

RECENT AUDIO SCORES: AFFORDANCES AND LIMITATIONS

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ABSTRACT

A growing body of contemporary composers produces audio scores where sound is the integral mediator between the composer and performer. While many musical scores deploy some form of symbolic visual representation of sound or movement, audio scores represent information and instructions in the same domain as the performed product. This paper aims to survey the affordances and limitations of audio scores enacted thus far. Within the field, we identify two primary sub-categories associated with the temporal relations between performer and audio score: reactive and rehearsed. Louis d’Heudieres’ *Laughter Studies 1-3* (2015-16) and Lara Stanic’s *Open Air Bach* (2005, rev. 2013) are examples of reactive audio scores. Representative examples of rehearsed audio scores include Carola Bauckholt’s *Zugvögel* (2011-12) and Cassandra Miller’s *Guide* (2013). These primary sub-categories may be combined and hybridized to varying degrees, as in Carolyn Chen’s *Adagio* (2009). Finally, in light of our survey of the possibilities offered by audio scores, we propose some further avenues of exploration for creative practice.

1. INTRODUCTION

This paper aims to survey the affordances and limitations of a growing body of audio scores, defined here as scores which employ sound as the primary means of communication between composer and performer.

Most existing literature on this topic comprises self-reflective analytical commentary by composers [1] [2] or discusses audio scores within the larger theoretical frame of real-time scoring strategies (alongside animated or video scores, for example) [3] [4]. In the latter context, d’Heudieres analyses Gavin Bryars’ *1, 2, 1-2-3-4* (1970) where each performer listens to popular songs over headphones and spontaneously imitates their instrument’s part

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in the recordings. Taking Bryars’ work as his primary historical exemplar, d’Heudieres stresses real-time applications in his definition of the medium: “an audio score is one in which the instructions from composer to performer are communicated *in performance* through sound” (our emphasis), thereby excluding recorded samples assisting performers solely in rehearsal [4, p.18]. Alternatively, Bell [1, p.43] [3, p.2] conceives of his ‘audio-scores’ as extensions of visual symbolic notations, explicitly incorporating ‘learning by ear’ oral tradition practices within written ones (e.g. pitch cues and click-tracks delivered over earpieces). For Bell, the audio cues merged into this hybrid format primarily serve as solutions to rehearsal and performance difficulties when realizing complex written tempi or microtonal pitches. By contrast, Bhagwati [2, p.25] adopts an expansive definition of what he terms ‘Elaborate Audio Scores,’ simply emphasizing the primacy of auditory communication between composers and performers as the sole requirement. This definition encompasses work conforming to both d’Heudieres’ and Bell’s positions, and is the one we have followed here.¹ Bhagwati goes on to discuss the various “conveyance modes” he typically employs in his own compositions [2, p. 26-28], including event and instruction cues for executing sounds or choreographies, as well as prompts for improvisation, and imitation of samples or styles.

To the best of our knowledge, no general analytical survey exists which sketches the diversity of recent efforts in the nascent field of audio scores; both Bell [1, pp.46-54] and Bhagwati [2, pp.25-26] only provide brief descriptive lists of works that parallel or influence their own creative endeavors. As such, our paper seeks to both complement this existing literature and extend its scope by drawing scholarly attention to bodies of work hitherto un- or under-examined in this context.

As a methodological lens for this survey of the state of the art, we employ James J. Gibson’s [5, p.127] notion of affordances: the potential actions made possible by an object or environment to a given individual—a concept that implies a mutually influencing, transactional relation between actor and object. A material format alone does not wholly determine the action possibilities it affords; composers and performers (i.e. the actors in this context), as well as audio scores (i.e. the object), are themselves situated and dynamically shaped within wider networks and

¹ Of course, whether a given hybrid score (akin to Bell’s practice) uses sound as a *primary* mediator between composer and performer, or not, will be open for debate on a case by case basis.

histories of cultural practice. These practices mediate and constrain potential relations: for instance, the act of deploying a sound recording *as if* it were a score suggests a translation of prior scoring practices across media; equally, functioning as a score is just one of the many potential use cases afforded by recorded or generated sound. Nevertheless, at this particular intersection of cultural practice and material format, we contend that audio scores representing information and instructions in sound afford some *distinct and different* possibilities to composers and performers when compared to scores which deploy some form of symbolic visual representation of sound or sound-producing movement. Via the contrasting pieces we have taken as case studies (all primarily associated with Western experimental art music), supplemented by a table of related works (see Figure 2 toward the end of this paper), we intend to offer a preliminary sketch of some of the affordances enacted thus far in this dynamic, *in process* contemporary field.

Categories of Audio Scores

Within this field, we identify two primary sub-categories associated with the temporal relations composed between performer and audio score: reactive and rehearsed.² On the one hand, performers primarily react to the audio score *during* performance; on the other, the audio score shapes the performers' interpretations in rehearsal, well *before* public performance.³

2. REACTIVE AUDIO SCORES

2.1 Louis d'Heudieres, *Laughter Studies 1-3*

Louis d'Heudieres' *Laughter Studies 1-3* (2015-16)⁴ for two vocalizing performers [6] are examples from our reactive category that translate a practice associated with visual scores into a different format to enact distinct affordances. In d'Heudieres' series, each performer listens to a different audio score on headphones and alternates between vocally imitating and verbally describing what they hear to the audience.

The audio scores feature a fast, collage-like succession of many and diverse samples, which are edited and processed to varying degrees. The performers are asked not to overly familiarize themselves with their audio scores beforehand; rather, they should spontaneously react to the often unpredictable changes and transformations between sounds. This arbitrarily-imposed constraint is a kind of

translation of sight-reading practices, though it differs in some fundamental respects. Static visual scores tend to represent sounds in a metaphorical spatial configuration [7, p.23] allowing performers to anticipate and read ahead of their performed actions at any given moment. In addition, a performer may infer the likelihood of future events in a given visual score based upon characteristic features of the dimensions prioritized by the composer, which all serve to situate the score with reference to similar examples from similar genres. By contrast, d'Heudieres' *Laughter Studies* lock the performers into a relation with the audio score that is always reactive—the format ensures there is little way of hearing or inferring ahead.⁵ d'Heudieres couples this limitation with an affordance of sound reproduction technologies: the format mediates and renders commensurable a vast array of sound sources—recorded, synthesized, and processed, etc. Potentially *any sound* within the range of human hearing and the frequency response of the microphones, speakers or headphones etc. could be reproduced, manipulated and organized in countless ways. As if to take full advantage of this, many of the sounds in the *Laughter Studies* audio scores are crowdsourced from online repositories.⁶ The resulting high degree of unpredictability and diversity in the sounds deployed by d'Heudieres encourages varied modes of performer listening, imitation, and description: highly affective sounds, such as laughter or crying, invite imitations and descriptions emphasizing semantic associations; by contrast, more abstract sounds or processing invite greater attention to acoustic qualities, etc.

However, unlike many visual scores featuring transcription, d'Heudieres does not explicitly transcribe and prioritize certain dimensions of his chosen sounds *beforehand* and on behalf of the performers; no guidance is given on *how* the performers should accomplish their tasks, and few concessions are made to idiomatic vocal conventions in the choice of sounds. Rather, the particular intersections of translated sight-reading practices and audio score format we have enumerated allow d'Heudieres the possibility of *recomposing the relations between performers and score*—the vocalists transcribe and mediate freely in their own, individual way. The ease or difficulty of the task over time for those specific performers are dimensions of compositional exploration, traceable via the *variable fidelity* of their imitations and descriptions—sonic and gestural stumbles or hesitations demarcate each performer's limits. Overall, the performers' personas convey no pretensions toward mastery of their materials, inspired interpretation,

² Bhagwati raises and rightly critiques a seemingly similar division between “situative and fixed audio scores” [2, p. 30]. Rather than emphasize the nature of the score-in-itself, we stress the character of the encounter composed *between* score and performer. For example, when an audio score is heard for the first time by a performer, it may make little difference to them if the score is generated ‘live’ (i.e. situative) or fixed beforehand. But ‘live’ or fixed, the relation between performer and score in this scenario will be reactive.

³ As will become apparent later in our discussion of Carolyn Chen's work, these categories are not inviolable divisions; they draw attention to the primary emphasis of the relation composed between performer and score. For example, a performer will likely studiously rehearse Lara

Stanic's work and set-up, gaining experience and facility in negotiating the unpredictability arising out of the complexity of the system. However, the primary emphasis of the composition remains the performer's spontaneous reaction to, and negotiation of the audio-score in real-time.

⁴ Documentation: <http://www.louisdheudieres.com/works.html> [6]

⁵ Bhagwati primarily notes this affordance as a limitation [2, p.29], again serving to highlight how constraints may both open or foreclose creative possibilities depending upon how they are framed and negotiated within a given work.

⁶ For example, freesound.org, a collaborative online database of Creative Commons Licensed sounds

or faithful reproduction. Rather the affordances enacted in the relations between the performers and this reactive audio score evoke the register of candid, theatrical improvisatory play and games.

2.2 Lara Stanic, *Open Air Bach*

In a similarly playful vein, not only does the performer in Lara Stanic's *Open Air Bach* (2005, rev. 2013)⁷ [8] react to an audio score during performance, but this audio score reacts dynamically to the performer's actions as well. Stanic enacts the affordances of the varied assemblage of technologies at her disposal to compose a feedback loop. In this, performer, computer, microphones, and loudspeakers mutually influence one another, interacting via live processing of recorded sound. Three external microphones follow the amplitude of the output of three loudspeakers attached to the performer's body. The amplitudes picked up by each microphone determine the speed and pitch of the live, computer processed playback of each part of an instrumental recording—the third movement of J.S. Bach's Sonata in E minor for flute, cello, and harpsichord BWV 1034. The performer's goal is to achieve the 'correct' playback of the recording through silent movement and somewhat awkward gestures. The closer the performer moves to the microphones, the greater the amplitude of the signal they pick up, and the more accurate the playback becomes; however, the performer must constantly adjust their distance from each microphone due to the continually changing volumes of the recordings [9, pp.164-165].

Generally static formats and their associated practices, such as conventional symbolic visual scores, allow the performer varying types and degrees of interpretative flexibility centered upon a largely stabilized, if relationally defined object. Many of the score's details and their situated meanings are negotiated before the act of public performance. By contrast, thanks to live electronic sound processing, Stanic composes a situation where the score-object itself is highly mutable and fluid *during* performance. Stanic defines an interactive system, which dynamically responds to *and* scripts the performer's movements. Since the audience also hears these processed, fluctuating sounds, the audio score becomes an object of aesthetic interest as well.⁸

3. REHEARSED AUDIO SCORES

3.1 Carola Bauckholt, *Zugvögel*

Thus far, our case studies have surveyed a reactive relation between performer and audio score. By contrast, the reed quintet *Zugvögel* (2011-12)⁹ [10] by Carola Bauckholt [10] invites players to interact with and *rehearse* the audio score well before public performance. The audio recordings, which consist of bird calls of various species, are not

played in performance; instead, the quintet members are instructed to familiarize themselves with these bird calls and memorize all their nuances in order to reproduce them on their respective instruments.

Bauckholt's use of the audio score format directs this activity towards high-fidelity transcriptions of bird calls rather than reduced abstraction or overt musicalization (the obvious historical precedent for the latter occurs in the works of Olivier Messiaen) [11]. By using recordings of her sources, Bauckholt's audio score affords a higher degree of specificity and dimensionality to performers than most visual, symbolic representation of those sources (particularly in regards to spectro-temporal variation in timbre, for example.)

In *Zugvögel*, each performer establishes a distinct relationship with the recordings due to their objective of producing a faithful imitation through whatever means necessary. This mimetic process begins with the task of parsing each recording's most salient elements. In contrast to the traditional practice of bird call transcription in a conventionally-notated medium, the recorded format omits much of the symbolic filtering and prioritizations of the composer. It instead defers any such filtering to the instrumentalists of the reed quintet, allowing a more intimate understanding of the instruments' capabilities to inform a precise rendering. Hence, the performers' personal knowledge of their instrument's compatibility with the source material enables a higher degree of fidelity in its reproduction. Through this process, the performer may also come to discover previously hidden action-potentials in relation to their instrument.

It should be noted that each recording is symbolically transcribed by Bauckholt in an accompanying visual score. She adds in her prefatory notes, however, that "the notation should only be taken as a guide," [12] suggesting that the notated transcription holds only a supplementary role in relation to the audio score. However, this visual aid helps to mitigate one of the audio score format's primary limitations: the act of memorization. Because the minute features of each recording must be encoded into memory and recalled in performance, the musical information itself is subject to variability and even corruption over time—employing a visual score in conjunction with the audio score seems to effectively redress this limitation.

3.2 Cassandra Miller, *Guide*

Guide (2013)¹¹ for 10 singers [13] by Cassandra Miller offers a similar implementation of the rehearsed audio score in emphasizing the specificity of its recorded materials; however, where Bauckholt instructs the performers to *imitate* the sound sources as closely as possible, Miller instead opts for a *qualitative embodiment* of the audio score. The players are directed to thoroughly familiarize them-

⁷ Documentation: https://youtu.be/mdbK0S_PvM4 [8]

⁸ See Figure 2 for further examples of reactive audio scores and associated affordances

⁹ The title translates to "migratory birds"

¹⁰ Documentation: <https://youtu.be/KEAHxLNyVxw> [10]

¹¹ Documentation: <https://soundcloud.com/cassandra-miller-composer/guide-exaudi> [13]

selves with a recording of “Guide me, O Thou great Jehovah” as interpreted by American folk singer Maria Muldaur in 1968. The particular recording was selected, according to Miller, because its melody exhibits “swoops over a large tessitura that, more than anything, sounds like it feels good to sing” [14]. As in *Zugvögel*, *Guide*’s visual score serves only a supplementary function; Miller employs a “quasi-neumatic” open graphic notation, providing only the starting pitch, tempo, and general contour of each vocal line in order to support a flexibility of interpretation.

“Singability” is prioritized in agreement with the free-flowing, improvisatory characteristics of Muldaur’s original interpretation. These characteristics need not be translated through a direct imitation of the recording by rendering all its time-based nuances; instead, the audio score affords a *qualitative embodiment* of Muldaur’s vocal characteristics as the basis for a public performance of *Guide*. Muldaur’s vocal identity is appropriated and filtered through the bodies of each singer; the audio score allows access to the minute sonic details of Muldaur’s registration, phonation, and articulation. In her instructions, Miller references the score’s resemblance to oral tradition; the composer acknowledges this larger cultural practice in *Guide*, whereby material is shaped by the corporeal and performative identities of multiple generations of interpreters [15, p.89]. The liberties granted to the singers allows this phenomenon to be communicated in an arguably more acute, concrete way than a symbolic transcription.¹²

4. HYBRID AND CROSS-MODAL APPLICATIONS

Carolyn Chen, *Adagio*

The two primary sub-categories of audio scores we have outlined, reactive and rehearsed, serve well as an initial distinction to guide our survey; however, these categories may be combined, weighted, and hybridized to varying degrees. In Carolyn Chen’s *Adagio* (2009)¹³ [16] three or four performers listen to an audio score on headphones, synchronizing emotive facial expressions with the music—specifically, an excerpt of the second movement from Bruckner’s 7th Symphony as performed by the Münchner Philharmoniker, conducted by Sergiu Celibidache live in 1994.

The distinct affordance this work enacts via its associated entities is the encapsulation of a chain of translations of *specific* media, histories, and socio-cultural phenomena. First, a recording encapsulates Celibidache’s interpretation of Bruckner’s visual score and its associated practices. Then, an excerpt of this *specific* recording is subsequently appropriated by Chen and situated as an audio score. Bruckner’s visual score also acts as an adjunct to this audio score, annotated with affective descriptors that presumably

translate and embed Chen’s own listening practices and relations with the excerpt [17]. The performers *rehearse* and memorize descriptors such as “elevated,” “yearning,” and “solitary” [18]—often suggesting, but not prescribing the exact facial expressions to perform. The audio score provides not only a time-based structure for these performative events (akin to a click track¹⁴), but a live stimulus which the performers react to, mediating Chen’s affective instructions. This ‘private’ listening practice is then transposed into a concert setting. The audience hears no sound; they voyeuristically observe the staging of a ‘private’ listening experience they know well, speculating upon the incomplete trace of the aforementioned chain of mediations. At the very least, the performers’ exaggerated facial expressions (as in Figure 1) may clue the audience into the ‘romantic’ qualities of the unheard musical referent.

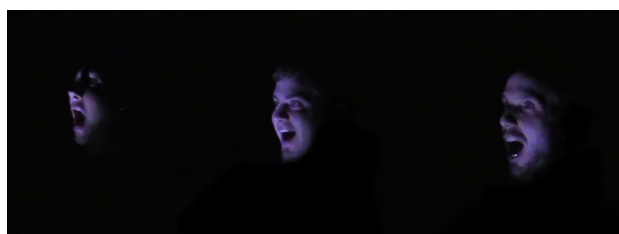


Figure 1. Still from a performance of Carolyn Chen’s *Adagio* by Constantin Basica (left), Chris Lortie (center), and Charlie Sdraulig (right). Filmed by Dave Kerr. Used with permission.

5. CONCLUSIONS

Overall, in contrast to their visual counterparts, audio scores often represent information and instructions in the same domain as the performed product. As such, many audio scores afford the imitation and embodiment of diverse sound sources with varying degrees of fidelity. Unlike many visual scores, a composer’s conception of a voice or instrument’s capabilities need not determine the fidelity of the performers’ realization—a somewhat standardized vocal or instrumental approach can be deemphasized in favor of an individual musician’s knowledge of the action-potentials of their specific instrument (as in d’Heudieres’ *Laughter Studies*, Bauckholt’s *Zugvögel*, and Miller’s *Guide*). Distinct affordances are enacted through the intersection of prior cultural practices and the audio score format: in *Laughter Studies*, sight reading practices are translated into a format that limits performer’s abilities to listen or infer ahead; a mediated oral tradition in *Guide* enables the qualitative embodiment of the recorded material’s specific characteristics; Chen’s use of Celibidache’s recording in *Adagio* playfully situates and encapsulates successive mediations of Bruckner’s score,¹⁵ etc. In addition, digital manipulation of recorded sound affords a mutable score-object as in Stanic’s *Open Air Bach*.

¹² See Figure 2 for further examples of rehearsed audio scores and associated affordances

¹³ Documentation: <https://vimeo.com/194820531> [16]

¹⁴ See Bell [1] [3] and Bhagwati [2] for further discussion of click tracks as a form of audio score

¹⁵ cf. Michael Baldwin’s *BUZZED* (2015) for solo French horn where several recordings from the collaborative process are edited and layered in the final audio score <https://michaelbaldwin.online/buzzed/> [19]

| <i>Category</i> | <i>Affordances / Limitations</i> | <i>Pieces, Situations</i> |
|-------------------|---|--|
| Reactive Emphasis | Real-time improvisatory response to sound/performers cannot hear or infer ahead | <p>Bryars, <i>I, 2, 1-2-3-4</i> (1970)</p> <ul style="list-style-type: none"> instrumentalists imitate their instruments' parts in recordings of popular songs [4] [21] [22] <p>Brown, <i>Tomorrow, When I Grow Up</i> (2017)</p> <ul style="list-style-type: none"> unpredictability of audio score stimulates a performed anxiety [23] <p>Cassidy, <i>I, purples, spat blood, laugh of beautiful lips</i> (2006)</p> <ul style="list-style-type: none"> singer matches the pitch of an undulating sine tone generated by a computer in real time [1, pp.52-53] [24] <p>d'Heudieres, <i>Laughter Studies</i> (2015-)</p> <ul style="list-style-type: none"> spontaneous free vocal imitation and description of an unpredictable collage of processed recorded and generated sound (see also <i>FOR ___ ON ___</i> (2015)) [4] [6] <p>Palme, <i>Cantu Foliato</i> (2012)</p> <ul style="list-style-type: none"> choir spontaneously responds to and imitates pre-recorded voices [1, p.51] |
| | Instructive/performative prompts | <p>Bhagwati, various pieces</p> <ul style="list-style-type: none"> event and instruction cues for executing sounds or choreographies, as well as prompts for improvisation, and imitation of samples or styles [2] <p>Castonguay, <i>Le Souffleur</i> (2009)</p> <ul style="list-style-type: none"> performative prompts sent through Max/MSP [2, p. 26] [25] <p>Chen, <i>Adagio</i> (2009)</p> <ul style="list-style-type: none"> Bruckner recording serves as an affective prompt [16] [18] <p>Improv Everywhere, <i>The Mp3 Experiments</i> (2004-)</p> <ul style="list-style-type: none"> a large crowd of participants receive synchronized instructions for physical actions through headphones in a public space [26] <p>Mason, <i>felt ebb thus brink here array telling</i> (2004)</p> <ul style="list-style-type: none"> tempo and pitch cues, as well as instructions referencing symbolic visual notation absent in performance [1, p.49] |
| | Mutable score-object | <p>Baldwin, <i>BUZZED</i> (2015)</p> <ul style="list-style-type: none"> audio re-arranged in DAW during collaborative process [19] <p>Brown, <i>Tomorrow, When I Grow Up</i> (2017)</p> <ul style="list-style-type: none"> audio re-arranged in DAW before each performance [23] <p>Castonguay, <i>Le Souffleur</i> (2009)</p> <ul style="list-style-type: none"> composer controls the output to each pair of headphones in performance [2, p. 26] [25] <p>Schimana, <i>Virus #1.0 - #1.7</i> (2011-17)</p> <ul style="list-style-type: none"> resonant body provides live-generated sounds which influence the performance [2, p. 25] [27] <p>Stanic, <i>Open Air Bach</i> (2005, rev. 2013)</p> <ul style="list-style-type: none"> live processing of existing recording tied to performer's movements [8] |
| | Real-time ambient sound as audio score | <p>Kubish, <i>Electrical Walks</i> (2004-)</p> <ul style="list-style-type: none"> participants engage with electromagnetic signals in the environment via the use of custom headphones [28] <p>Lucier, <i>Vespers</i> (1968)</p> <ul style="list-style-type: none"> blindfolded performers echolocate using the reverberant properties of the space as a guide [2, p.25] [29] <p>Oliveros, <i>Sonic Meditations</i> (1974)</p> <ul style="list-style-type: none"> participants reinforce and contribute to environmental sounds [30] |

| <i>Category</i> | <i>Affordances / Limitations</i> | <i>Pieces, Situations</i> |
|--------------------|---|--|
| Rehearsed Emphasis | High-fidelity reproduction | <p>Bauckholt, <i>Zugvögel</i> (2011-12)</p> <ul style="list-style-type: none"> recordings of bird calls allow performers to execute a high degree of timbral detail in their imitations [10] [12] <p>Bell, various pieces</p> <ul style="list-style-type: none"> cues and click tracks aid performance of microtonal tunings and complex tempi, sometimes in non-standard spatial configurations [1] [3] <p>Hadju, <i>Der Sprung</i>, Intermezzo (1999)</p> <ul style="list-style-type: none"> performers use audio score as an aid for microtonal tuning [31] <p>Lortie, <i>Incorporate</i> (2018)</p> <ul style="list-style-type: none"> audio score expedites the communication of complex timbral detail [32] <p>Mazulis, <i>Ajapajapam</i> (2002)</p> <ul style="list-style-type: none"> performers use audio score as an aid for microtonal tuning [1, p.49] |
| | Corruption of memory | <p>Bauckholt, <i>Zugvögel</i> (2011-12)</p> <ul style="list-style-type: none"> sound recordings memorized, but not played back during performance; audio score supplemented with a conventionally-notated one [10] [12] <p>Lortie, <i>Incorporate</i> (2018)</p> <ul style="list-style-type: none"> sound recordings memorized, but not played back during performance; cues on a computer monitor instruct when these are to be performed [32] <p>Miller, <i>Guide</i> (2013)</p> <ul style="list-style-type: none"> sound recordings memorized, but not played back during performance; supplemented with a quasi-nuematic score using open graphic notation to encourage flexibility [13] [14] |
| | Embedding and situating personal, musical and collaborative histories | <p>Applebaum, <i>Clicktrack</i> (2015)</p> <ul style="list-style-type: none"> each performer creates their own audio score by reciting and recording a poem, which subsequently acts as their individual click track [33] [34] <p>Baldwin, <i>BUZZED</i> (2015)</p> <ul style="list-style-type: none"> indexing of physical movements linked to sounds; the audio score layers successive recordings from the collaborative process between performer and composer [19] <p>Chen, <i>Adagio</i> (2009)</p> <ul style="list-style-type: none"> successive mediations of specific instantiations of the slow movement from Bruckner's 7th symphony [16] [18] <p>Miller, <i>Guide</i> (2013)</p> <ul style="list-style-type: none"> audio score enacts a mediated oral tradition: performers embody the characteristics of a specific vocal model chosen by the composer [13] [14] <p>Walshe, <i>1984 IT'S O.K.</i> (2015)</p> <ul style="list-style-type: none"> audio and visual reference material for specific performance attitudes/identities to be embodied [35] |

Figure 2. A summary of the principle affordances and limitations of the pieces cited in this paper, Bell [1], Bhagwati [2], and d'Heudieres [4]. We have also included additional pieces known to us at the time of writing, which conform to our definition of an audio score (see footnote 1). For those audio scores used in performance, many employ headphones or ear pieces as the means of transmission (with some exceptions e.g. Brown, Lucier, Oliveros, Schimana, and Stanic).

6. FURTHER AVENUES

Finally, our survey of the affordances enacted in recent audio scores point towards further avenues of exploration for creative practice. Chen's piece is just one of many possible hybrid approaches to the relations between audio score and performer; cross-modal interactions and mappings could be extended further;¹⁶ within a single piece, certain performers might engage with visual scores and others with audio scores; varying degrees of prescription or flexibility in the interpretation of audio scores might be explored; the audio score could be at times mutable via live processing and at others largely fixed; the score itself could be revealed as an object of aesthetic interest over time—diffused over speakers in different spatial configurations, including headphones; evidently, these diverse approaches and others might be applied asymmetrically across individual members of a given ensemble or at different times within one piece. In all of these cases—speculative as well as realized—representations of information and instructions in sound afford the possibility of *fundamentally re-composing the interpretive encounter between performer and score*.

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¹⁶ cf. video scores e.g. Celeste Oram's *XEROX ROCK* (2015) <http://celesteoram.com/XEROX-ROCK-2015-a-video-score> [20]

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