences, sometimes the most intuitive or charitable interpretation of 'sound' is sonic mental images, sometimes sound waves, sometimes sounding objects/events. According to the polysemy thesis, these are all legitimate physical reductions of sound—legitimate senses of the polysemous word 'sound' (Killin, 2020, p 443).

Killin makes a great point here that warrants a few comments. While the core argument presented here is directed at a particular aspect of O'Callaghan's unique flavor of distal

theory, it should be made clear that my intention is not to entirely discredit distal theory (or any possible theory of the location of sounds) but rather to bring the relative strengths and weaknesses of all theories and sub-theories into sharper focus, particularly as they relate to echoes. As Killin rightfully notes, “At least in standard cases, sound sources/ events produce sound waves which, in human perceivers, produce auditory sensations/ sonic mental representations” (Killin, 2020, p 443). In other words, not only will different uses of the word ‘sound’ and ‘location’ require leaning on different theories of sound (no *one* of the above theories for all cases), but a workable causal analysis of the various ‘moving parts’ of the phenomenon of sound sources and events will require invoking at least some element of each theory (all of the above theories in each case)⁷.

⁷ Interestingly, Phillips Young (the key advisor for this paper) arrived at the same conclusion during our discussions and before becoming aware of Killin’s paper. I am especially thankful for his suggestion to include Killin’s polysemous view in the survey of Philosophy of Sound theories presented here as I now think that it warrants inclusion alongside the standard ‘big four’ theories.

Section Two: Against the Primary Sound Account of Echoes

If you recall from the account presented here of O’Callaghan’s Primary Sound Account of Echoes (or PSAE for short), primary sounds and their echoes “are like Mark Twain and Samuel Clemens: they are one and the same⁸” (Fowler, 2013, p 466). This aspect of the PSAE position is directly argued against in the rather fittingly titled paper by Gregory Fowler, ‘Against the Primary Sound Account of Echoes’ (2013). I agree with Fowler’s claim that as go echoes, so goes the workability of O’Callaghan’s overall theory. Additionally, I agree with Fowler that most of the intuition pumps presented in his paper bring serious problems for O’Callaghan and other distal Relational Event Theory proponents. In Section Three, I will attempt to go beyond one of the cases Fowler presents and highlight what I view as a new range of issues for O’Callaghan. But before we get into my new argument, let’s clarify what Fowler argues.

As rendered by Fowler in a more rigorous logical form:

The Primary Sound Account of Echoes: For every echo E , (i) there is a sound S such that E is an echo of S , and (ii) for every sound S such that E is an echo of S , E is identical to S (Fowler, 2013, p 466).

Taking those two statements to be an accurate representation of O’Callaghan’s view regarding echos and primary sounds, we are first presented with what I will refer to as Case 1:

⁸ Speaking of ‘the same,’ Killin brings Leibniz’s Law to bear in multiple PSAE cases (Killin, 2020, p 452). It seems to me that the various meanings available to us in regard to ‘identical’ objects are at the root of the worrying intuitions that arise in Fowler’s echo scenarios. Once we add in identity over time (as O’Callaghan’s view requires us to do), the plot further thickens.

Bryce and Chuck stand together midway between a wall and a building scheduled for demolition. Then the explosive charges fire and the building implodes, making the sound of a building imploding. A compression wave travels through the air to Bryce and Chuck's ears and they each hear the sound of the building imploding. The wave rebounds from the wall and soon reaches Chuck's ears again, causing him to hear an echo of the aforementioned sound. The wave doesn't reach Bryce's ears again, however, because he was whisked away before it returned (Fowler, 2013, pp 466-467).

As Fowler has presented Case 1, it is now possible to follow the logical rendering of PSAE to achieve a surprising result—Bryce heard an echo but also did not hear an echo. How can this be? The sound *S* of the building imploding is said via PSAE to be identical to its echo *E*. In this case, what Bryce heard (*S*, the former or primary sound) is the same as what Chuck heard (*E*, the latter or echo). Fowler notes that “if PSAE is true, he heard the latter too and, since the latter is an echo, Bryce heard an echo - the same echo Chuck heard” (Fowler, 2013, p 467). As it should be clear (and at least to me, it feels intuitively correct to say), Bryce was not there at the time of the ‘return’ of the wave to hear an echo. So, according to this reading, PSAE is false.

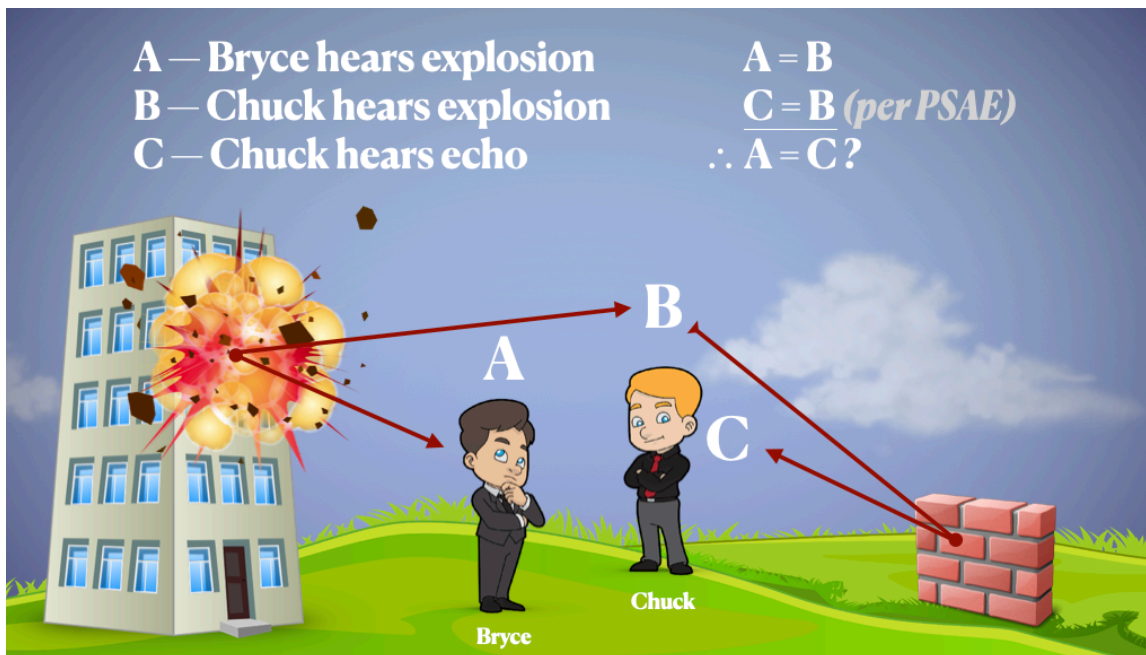


FIGURE 1

Fowler doesn't think this argument fully succeeds, however. He gives an example of knowing the president of the United States. It seems proper to claim that since I knew Barack Obama in 1982, I now know the president of the United States. Of course, at the time (1982), I had no awareness that Barack Obama was destined to be the president, but now that I know this fact, I can make a more general claim. Put another way, "there remains a sense in which it is true that Bryce heard an echo, since the sound Bryce heard was an echo after he heard it" (Fowler, 2013, p 467). Fowler expands on this point, noting that what this initial intuition may reveal is "that PSAE should be conjoined with the view that *being an echo* and related properties (e.g. *being the echo of the sound of the building imploding*) are temporary properties that a sound has only after the associated compression wave has rebounded from a reflecting surface" (Fowler, 2013, p 467). In this way, O'Callaghan could reply that Bryce only "seems not to hear an echo," just

because the echo wasn't an echo yet when he did hear it (Fowler, 2013, p 467). PSAE remains intact since the sound was an echo when Chuck heard it and not an echo when Bryce did. I have something else in mind for pushing Case 1 into a potential trouble zone for O'Callaghan in Section Three, but let's move to Fowler's Case 2 argument first.

Our good friends Bryce and Chuck are still around, standing near another imploding building. I don't know where they live, but this neighborhood seems unsafe. Nevertheless, they are willing to risk their lives for our philosophical pursuits.

Chuck stands midway between a wall and a building scheduled for demolition, 100 feet from each, and Bryce stands 300 feet away from the other side of the building. Then the explosive charges fire and the building implodes, making the sound of a building imploding. A compression wave travels through the air to Chuck's ears and he hears the sound of the building imploding. The wave rebounds from the wall and soon reaches Chuck's ears again, causing him to hear an echo of the aforementioned sound. Simultaneously, the wave reaches Bryce's ears for the first time and he hears the sound of the building imploding, after which he is whisked away (Fowler, 2013, p 467).

In this case, the temporary properties response will not help O'Callaghan. PSAE would lead us to believe that Bryce heard an echo (*E*) of the building implosion sound (*S*), but that is not the case. Importantly, in Case 2, PSAE would state that Bryce heard a sound that comes complete with the property of *being an echo* at the time he heard it—but he didn't hear an echo. Fowler proposes that we think of it like this: “Although PSAE and the temporary properties view together imply, rightly, that Bryce couldn't correctly say

‘What I am hearing *is* an echo’ in the unmodified case, they imply that he could in the modified case, which seems absurd” (Fowler, 2013, p 468).

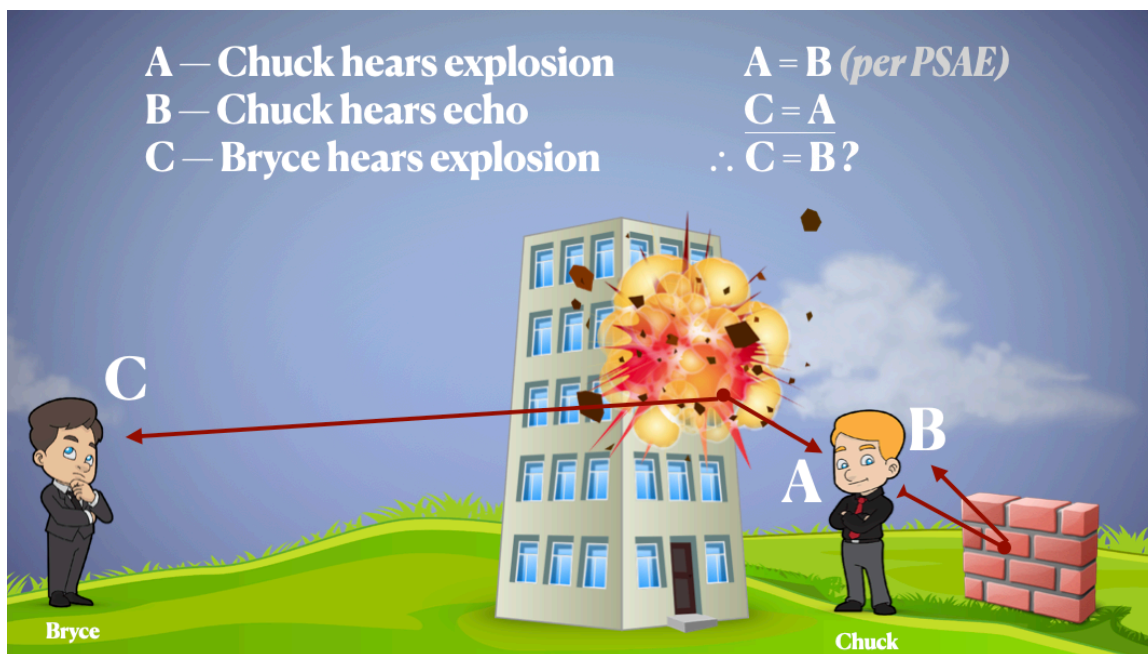


FIGURE 2

You’ll note that I’ve included simple diagrams of how the transitivity seems to flow in these two cases when we assign equality between echoes and explosions per the PSAE. The concept of transitivity of perception is another interesting topic, but a complete exposition of its application here is not in scope. I only present the transitivity flow for reference and as an aid in helping us to better grasp the moving pieces within Fowler’s intuition pump.

Fowler presents two additional cases that he presumes to be successful attacks on the PSAE, a case (Case 3) that centers on the plausible takeaway from PSAE that primary sounds can only have one echo, and a final case (Case 4) that it is possible to ‘outrun’ an echo and cause a secondary (or tertiary, etc.) experience that we’d have trouble counting

intuitively as a new additional echo. Case 3 is especially relevant to the overall claim I make in Section Three, so it is worth briefly describing here:

On their upcoming trip to the Grand Canyon, Devon and Ellie plan to each shout ‘Hello!’ when they reach its edge. Before leaving, they make a bet: Each bets that they will hear more echoes of their own shout than of the other’s shout (Fowler, 2013, p 468).

If Fowler’s conception of PSAE is accurate (and I believe it is⁹), then the likely case of either Devon or Ellie winning the bet is problematic since PSAE would state that “every echo of a sound is identical to that sound and hence implies that no shout can have more than one echo” (Fowler, 2013, pp 468-469). Once again, something feels off when we apply these various intuition pumps across a range of echo cases. Just what is it that makes the PSAE results troublesome at root philosophically?

⁹ Killin does not believe Fowler’s conception of PSAE is accurate. He notes that “all it takes to make sense of these puzzle cases is to disambiguate the notion of ‘sound’ at play in the philosophical theory under dispute, in order to untangle and clear things up—in order to avoid talking past one another and for some progress to be made” (Killin, 2020, p 452). More on this in Section Three and Section Four.

Section Three: (Further Against) the Primary Sound Account of Echoes

As I presented in an earlier form at the 2021 Newcastle University ‘Philosophy Across Disciplines’ conference, I think that Fowler is onto something—but he fails to go far enough. To borrow Dennett’s idea of philosophical thought experiments as being ‘intuition pumps’ (in the positive sense described in *Elbow Room* [1984/2015]), Fowler didn’t quite pump enough in his setup of Case 1. As Dennett notes:

A popular strategy in philosophy is to construct a certain sort of thought experiment I call an *intuition pump*. ... Intuition pumps are cunningly designed to focus the reader's attention on ‘the important’ features, and to deflect the reader from bogging down in hard-to-follow details. There is nothing wrong with this in principle. Indeed one of philosophy's highest callings is finding ways of helping people see the forest and not just the trees (Dennett, 2015, p 13).

Fowler successfully focuses our attention on the part of PSAE in practice that could lead us to the distinctions drawn out above related to a sound's temporary properties over time. If the intuition pump worked, then you likely felt that it would be strange in Case 1 to say that Bryce heard an echo. The same sort of careful intuition design would have presumably guided your intuition to think more than one echo should be counted for a primary sound in the case of Devon and Ellie (Case 3)—somebody would have won the bet for sure. I’ll focus here on what I believe to be a key element missing in the pump design in Fowler’s Case 1 that may strengthen the overall intuition guiding effects and turn the expanded case into a more successful argument.

The good news for Bryce and Chuck is that we don't need to subject them to danger again nor do we need to find a new building to implode. We can use the same building, wall, and positions Bryce and Chuck occupied in Fowler's Case 1. You'll note that Fowler mentions "the sound of a building imploding" and the sound that "rebounds from the wall" and ultimately strikes Chuck's ears for a second time, both elements being critical aspects of the inner workings of the pump (Fowler, 2013, pp 466-467). The piece of the pump setup that I feel is missing is a full account of what is going on with the wall. O'Callaghan himself has gone on record as stating that "Sounds ... are events constituted by the *interactions* of objects and bodies with the surrounding medium" (O'Callaghan, 2007a, p 56). Is the wall an innocent bystander in the PSAE story? A mere 'extra' that is necessary to guide our attention more fully to the leading actor in the philosophical scene? I believe the case is more like a clever murder mystery where the real killer hid in plain sight the entire time and didn't raise any suspicions until the lead inspector took a second look at their alibi.

The particular 'tell' or clue that initially caught my attention several years ago on the PSAE case is on the first page of O'Callaghan's 2007 article, 'Echoes', published in *The Monist*. He states, "...since the brick wall, for instance, merely reflects sound waves and does not vibrate or actively disturb the surrounding medium, the distal views appear to have no sound to identify as the echo" (O'Callaghan, 2007b, p 403). Interesting. What happens to Fowler's Case 1 if the wall wasn't made out of brick and did vibrate and actively disturb the air around it? While we're at it, what evidence do we have to believe this claim that brick walls do not vibrate or actively disturb the air around them at all?

Might a broader definition of what constitutes a vibration or an ‘active’ disturbance render this claim false? Is there such a thing as an ‘inactive’ or ‘not-quite-active’ disturbance event? We’ll get to these questions shortly. First, let’s return to Bryce and Chuck.

In what I’ll refer to as Case 1.1, the scene is the same as described in Fowler Case 1, but the wall is made of a 3/32” thick ‘Single Strength’ sheet of window glass. If you are near a window as you read this, I request you lightly tap it in the middle of the pane with your finger. I tried this in my office, which contains two slightly different-sized windows, and noticed that they each produced a clear tone about a half-step away from each other in pitch. There isn’t much of a mechanical difference between the window panes in my office and the batter head of a snare drum or the sort of bell we’ve been placing inside hypothetical vacuums for centuries. When struck by some object or nearby vibration, they will resonate and vibrate readily and presumably make a sound. It stands to reason that a wavefront with sufficient amplitude could count as the type of object¹⁰ that would be able to cause this effect. In fact, this acoustic effect is common in musical situations that include snare drums. The tell-tale sound of a phantom snare drum rattling simultaneously as a nearby bass guitar amp rumbles (without the percussionist playing the drum) is a problem familiar to many sound engineers. It seems that if we can lightly tap our office window and set it into action producing a sound, the new sheet of glass in

¹⁰ For ease of reading, I’ve admittedly been a bit casual with my use of the term ‘object’ here to refer to waves. If O’Callaghan will allow for “viewing wave bundles as in some, perhaps minimal, sense [being] object-like,” then I’ll take him up on the offer here (O’Callaghan, 2007a, p 26).

our Case 1.1 example would also create a sound that Bryce or Chuck might be able to hear.

The question then centers around classifying this new sound within the PSAE framework. Is the vibrating pane of glass a new primary sound? Is the vibrating pane of glass part of the echo (that would, via PSAE, be the primary sound)? It seems that O’Callaghan has two options here. Either the sound of the resonating glass is a new primary sound (with a causal connection to the sound of the imploding building), or it is an echo via the PSAE. The new primary sound option would create an issue of explaining why reflections of primary sounds count as echoes (within PSAE), and a slightly different mechanical process like resonance warrants sidetracking the PSAE and calling these events new primary sounds. Including resonances within the PSAE framework would risk counting sounds (like the sound of the glass pane vibrating) as being the same as the primary sound—while they would share very little in common with the sound attributes of an imploding building sound.

To draw out the latter case (including resonance events like the window pane sound into the PSAE), let’s move to Case 1.2. As noted above, snare drum snares are tricky little buggers easily set off by most nearby sounds. So we return to Bryce and Chuck and the basic setup of Case 1.1, but we swap out the large window pane for an industrial-sized snare drum. As the building implodes, we now have the reflection of the primary sound off of the large snare drum head, which causes an echo in the first sense we explored in Fowler’s Case 1. Furthermore, we now have an additional sound in the mix—the snare drum is easily set into motion and sounds like a snare drum being struck

as the wavefront from the implosion strikes the drum and causes the two drum heads and the snares on the bottom drum head to be disturbed. If we were to ask Bryce and Chuck not how many echoes they heard but simply how many different *sounds* they heard, we'd have a few likely responses. The intuition pump is running optimally for me as it points to a likely answer of "I heard two sounds—an explosion and a snare" or maybe "I heard three or more sounds—an explosion and its echo(es) and a snare." No matter what our intuitions may be about Bryce and Chuck related to the echo off of the snare head (à la Case 1), it would be unlikely that they would leave the sound of the snare out of their description. Even if the jury is still out on how to treat echoes in Case 1, it seems reasonable to assume that we wouldn't mistake the snare sound for the sound of a building explosion. Whatever gaps in the intuition pump that may have existed in Fowler's Case 1 should now be narrowed in the extended Case 1.2.

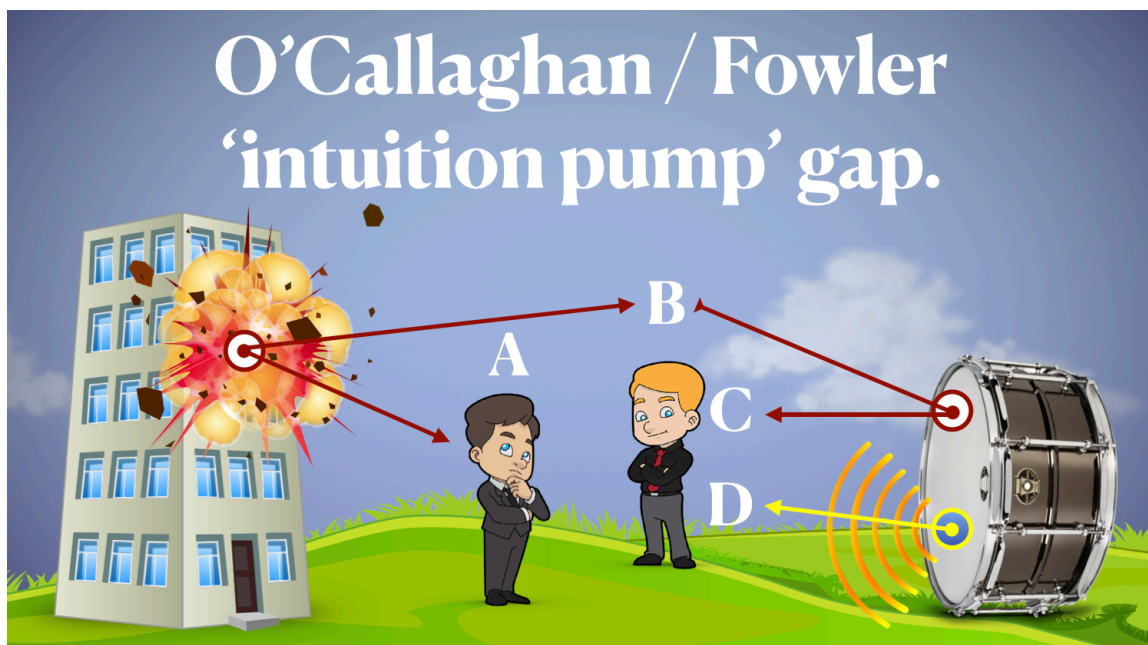


FIGURE 3

Section Four: O'Callaghan's Possible Responses

My attention is now on the new snare sound (labeled as D in FIGURE 3 above) as the likely killer of PSAE that was overlooked as a suspect in the initial crime scene investigation. Fowler had a wall in his case, but I think the substitution in Case 1.2 to a snare drum brings about a new problem for O'Callaghan that he seems to have glossed over in his theory. He notes, "The trouble for distal theories is that a mere elastic collision occurs at the brick wall. Brick walls do not in ideal conditions vibrate and actively introduce disturbances into the surrounding medium ... the distal views appear to have nothing to identify as the echo ... [yet] a simple resolution exists. Hearing an echo after a primary sound is hearing the very same sound particular at two stages of its continuous career" (O'Callaghan, 2007b, p 407). The 'mere elastic collision' and 'in ideal conditions' part of O'Callaghan's setup does not provide the rock-solid alibi he needs. We don't live in ideal conditions. What happens in cases that are more than 'mere elastic collisions'? He continues, "According to the distal views, the apparent echo is the original or primary sound perceived with distortion of place, time, and qualities" (O'Callaghan, 2007b, p 407). This leads me to think that the case could be made for considering the snare drum (or window pane, etc.) resonance events as a further distortion of qualities and being in scope for inclusion within the PSAE. Back to our questioning of Bryce and Chuck about how many sounds they heard, it seems even more strange to imagine them saying that the snare sound is the same primary explosion sound with a few distorted qualities thrown in.

Taking the other path open to O'Callaghan and claiming the snare drum sound is a new primary sound prompts us to ask why echoes warrant special treatment when the

mechanical processes at play between reflected elastic collisions and resonances appear to be quite similar. O’Callaghan’s opening for taking the angle that the snare drum counts as a new sound (distinct from the echo and PSAE) comes in this form: “The primary sound is not an object-like particular that travels through space. According to the version of the event view I prefer, it is an event that occurs only once at the location of the sound generating event” (O’Callaghan, 2007b, p 407). This last sentence contains an interesting footnote, clarifying that “Sound generating events are the events, such as collisions, that cause sound events” (O’Callaghan, 2007b, p 413). One possible read would grant that the vibrating snare drum raises to the level of this type of sound-generating event, outside of PSAE scope, and a new sound that is causally connected to the primary sound but not a continuation of the event in the same manner as an echo would be. Killin seems to take this particular route, likely treating the snare as a distinct disturbance event since “Different senses [of what constitute a sound/disturbance event] are at play here” (Killin, 2020, p 452).

Section Five: Conclusion

No matter how the intuition pump in Fowler's Case 1 guides you, the extended Case 1.2 should highlight additional troubling questions for O'Callaghan's distal Relational Event Theory—or, at the very least, highlight areas in the theory that could be further refined and clarified. He is left with two possible responses to Case 1.2, either including resonance into the scope for PSAE or setting it aside as a special case. In either instance, new issues arise. Including resonance events leaves us with a scenario in which two sounds that share little (if any) sonic resemblance would be said to be one and the same sound. Setting them outside of PSAE creates the issue of justifying why seemingly similar mechanical processes (resonance and reflection) should be handled differently philosophically. The additional concern that O'Callaghan's PSAE appears to rest on 'ideal' conditions that are not likely to occur in the real world warrants further explanation.

While Fowler presented a solid case for potential failure points in the PSAE, the extended cases illustrated here have focused on and amplified his initial efforts. Suppose O'Callaghan's distal Relational Event Theory was intended to overcome novel problems with distal theories of sound (as he explicitly states), and we have shown that he is unsuccessful in that endeavor. In that case, a worrying blow has been landed for distal theorists writ large. Even if, in the final analysis, it seems that the situation isn't necessarily dire for O'Callaghan's distal Relational Event Theory, perhaps it is telling that we need to do so much philosophical work to "untangle and clear things up" (Killin, 2020, p 452). In that case, the outcome of presenting my new echo cases here may turn

out to be less of a reason to shy away from O'Callaghan's distal theory as the correct answer to the 'Where do sounds occur?' question and more of a reason to look seriously at Killin's polysemous view.

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