

In-Listening-In: An Exploration of Ambisonic Audiography as an Alternative Approach within Sound Studies

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Abstract

This paper offers the ambisonic audiographic form as a viable alternative approach to theorizing within sound studies. The approach is exemplified in the essay-artwork *In Listening In* that allows the listener to be fully immersed in semiotic and sensorial sound. Traditional modes of theorizing emphasize critical distance and objectivity. However, considering sound and listening phenomenologically, sound/object and listening/subject are interdependent, each bringing the other to meaning in a correlation I call sonaurality. The visual paradigm of observational separation is thus ill-equipped to theorize sonaurality. I propose that the writer can consider the experience of sounding from within, acknowledging context, sitedness and partiality as per Haraway (1988). I call this a tomographic approach, borrowing the term from the medical procedure that explores within a body via multiple X-ray slices. *In Listening In* enacts the tomographic authorial position in its textual material and style additionally repositioning the reader as listener through what Smith calls “critical audiography” (2019). The audiographic form is extended via the ambisonic audio potentials of 360VR technology, fully immersing the listener and sensorially reinforcing the arguments. While the essay-artwork can stand on its own academically, this paper argues for the ambisonic audiographic form as both a methodology and format that is a valuable approach within sound studies.

Keywords

Audiography, creative sound theory, practice-based theory, ambisonics, 360VR, phenomenology, tomography, subjectivity, podcasts, audio paper, sound studies.

Introduction

This paper is a discussion of the artwork and ambisonic essay *In Listening In*. My argument focuses on how this practice-based approach stands on its own as an alternative yet equivalent form of academic paper, however as a relatively new, speculative form it is beneficial to accompany the creative paper with a defence that uses a more traditional format. Consequently, this paper provides an analysis of what I am calling the ambisonic audiographic form and makes a case for why we should be seeking alternative ways to theorise sound and the sonic arts. [1]

This research argues that the way in which sound theory is conducted and published can benefit by moving beyond the traditional, silent print paradigm. It calls for sound theory to sound, encouraging a thinking through the medium of sound and the experience of listening. The argument is supported by provocations from a number of sound theorists who propose that there is an embedded bias in the notion of critique and theorizing that comes from the premise of observational distance. When a phenomenological ontology of sound is adopted in which sound (object) and listener (subject) make meaning through their meeting and mingling, then the subject cannot be considered separate from the object and the sense of distance required for observational critique cannot exist. Consequently, the correlation of sound and listening can benefit from other ways of theorizing that offer a response from within the relation—a response that is no less rigorous and does not slide into solipsistic subjectivity.

This paper offers an argument for an alternate approach to sound theory that has two key innovations. Firstly, there is the suggestion of an authorial position I have termed “tomographic”. Adapted from the medical terminology for the imaging procedure that takes x-ray slices from within a body to create a compiled picture from fragments, writing tomographically allows for the inclusion of slices of experiences that are then reflected on from without to form a cohesive commentary. The second method emphasises the formal and medium specific delivery of sound commentary through audio or what Smith calls “critical audiography” and Groth and Samson discuss as audio papers. [2] I then propose the extension of audiography to embrace the ambisonic capabilities of 360VR, to make the argument for theorising from within through a heightened sensorial reaffirmation of conceptual argumentation, as exemplified in the project *In Listening In*.

Sonic Ontologies

Critical discourse does badly in dealing with sound as it assumes and insists on the gap between that which it describes and its description—it is the very opposite of sound, which is always the heard, immersive and present. [3]

In order to make the argument as to how traditional methods of theorising are not compatible with the study of the sonic

realm it is first necessary to explore what we believe sound is, particularly as it is used in creative practice. This section explores the two main ontological explanations of sound, the phenomenal and the material. Through an analysis of this, I will put forward my proposal for sound and listening as the combined unit I call “sonaurality”.

Phenomenal Correlations

My proposal for sonaurality is founded on a phenomenological understanding of sound as put forward by Pierre Schaeffer, Don Ihde and Salomé Voegelin whose arguments are in turn based on the philosophy of Edmund Husserl and Maurice Merleau-Ponty. [4] Husserl initially proposes a formal way to understand our understanding of the world in which there is the “noema”, the object that is being perceived—in this case sound—and “noesis” or the “noetic act”, the way in which something is experienced—the act of listening. [5] The noetic act utilizes a bracketing of external assumptions and preconceptions, called an *epoché*, which allows us to experience the essence of an object as it is presented to us perceptually. When we specifically turn our attention to something using the *epoché*, we become aware not of the thing itself, as we can never know the thing itself in its entirety, only our perceptual perspectives on it. [6] Continuing Husserl’s thinking Heidegger introduces the physical body and its openness to suggestion from “stuff” into an active relation between objects and subjects. [7] Merleau-Ponty develops these ideas further suggesting that sensory objects (the world) are directed towards their subjects, who importantly are mind and body (not just mind) and in turn, subjects are directed towards the objects. [8] Our embodied engagement with the world and the world’s engagement with us is a mutual and reciprocal exchange. Neither subject nor object can be considered independently, rather they need to be understood as a correlation.

It is this understanding of interdependence that Pierre Schaeffer exemplifies in his proposal for *musique concrète*. He describes the *objet sonore* as the sound object, the sound of the sound, rather than its cause, source or signification. We can only access this aspect of sound through the *epoché* of reduced listening, in which we listen to the qualities of the sound rather than seeking its everyday meaning. [9] The sound object and reduced listening are correlated, each bring the other to being. Voegelin further explicates this idea proposing that sound is “made” in the listening: “the auditory is generated in the listening practice: in listening I am in sound, there can be no gap between the heard and hearing”. [10] In this configuration, sound and listening, subject and object are in a symmetrical relation of interdependence.

Material Flows

Christoph Cox proposes a contrasting, asymmetrical materialist approach in which sound is independent of the listener. He draws on Schopenhauer who argues that “the world is will: an undifferentiated, propulsive energy or force” which we can only experience through representations. [11] Sound, as noise, always already exists as a kind

of underlying force. It is part of the eternal flux and flow which choose to tune into when we listen.

Nietzsche continues Schopenhauer’s argument, proposing that music is “an audible expression of nature in all its dynamic power”. [12] For Nietzsche nature and culture are collapsed together. Nature itself is “creative” and human creativity is simply an expression of nature. Through this, human culture is part of nature’s flow. [13] Cox concludes that sound art activities are thus projects that sample the flow and reveal the “‘intensive’ dimension of sound”. [14] He backs this argument with John Cage’s understanding of noisy sound as a “ceaseless production of heterogeneous sonic matter” that “precedes and exceeds individual listeners”. Composers are “curators of this sonic flux”. [15] While this understanding allows sound to exist independently, it still acknowledges that something specific happens when we decide to tap into and frame the flow. There is still something that depends on an interaction, a relation.

Tim Ingold believes that sound is continuum as it is the “medium” that we hear in just as light is the medium through which we see. [16] Ingold offers a more explicit bridge between the materialist and phenomenological by focusing on relations between “things”. Ingold incorporates Merleau-Ponty’s entanglement of sensing and sensed through his term of “meshwork...the co-responsive movement of the occurrences of things” in the process of becoming. [17] In Ingold’s view, humans and our environments are things that “leak...interchanging materials”. [18]

Voegelin also seeks to meld the materialist and phenomenological perspectives by reminding us that the body that figures so prominently in Merleau-Ponty’s subject is still material, a position that Voegelin proposes the masculine materialist approaches of Meillasoux and Harman tend to ignore. [19] Voegelin’s feminist materialist perspective is integrally one of relations—relations between matter reflecting the correlations of phenomenology. Both Ingold and Voegelin illustrate how materialist and phenomenological positions can overlap, inform and enrich each other and how sound encourages plural understandings.

Sonic Art and Sonaurality

These ontological perspectives are presented to build an account of the specificities of the aural realm so that we may then make a case for alternate approaches to critical knowledge paradigms (dealt with in the next section). Even in this brief account it becomes clear that a singular ontology for sound is not possible or useful in terms of generating further understanding. For the purpose of this research I propose a framework that stems primarily from the phenomenological as it offers more opportunity for discussion in relation to the sonic arts in which embodied experience is the predominant engagement. This is the understanding that sound and listening bring each other not into being, but into significance for human experience. This is clearly an anthropocentric perspective because that is what is useful to discuss humans’ experience of sonic art. The material accounts that free sound from the anthropocentric are not completely denied. As per Cox there is the possibility of sound as event,

material or vibration without the need for listening, but as subjects we can only consider this sound through our engagement with it, and thus it becomes part of phenomenological correlations.

To simplify the terminology in a way that allows us to always consider the correlation of listening and sound I propose the term “sonaural”. Sonaurality allows for the entanglement of sound and its reception through listening. (This does not always have to be real and sensorial but can be presented in conceptual forms). So, if theorizing sound is in fact theorizing the sonaural, we must now investigate if traditional methods of theorizing are fit for purpose.

A Critique of Critical Distance

Theory’s Visual Paradigm

There is a growing body of writing that questions how the traditional paradigm of theory does not suit the specificities of sound and listening. [20] Relying completely on etymology can be essentialist, however it should not be too easily dismissed that the word theory comes from *theoria* in late Latin meaning “to look at, or to see and the Greek *theoros*, “spectator”, and *thea*, “sight”. [21] Several writers have suggested that there is a visual paradigm implicitly embedded in theorizing due to the notion of critical distance and objectivity. [22] Observation or “looking at” are activities that imply there is a distance between the observer/subject and the object of study.

However, if we consider sound as essentially a correlational situation in which the subject is in the midst of the object and whereby each bring the other into meaning, then there is, as Lavender says, a “fundamental mismatch between the nature of sound qua object and the conditions of possibility for knowledge that are rooted in the intellectual traditions of the West”. [23] Sonaurality as the correlation of object and subject can benefit from a different approach to theorizing; one that can work with the entanglement of subject and object in an immersive embrace of sound and listening. Sonaurality offers the opportunity for what Lavender calls a reconfiguration of the “relationship between thought and its object”. [24] In this way sound theory can be seen as a “meta-discipline... in which the status of theory itself is at stake”. [25]

Steintrager and Chow, also question the application of observational paradigms to sound stating “that the very framework and rhetorical resonances of “theory” are potentially misleading and inadequate—and that theory itself must also proceed otherwise, with sound. [26] Sound is not observed, it is experienced immersively and from an embodied perspective from within. To theorize from without works against this situation.

Even if we consider the material perspective of Cox, he finds the traditional modes of theorizing problematic. The issue for him is the reliance on text and image that preferences representation and signification in a way that is heavily entrenched in “semiotics, psychoanalysis, poststructuralism, and deconstruction”. [27] He proposes that a materialist

theory of sound and sonic art allows us to move beyond a consideration of the world via symbolic and representational paradigms, with their attendant binaries of mind and matter, culture and nature, and to approach the world as flows and forces. From both the phenomenal and materialist ontologies it is clear that sound provides the opportunity to reimagine how we have thought about theory.

Authorial Authorities

The issue that the visual paradigm highlights is the location of the author: from where within the experience does the writer-subject speak, and with what authority? Traditional theory, with its requirement of critical distance, claims objectivity in which, according to Daston and Galiston, the resulting knowledge “bears no trace of the knower—knowledge unmarked by prejudice or skill, fantasy or judgment, wishing or striving”. [28] The term objectivity as we use it now actually only emerged in the nineteenth century but there were preceding epistemologies that pursued similar or aligned agendas.

The pursuit of knowledge by the Ancient Greeks was, according to Plato, a pursuit of “justified true belief”. [29] The epistemic model of realism (empiricism) proposed by British philosophers such as Locke, Berkeley and Hume valued distanced observation, in which the observer insists on their separation from the action. The German Idealists (rationalist) such as Kant and Hegel, acknowledged our inevitable role arguing that we cannot experience the world directly, only through our experience of it. However, the idealists still employed distancing devices that insisted the resulting idea was an independent “truth” about existence. Ihde identifies that in idealist philosophy there is often a metaphysical leap: “When the limits of sense are reached, it posits an unsensed sense; when the limits of consciousness are reached, it posits an unconscious-consciousness; when the chain of causes threatens to proceed to infinity, it posits an uncaused-cause”. [30] The explanatory leap, invention or intervention diminishes or explains away individual human involvement in order to make claims for a universal truth.

The problem with these ways of thinking is that objectivity is pitted against subjectivity in a “convex/concave” relation. [31] This objective/subjective binary is a construct of European (and later American), patriarchal origin in which rational objectivity as the correct path to enlightenment was only open to educated Western males. This maintained a system of racial, class and gendered suppression. It is only with the questioning of binaries, and destabilization of universalities that came about with mid-to-late twentieth century post-modernism and feminist theory that there arose the possibility of other ways to consider the subjective/objective division. It is beyond the scope of this paper to enter into a detailed discussion of the history of objectivity and subjectivity; however, some key aspects are highlighted in the following proposal for a nuanced authorial position from within, which I have termed “tomography”. [32]

Tomography: Slices from Within

The concept of critical distance places the subject—the experiencer and/or writer—outside the experience, which, as we have discussed is a difficult, if not impossible place from which to understand the sonaural entanglement. So, what are the possibilities for an authorial position within sound that is not purely internal and solipsistic? Rather than an outright rejection of objectivity, Donna Haraway chooses to recast the notion as a feminist objectivity. She rejects a disembodied and displaced “view from nowhere” and suggests that it is possible to have a truth-seeking perspective that actively includes the context of the knowledge—the situatedness of the researcher and the partiality and incompleteness of this. [33] It is from this understanding of situatedness and partiality that I pose the metaphor of tomography to approach sonic thinking.

Borrowed from the medical sciences, tomography is the procedure in which slices or sections of a body are taken via a penetrating wave, for example X-ray, magnetic resonance imaging (MRI) or ultrasound imaging (interestingly a sound-based technology). These slices from within are compiled to create a view that can be considered from without. Tomography as a thought-figure comes more into focus when we consider it in relation to topography which is concerned with mapping the surface of things. De Certeau’s parable presented in “Walking a City” reflects this difference. [34] He talks of how a view from above offers a topological map, but the map is made by the walker on the ground. He suggests that “Surveys of routes miss what was: the act itself passing by. These fixations constitute procedures for forgetting. The trace left behind is substituted for the practice”. [35] It is the emphasis on practice that is important here. Within the tomographical approach, there is an account of the act and practice of listening. The temporal continuity of sound means that account is inevitably fragmented but in the accumulation of fragments, there arises the possibility for rigorous reflection from within.

The tomographic approach acknowledges the sonaural entanglement of sound and listener by allowing for an authorial position that is experiential, embedded and immersed. It offers a cross-section of a sonic act, a detailed slice of the listening experience, but in the compilation of slices there is an acknowledgement of relations in action; experience in relation to other internal and external factors. This reflexive acknowledgement draws on Haraway’s situated and consciously partial knowledges, in which the theorizing provides context and specificity that allows it to have a rigor, rather than a relativism. The tomographic compilation is inevitably incomplete, but consciously so—universality is not claimed. Rather, the incompleteness opens up possibilities for connection with other accounts, acknowledging that knowledge is formed from and forms a web of relations.

However, it is not enough to propose an alternative position. The vital aspect that is often missing in propositions for alternate sound theory is the actual application of it—the presentation of these new ideas in new forms. The ambisonic audiographic essay is an attempt to put theory into

practice, to exemplify the tomographic authorial position that also allows the reader-as-listener an immersed, embodied position from which to consider the theory.

Sounding Theory: *In_Listening_In*

Audiography as Methodology

In the creation of *In_Listening_In* I engaged with Jacob Smith’s notion of “critical audiography”, a term he uses to describe works that are “made with the audio form in mind, using recorded sound as an essential component in the making of an argument”. [36] Using sound as the format of an essay encourages a dual mode of factual or “empirical” listening and imaginative listening. Smith suggests that empirical listening can be brought about by the “concretization” of details with real world sounds (an idea he borrows from Mikhail Bakhtin), while creative composition, with its sensorial affect, allows for more speculative and generative thinking or “adventurous listening” (an idea he develops from Kate Lacey). [37]. Soltani, similarly argues for the value of aural argumentation suggesting that the power lies in sound’s dual application as semiotic and sensorial material that can be used to heighten association, contrast and provocation. Beyond semiotic meaning the sounds are phenomenologically significant, expanding the work’s perceptual engagement with the world. [38]

Smith has put his ideas into practice with his remarkable audiographic project *ESC*. It is 10-part analysis of the 1950s radio adventure drama *Escape*, considering the stories and their underlying ideologies with an ear to ecological issues affected by capitalist driven Anthropocentric activities. Smith crafts his arguments from fragments of the original program, insightful commentary and concretizing examples from contemporary sound artists such as Jana Winderen, Daniel Blinkhorn, Christina Kubisch and Sally Anne McIntyre. Smith uses the field recordings “contrapuntally” (a notion drawn from Edward Said)—the contrast between the 1950s foley and the real-world sound being both semiotic and affective. Offering a post-colonial analysis, the field recordings give the environment and location an agential voice redressing the silencing and marginalization of voices in the grand expansionist narratives. [39] *ESC* is published both as an audio monograph on the University of Michigan’s Fulcrum platform, and as a podcast, format choices that allow it to reach both academic and non-academic listeners, which is a significant beneficial feature of audio-based sound theory. [40]

Audio Papers as Praxis

Aimed more specifically at enhancing the academic world’s listening is the proposition by Groth and Samson of the audio paper, particularly associated with the Danish online journal *Seismograf*. [41] In their manifesto Groth and Samson suggest that one of the key benefits of the audio paper is that it allows for Haraway’s sited partiality, offering a plurality that gives (sometimes actual) voice to a range of

protagonists, challenging traditional objective and singular positions of authority within academic discourse. There is also an inherent reflexivity of the form as it enacts or performs the mediation which it is frequently discussing: “The mediation reveals meanings through, for instance, the physicality of sound or the dramaturgy by which the soundscape, voice and theses are put together”. [42]

In its performativity, the audio paper also illustrates the constructive relations between theory and practice in which the theorist must engage with the materiality of their subject. Within this notion of praxis they suggest audio papers need to strike a balance between being an artwork and an academic paper. They propose the audio paper as “an art-based research methodology allowing academics to experiment and to show the processual aspects of research in the final research stage—the paper”. [43] *In_Listening_In* embraces the proposal of audiography and audio paper as practice-based methodology in which the empirical and speculative, semiotic and sensorial, are at play. Furthering the standard stereo delivery to an ambisonic format, I argue there is an even greater effect offered by the form’s enactment or performance of content.

Immersive Form and Content

In_Listening_In uses the technology of 360VR to deliver an immersive and spatially dynamic audio experience called ambisonics. Beyond mere stereo, ambisonics allow for a 360-degree sonic sphere to be created so that the listener is fully immersed. Viewed on an appropriate device that allows for movement information to be registered, such as a head-mounted VR display or hand-held mobile or tablet, the sound spatialization is relative to the user’s movements. Instead of staying as a static stereo environment that moves as-a-whole with a head turn, the sonic environment functions like in the real world, staying in its place, while the body moves within it. For *In_Listening_In*, this allows the content, which concerns the immersive ontology of sound, and the search for an attendant epistemology, to be manifested in a highly affective sensorial manner.

The text, read by myself, combines poetic fragments, personal anecdotes and concise summaries of theoretical concepts. It is written for aural reception and employs poetic reduction and attention to fluidity, pacing, rhythm and aural comprehension. The piece is underscored with soundscapes composed for spatial delivery. The opening soundscape is adapted from material I composed for the *Tanks Project* in 2018–19, an eight-channel surround concert and installation presented in a decommissioned circular oil tank at Middle Head, in Sydney Harbour. [44] This introduction is aimed at allowing the listener to acclimatize and explore the immersive environment sonically and spatially.

As the content continues with a focus on journeying, I use sounds from my own field recording archive, gathered in Europe and Asia, using binaural microphones. These are matching microphones that are placed in or around the ears recording the sound as it is heard through and around the anatomy of the recordist’s head, creating an intensified sense of stereo. The binaural recordings are adapted to the

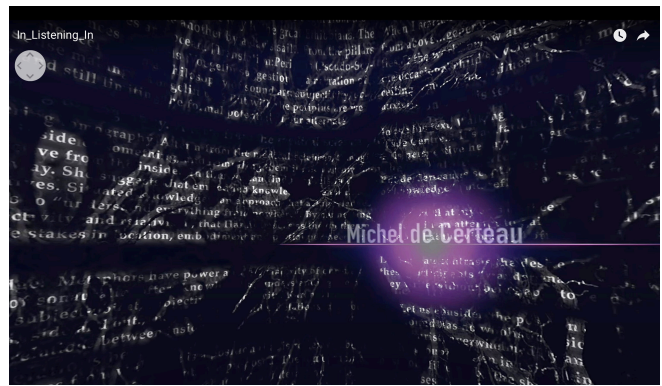


Figure 1 Gail Priest, *In_Listening_In* (screenshot) © Gail Priest

ambisonic environment, with additional compositional placement of height and depth to create spherical sound fields. Additional soundscape and music materials are composed to draw attention to spherical nature of sound using swirling drones and dynamic spatial shifts. A heightened sense of intimacy is also encouraged through close-proximity, ASMR-like sounds. The underscoring elements are intended to generate an embodied immersion that sensorially and affectively illustrates the essay’s textual content.

An example of concretization mixed with affective spatialization can be heard in section two (8:47) in which a compilation of footsteps recorded in various locations illustrates the multicursal paths referenced by de Certeau. [45] Another example (5:00), is a rapid parametric equalizer sweep applied to a soundscape of a busy city. By rapidly removing bass frequencies and changing vertical placement, the effect creates a semiotic, spatial and affective aural transition from the position on the ground amidst the city, to a placement high above, changing not just the point of view but the point of listening.

Visu-auditive Environments

While 360VR could be considered a visual medium, I wanted to subvert the format, exploiting its audio capacities and minimizing the visual accompaniment. After initially resisting the pull of visual material in my practice, hoping to encourage people to listen more deeply, I have become interested in how visual material can be used to provide an anchor and focusing point for sonic material. Michel Chion calls this “visu-audition”—a proposition accompanying and contrasting the audiovisual. Rather than the sound anchoring or accompanying the visuals, visu-audition allows the visual to add value to the sound, assisting the reading of the it. Naturally occurring examples are the playing gestures of a musician, or the movements of the mouth when watching someone speak. [46]

The visual language for *In_Listening_In* went through a number of drafts. The early material was more varied, matching the rhythms of the sounds, featuring a mix of abstract visuals and real-world footage from the same places as the audio material. However, this level of visual detail pushed the sound-vision relationship too far towards the

audiovisual, dampening the sense of immersion, spatialization and hindering textual comprehension. I realized I needed a more subtly atmosphere—an environment that was inhabited rather than viewed. In this I took inspiration from Laurie Anderson’s VR project *Chalkroom*, made in collaboration with Hsin-Chien Huang. [47] When discussing the visual approach Anderson talks of how virtual reality environments require you to “make air”. [48] This line of thinking helped me create the right style of visual landscape that defined the space, was not static, yet not narratively active and dominating.

The visual environment employs graphic text (the transcript of the piece) collaged with photographic material of branching root structures. When developing visual material I am always keen for it to be drawn in some way from the content, either as sound waveform, or in this case, an environment made from the actual text. The textual image moves very slowly, presenting shifting opacities that activate the space like it is breathing. Shifting color gradients indicate different sections. Cited writers’ names appear as glowing orbs, spatially matching the audio placement. This allows the participant occasional textual prompts, helpful when discovering new writers. The placement also invites the participant to explore the space more dynamically.

The essay is housed on YouTube that supports the 360VR ambisonic format (Vimeo has only more recently added this ability). It is best experienced using the YouTube App on a phone or tablet so that the device’s in-built movement sensors can fully implement the responsive spatialization. As the sound is most important the experience does not require VR goggles offering greater accessibility. However, it can be viewed through VR headsets which creates an even more immersive effect. It also means the piece can be presented as a stand-alone artwork as it is here at ISEA2024.

For academic purposes, the work is best accessed through a website portal that allows me to include key elements such as a preface/abstract and timecoded notes with full hyperlinked references to fulfil key academic competencies. I have also provided a transcript that includes creative audio descriptions of the soundscapes. This serves both as an accessibility tool and as complement for flexible modes of study. While the 360VR visual format can be navigated on a computer, the audio is less dynamic. Consequently, there is no benefit to embedding the video in the module’s webpage and it is necessary to refer the participant to YouTube on a mobile device. This method is not as elegant as I would desire, and in this way the project is, still in some ways a speculative proposition, but as technology improves, ambisonic audio in computer-based video delivery may become more common place.

Ambisonic Essay as Artwork

In Listening In is a practice-based research project that operates within an academic context, as it adheres to the formal requirements of rigorous research. In its content and 360VR

ambisonics format, the project can also be considered an artwork—both as an online piece and as gallery-based VR work using head mounted displays and/or tablets. While Groth and Samson are wary of allowing the audio paper to be fully recognized as artwork, preferring it as an example of practice-based process, I would argue that if intentioned, the audiographic form, utilizing both semiotic and sensorial properties of sound can be presented within both academic and artistic fields. In this way it serves to makes sound theory more widely accessible and invites a wider potential audience to engage with it.

With this project I propose I have furthered the potential that audiographic critique offers, by using the extended spatializing properties of ambisonic audio that heighten the sense of immersion within sound. For this work, it allows there to be complete entanglement of form and content, each illustrating and concretizing the other. While the content of this essay is specifically concerned with the immersive ontology of sonaurality, the ambisonic essay format has potential for essays on other issues within sonic theory, with the capabilities of dynamic sound and textual placement offering more opportunity for formal and textual play. In this way it is offered as speculative methodological and formal proposition.

Conclusion

Through this reflection on the ambisonic essay *In Listening In* I have outlined an ontology of sound and listening that allows us to discuss the aural realm as distinct from the visual. This foregrounds the correlational aspect of sound and listening in which subject and object are entangled, bringing each other to meaning. This correlation I term sonaurality to ensure that the two elements are considered together. Given this entanglement of subject and object, it becomes clear that a mode of traditional theorizing that is reliant on the paradigm of observational distance falls short. In order to account for the specificities of sonaurality I propose a move to a tomographic authorial position in which the writer acknowledges their position within, and offers slices of experience that then can be considered reflexively to offer an acknowledgement of inside and outside understandings. These ideas form the content of the *In Listening In* but are also enacted through its development and presentation as an artwork that uses the ambisonic tools of 360VR to deliver an immersive visu-auditive experience.

While this paper has been an explication of the relevance and usefulness of this form, it is also hoped that in the future, the ambisonic essay, offered with the same rigor of research as traditional print formats, may be able to stand for itself. Currently there are some impracticalities to the VR form in terms of ease of delivery to a mass audience, but the piece is offered as provocation as to how we might be able to facilitate alternative forms of sound theory in the future.

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