

# Towards an Understanding of Confusion

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## Abstract

This paper details initial findings in an investigation into the experience of auditory confusion arising from a listener's inability to identify or resolve the source or identity of a sound. An initial survey of the possible ontologies of sound is considered. These ontologies find relevance in one or more of the fields of study or *sound recording technologies* that are subsequently considered. These include anthropology (Feld 1982, Augoyard et al. 2006), acoustics, musicology (Chion 1983/2009, Smalley 1997), literature and poetry (Empson 1930), psychoacoustics (Bregman 1999, Moore 2003), soundscape studies and acoustic ecology (Schafer 1993, Truax 1996), and acoustic communication (Truax 2001).

The original research presented includes data from semi-structured phenomenological interviews with twenty experienced and naive listeners, and a self-reflective and documentary journal. Themes arising from this data are shown to support the categorisation of sonic effects detailed by Augoyard (2006) and are presented as a precursor to more formal analysis. These findings highlight the broad range of features associated with the experience of auditory confusion.

## 1. Introduction

This paper details initial findings in an investigation into the experience of auditory confusion or uncertainty arising from a listener's inability to identify or resolve the source or identity of a sound. This type of confusion may arise due to ambiguity in the sound itself.

Ambiguity is often included amongst the compositional concerns of electroacoustic and acousmatic composers (Wishart 1996, Smalley 1997). Many authors assume that we know how ambiguity operates or theorise it in terms such as *gestural surrogacy* (Smalley 1997) or association. The research described here attempts to discover what the experience of auditory confusion is like and what types of ambiguity can cause it.

We can speculate that confusion and ambiguity are reflexively correlated, to use the jargon of phenomenology. Where the object of contemplation is ambiguous or open to more than one interpretation it may cause uncertainty or confusion - a bringing together of diverse impressions. Conversely, where a state of confusion exists in the mind of the listener, sounds may appear ambiguous or be misinterpreted.

The original research presented includes data from semi-structured interviews, and a self-reflective and documentary journal. I consider key themes from this data as a precursor to more formal analysis. These findings highlight the broad range of features associated with the experience of auditory confusion amongst the participants selected.

Why concentrate on confusion? I take inspiration from a diverse range of influences. I note initially that many of the insights of Pierre Schaeffer and his colleagues came from studying paradoxical phenomena (Chion 1983/2009). The repetition and dissociation of the closed groove recording and transformations of identity caused by modification of the amplitude envelope of recordings are primary examples. The poetic and creative force of ambiguity is well represented by William Empson's (1991) analysis of literary texts. My personal experience of the value of sound reverie was strongly validated by the phenomenological investigations of Gaston Bachelard (1964). Furthermore, I find a growing contemporary interest in ambiguity in the study of linguistics and a guiding example in the work of the Augoyard (2006) and his colleagues at the CRESSON research centre in France, who have already highlighted many significant aspects of the experience of confusion including such carefully observed effects such as the Sharawdji effect - an apprehension of the beauty of a complex and confusing soundscape (Augoyard et al. 2006, p.117).

I am still far from drawing any conclusions, however, I am led to believe that ambiguity is probably an essential aspect of the experience of sound.

## 2. What is sound? Sound ontology and sound recording technologies.

In introductory lectures to undergraduates I ask the question: "what is sound?" I start with the paradox: "if a tree falls in a forest and no one is there to hear, does it make any sound?" We go on to seek simple descriptions and explanations of these phenomena. We introduce the physical properties of acoustics: frequency, intensity, and so on; and their perceptual

correlates in musical acoustics: pitch and loudness, etc. At the introductory level these discussions are adequate until we approach the issues of making, designing and composing with sound.

In English we have the words listening and hearing. We can listen not only to individual sounds as elements of an environment, but we can listen to spoken language and the complex and sometimes abstract entities that it creates, and as poets, novelists, sound designers, and composers of electroacoustic music like to think, we can listen to the former and hear the latter. We can hear other things as well. We can hear the formal structures of both instrumental music and rhetoric. We can also hear without the presence of acoustical stimulus. I hear the voice of my dead grandfather, or the strange particularity of a general sound idea or image such as applause or a handclap.

Sound is something we listen to. The acousmatic is distinct from but continuous with other types of listening. Words, for example, are sounds already detached from their source. This property has been noted by Gilles Deleuze (1987 p. 567) amongst others.

The phenomenon of sound, a correlation between, and a construction of a listening subject and a sounding world is often complex in its genesis. For example, I hear the voice of my father as I rebuke my five-year-old daughter. I say, "listen to your mother, listen to what she is saying to you", I reflect in the moment "if only she would listen to reason". Here we see the fundamental ambiguity of sound and listening – simultaneously an identity, a subject/object, a set of linguistic meanings, and an epistemology. The words "listen to reason" appear in Trevor Wishart's seminal composition 'Red Bird' (1977).

As you know, Pierre Schaeffer attempted to schematicise these listening relationships in his four modes model which details: listening [écouter], perceiving [ouïr], hearing [entendre], and comprehending [comprendre]. Both Michel Chion (1983/2009) and Charlotte Mandell in her translator's notes for Jean-Luc Nancy's book "Listening" (2007) have highlighted the French language's propensity for insight into the subtleties of sound.

Keeping Ockham's razor at bay we can multiply the possible ontologies of sound by examining the range of what I have provocatively termed 'sound recording technologies' and their objects of study.

The first stop on this tour of sound recording technologies, as it is for my undergraduate students, is the apparent physical reality of the everyday as understood by acoustics, the study of the physical phenomenon of sound with objectively measurable physical properties. Acoustics demonstrates a functional predictive power.

The study of psychoacoustics provides us with the ontological view of a percept with statistically normative psychological characteristics. Various phases are described in cognitive models of auditory perception and cognition. These phases are associated with a not necessarily linear progress through peripheral and central auditory processing systems, relying on notions of sound characterised as and identified with neurological events, dynamic sensory data; as patterns, and as images stored and recalled in various forms of memory; as schemata; as segregated discrete, coherent objects, events or streams, and as elements within an auditory field with the status of figure or ground, foreground or background.

Sound recording technologies encompass techniques and methods for recording, describing, explaining, interpreting and communicating sound in all its various modes of existence.

Sound as an independent aspect of human culture is dealt with in the practice of music and its study in the discipline of musicology. Here, the work of art and everyday practices of production and consumption further multiply the being or becoming of sound. We have the intentions of composers and performers; we have the experiences of ordinary listeners and critics alike; we have scores, audio recordings, and performances; we have instruments and venues, each producing a particular token of a more general type of sound; we have authenticities, interpretations and experiments. In writings about sound and occasionally in their realisation we have forms and structures, we have categories and typologies.

Political and metaphysical entities and historical periods also have sounds.

In anthropology the complexity of sound in human life is further revealed. The anthropologist, Steven Feld came to this realisation while attempting to use a taxonomy of birds identified by their calls as a way of understanding the Kaluli language of the New Guinea highlands. He reports a breakdown in communicating with his local research participant in which the informant objects: "listen – to you they [the sounds] are birds, to me they are voices in the forest." For this local informant they are voices of the ancestors communicating important information about the environment. Feld's revelation is that sound and reality are structured differently in Kaluli epistemology (Feld 1982 pp. 44-45).

In another example acoustic ecologist Torigoe Imada (2005) asserts that the Japanese word for music changed its meaning after the impact of Western culture on Japan. In prior usage music referred to the sound making practices of foreigners, and Japanese music was considered contiguous with the rest of the soundscape.

In spiritual practices sound often exists as a link to the metaphysical, spiritual or collective. In astrology the heavenly bodies are sometimes considered to have sonorous properties.

In the fields of acoustic design (Schafer 1993, Augoyard et al. 2006), acoustic communication (Truax 1984, Sonnenschein 2001) and architectural acoustics, sound functions to motivate consumer behaviour, modulate physical space and transform

visual images and narrative. In the instrumental understanding of sound its existence should never be separated from the total context of sensory experience. In this view, sound is always part of an immersive lived totality.

Finally, sound is recorded and reproduced in works of literature and poetry. In written language sound structures narratives, experiences, place and time. In, for example, English romantic or imagist poetry and Japanese haiku the reference of sound constructs a powerful inter-subjectivity. In literature sound exists as metaphor, metonym and numerous other tropes of connotation and denotation. In words such as echo and resonance sound takes on a strange double-life. The experiences of listening and hearing and the existence of sound as related in literature often have a kind of truth that reveals yet another of sound's many guises.

### **3. Auditory confusion: what is it like? Everyday listening – how people report their experiences of confusing listening events.**

The model of auditory perception offered by cognitive psychology describes a phased process of sound identification (Bregman 1999, Moore 2003). The first phases necessarily involve some level of indeterminacy which in normal cases is progressively resolved. It is a characteristic of our being-in-the-world that these initial phases of confusion are hidden from consciousness. This suppression enhances our confidence in our relations with a fixed and knowable world and facilitates communication and other interactions with the world. This description of auditory perception implies that auditory confusion is a normal part of everyday listening and hearing. My experience and therefore my hypothesis is that overt experiences of auditory confusion can result in aesthetic engagement with sound and the world. (Note that an alternative view of perception, which avoids these staged aspects and refutes my interpretation of the essential aspect of confusion is presented by Gibson's ecological model (Gibson 1986, Neuhoff 2004).)

To explore this hypothesis I am undertaking a series of interviews, keeping a personal listening journal and investigating representations of listening experiences in works of literature.

The interviews are loosely structured around three simple questions using a narrative interview method.

Prior to answering the questions, participants are asked to rate their listening expertise. Unlike other skills, like musicianship for example, it is unclear exactly what listening expertise is. Rather than a simple likert scale, what is developing through this process is more like a listening inventory. I offer participants a sample list of descriptors of listening activities. Compare, for example the listening skills of a psychotherapist with the listening skills of a musician, with the listening skills of a motor mechanic, with the listening skills of a birdwatcher, a sound engineer, a radio producer. What is being attended to and how, in each of these cases?

Participants are asked to recount in descriptive narrative form, experiences related to the following questions:

1. Have you experienced a situation where you could not determine the source or cause of a sound, or the sound you heard turned out to be caused by something other than what you initially thought?
2. Have you experienced a state of reverie or intense imaginative engagement or distraction as a result of your listening to a particular sound?
3. Has a reverie of this type ever resulted from a sound the source or cause of which was ambiguous or mistaken?

So far I have resisted reducing the responses to invariant essences or categories. However easy it may be to report on typical sound types, attention types, context types, emotion types, and so on.

Most stories are told in the context of the first two questions describing experiences of misidentification or confusion as separate from experiences of imaginative engagement. It turns out however, that the majority of stories in the first category do involve some sort of imaginative engagement or reverie and most stories of the second type involve, at some level, mishearing or hearing something other than the indexical sound source. Often when this is pointed out in the interview the participant is quite surprised to realise that this is actually the case.

Perhaps this is not so surprising. These experiences after all have been committed to memory so presumably they had some psychological impact on the listener. Given my interest in ontological distinctions it is perhaps not surprising that I should highlight ambiguity in the sounds described. It is also likely that, as one participant pointed out there are very many experiences that are not remembered and therefore not reported.

It is also worth reflecting that the materials under investigation here are not actual listening experiences, what ever those might be, but people's accounts of their experiences.

At this intermediate stage, one way of addressing my doubts as a researcher is to compare my observations with existing data. A very useful reference is the catalogue of sonic effects collected by Augoyard and Torgue (2006).

This catalogue includes a useful neologism that captures the focus of my research topic. They introduce the term *phonotonic* which I had previously called *sonic reverie*. For most people this is associated with listening to music or the natural environment. However, for a significant number of my interview participants this euphoria, as Augoyard and Torgue put it, is associated with many types of listening experiences.

Here are the most significant of these effects which relate directly to the experiences reported by my interview participants. I am paraphrasing entries from the book *Sonic Effects* published in English in 2006:

**Anamnesis:** is “an effect of reminiscence in which a past situation or atmosphere is brought back to the listener's consciousness, provoked by a particular signal or sonic context” (p. 21).

This effect is more or less a cliché, and not surprisingly is reported by several interview participants. It is usually associated with a strong emotional response sometimes positive sometimes negative, and usually with other sensory detail reported.

**Ubiquity:** “an effect that expresses the difficulty or impossibility of locating a sound source. Sound seems to come from everywhere and from nowhere at the same time or, sound seems to come simultaneously from a singular source and from many sources. Beyond simple sound reflections that limit localization, the ubiquity effect opens the way to the metaphysical dimension of sound” (p.130).

The related effect of **delocalization:** implies recognition of an error in localizing a sound source. As with the ubiquity effect, the listener does not know where the sound comes from; however, with the delocalization effect, the listener knows exactly where the sound seems to come from, while at the same time being conscious that it is an illusion” (p. 38).

Several participants reported both of these effects, often associated with a particular indoor or outdoor locations that they enjoy experiencing and are continually fascinated by. The delocalization effect is often amplified by or amplifies ambiguity in source identification or classification.

**Sharawadji:** “an aesthetic effect that characterizes the feeling of plenitude that is sometimes created by the contemplation of a complex soundscape of inexplicable beauty. In this brutally present confusion, we lose both our senses and our sense” (p. 117).

This effect is essentially captures the hypothesis of my study and is reported by a number of listeners in a range of contexts.

In the **anticipation** effect “someone waiting for a sound to appear will "pre-hear" - he or she will actually hear - the expected signal, even if no sound has been emitted” (p. 25).

In my study this effect is described particularly by musicians performing with technology or improvising where they are convinced that they are producing a sound that actually originates from elsewhere in the ensemble or within their own performance system but not by the element they are currently controlling. This effect may also account for illusions or errors of judgement that often occur in comparing or evaluating processes in audio engineering.

**Remanence** is “a continuation of a sound that is no longer heard. After the extinction of both emission and propagation, the sound gives the impression of remaining "in the ear."” (p. 87).

Similar to anticipation this effect is reported by musicians. The effect is also reported in the context of domestic situations where an appliance appears to be operating when turned off or where electroacoustic music appears to continue in the environment after its source has been eliminated. Once again these effects highlight the complexity of sound ontologies.

**Phonmnesis:** “refers to a sound that is imagined but not actually heard” (p. 85).

Examples from my interviews include both musicians, sound engineers and concert goers (often in the context of minimalist acoustic performances) hearing sounds that are evidently not caused by acoustic sources. One composer reported this effect, and one listener reported that this effect is essentially extinguished by the mistrust of the causal relations of sounds and their sources in electroacoustic performance situations.

**Attraction:** is “a phonotropic effect in which an emerging sound phenomenon attracts and polarizes attention, be it conscious or not. The magnitude of this effect can range from fleeting comprehension to the complete mobilization of attention” (p. 27).

This is the basic structure of much of the engagement reported in the interviews and is in contrast to sharawdji type effects.

**Decontextualisation:** “the incongruous intervention of a sound or group of sounds into a situation where the sonic content is otherwise predictable” (p. 37).

This effect is reported by those listening to electroacoustic music in a domestic context and often experienced by other unsuspecting listeners in their vicinity. This is perhaps a higher order outcome of Murray Shafer's schizophonia (1993) and has amusing and frustrating results such as listeners searching for the source of a sound implicating faulty domestic appliances, faulty cars, noisy neighbours, alien invasion and other apparent sources, where the actual source is the CD player.

#### **4. How do I listen? A listening journal as evidence of listening behaviours.**

The frequency and significance of these events is hard to determine and to help address this issue I have been maintaining a listening journal. One thing I note from this journal is that the number of events recorded seems to be in inverse proportion to the number of events recorded in my work diary. In other words I seem to need the space in my life and in my mind to

accommodate these interesting listening experiences which are often moments of pleasure and reflection. Occasionally however, the aesthetic force of the audible world imposes itself on the preoccupations of the everyday often in unexpected moments. The listening diary provides data for a sort of sensory auto-ethnography, a research method that I am still attempting to develop.

## 5. Future research

Taking methodological inspiration from experimental phenomenology, I am still in the initial phase of descriptive horizontalisation of the interview data. I plan to continue in this mode in examining references to experiences of auditory confusion in poetry and literature. So far I have collected about forty examples of references to this type of experience. I have also done initial investigations into the content of the World Soundscape Project's Sound References in Literature database using automated content analysis techniques and I look forward to being able to report on these in due course.

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